

May 19, 2022

ADDENDUM NUMBER TWO (2)

Project: SCSD ESSER Package 2  
Smith County School District  
PN: 21093

FROM: Dean Architecture, P.A..  
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The following additions, changes, clarifications and/or substitutions to the Project Drawings as indicated, are hereby made a part of the Contract Documents. Acknowledge receipt of this Addendum by inserting its number and date in the Proposal Form where indicated.

General

**Item #1:** As determined by the General Contractor, the mechanical sub-contractor and his equipment supplier on the availability of equipment, be advised of the following:

If equipment or material delivery is delayed due to ongoing supply chain issues, the general contractor "will not" be allowed to perform any work during the day when school classes are in session. During the established school attendance year, all work will have to be performed after school hours, on weekends, during the night or during recognized school holidays or breaks.

Mechanical

SEE ATTACHED MECHANICAL ITEMS PROVIDED BY HESMA

END OF ADDENDUM NUMBER TWO (2)

Dean Architecture

  
J. Alan Grant, AIA, Principal



PLEASE ATTACH THIS ADDENDUM TO THE INSIDE FRONT COVER OF EACH SET OF SPECIFICATIONS.

## **SECTION 23 41 53**

### **BIPOLAR IONIZATION AIR PURIFICATION DEVICES**

#### **PART 1 - GENERAL**

##### **1.01 RELATED DOCUMENTS:**

- A. The requirements of the General Conditions, Supplementary Conditions, and Section 23 05 00, "HVAC General" apply to all work specified in this Section.
- B. Refer to Specification Section 23 06 00, titled "HVAC Schedule of Submittal Data" for the submittal and approval requirements regarding the piping system.
- C. Furnish and install all required equipment, appurtenances, and accessories for a complete system.
- D. See other sections of these specifications that may specify accessories or features.
- E. Refer to the schedules on the drawings where equipment capacities are not included in this section.
- F. Review other sections of the specifications and the plans for services required to each piece of mechanical equipment. Any required accessories, appurtenances, or service omitted from the plans or specifications that are not called to the attention of the Architect at least 72 hours before bidding and corrected by addendum shall be provided as though shown.

##### **1.02 QUALITY ASSURANCE:**

- A. A qualified, factory employed representative from the manufacturer shall be available to inspect the installation of the air purification system to ensure installation in accordance with manufacturer's recommendations. Third party technicians shall not be utilized for start-up service.
- B. The complete air purification system shall be a product of an established manufacturer with documented experience of a minimum of 10 years. All devices shall be listed on the UL SPOT environmental claim validation website, or the Intertek Sustainability Certification Directory website, proving compliance to UL 2998.
- C. The complete air purification system including the assembled needlepoint bi-polar ion generator, with power and control wiring, safety switches, airflow switches and controls shall be listed by either UL or ETL for commercial applications. Residential products submitted with UL or ETL certification shall not be acceptable. Other unacceptable products include powered particulate filters, polarized media filters, uni-polar ion generators, "plasma" particulate filters, high-powered ionization devices, ozone generators, photocatalytic oxidation products and dry hydrogen peroxide products.
- D. Provide indoor air quality calculations using the formulas within ASHRAE Standard 62.1 to validate acceptable indoor air quality at the quantity of outside air scheduled. The calculations shall be generated from and validated by an identified and independent cognizant authority to assure compliance with ASHRAE Standard 62.1. Report for each zone shall be provided by the manufacturer.

### **1.03 SUBMITTALS:**

- A. Product drawings detailing all physical, electrical, duct work, and control requirements shall be submitted to the design professional prior to the release of any equipment for fabrication.

### **1.04 COORDINATION:**

- A. The products of one manufacturer have been used as the basis of design. Any modifications required due to the use of products from another manufacturer shall be coordinated with all other trades before delivery of equipment from the manufacturer, at no additional cost to the contract.

### **1.05 ACCEPTABLE MANUFACTURERS:**

- A. The basis of design equipment manufacturer is Global Plasma Systems. Manufacturers submitting for approval must comply with all aspects of this specification and submit documents required. Requests for approval shall include a minimum of five (5) similar application references with owner contact name and phone number. The contractor shall be responsible for any costs associated with substitution.

## **PART 2 – PRODUCTS**

### **2.01 BI-POLAR IONIZATION SYSTEM:**

- A. Bi-polar ion system shall be capable of:
  - 1. Effectively deactivating pathogens (viable mold spores, bacteria, and virus).
  - 2. Reducing odors and VOCs, as may allow for the minimum ventilation rates under the ASHRAE 62.1 IAQ procedure may be attained. [Manufacturer shall provide IAQP analysis based on the latest version of ASHRAE 62.1 in support of ventilation airflow reduction.]
  - 3. Capable of reducing static charges.
- B. No less than MERV 8 efficiency prefilters shall be provided in the air system upstream of the ion generators.
- C. Humidity:
  - 1. Relative humidity from 0 - 100% shall not cause damage, deterioration, or dangerous conditions within the air purification system. For bipolar ion generators installed in the supply duct, the manufacturer shall provide additional BPI capacity to offset the loss caused by high humidity. Provide a safety circuit to interrupt power in the event of an internal system short circuit or arcing condition. The safety circuit must be in addition to the normal unit fuse or circuit breaker.

## **2.02 EQUIPMENT REQUIREMENTS:**

- A. Ion generator specifications (needlepoint type)  
Each BPI unit shall include the required number of ion generators sized to the air handling equipment capacity indicated on the schedule.  
Electrical power to the generators shall be interrupted when access doors to the mechanical equipment or duct section is opened.

## **2.03 BIPOLAR ION GENERATOR REQUIREMENTS:**

- A. Generator(s), capable of mitigating gas phase contaminants shall be provided for all equipment listed in paragraph 2.1.
  - 1. The needlepoint bipolar ionization system shall consist of positive and negative ion generators, internal controls, safety door switches, airflow switches, and other accessories (as required) required for safe and efficient operation. The needlepoint ion generators shall include a BMS interface to indicate ion generator operation. Ion output shall be listed in ions per cc when tested with no air flow, at 1 inch from the ionization system.
  - 2. The needlepoint bipolar ion generators installed in a duct on each system shall be installed so that electric service is disconnected whenever the needlepoint bi-polar ion generator is removed for service.
  - 3. Generators mounted on a rail for installation in RTUs/AHUs shall be located between the unit prefilter and coil (esp. for coil cleaning function) or downstream of coil in available access space (for maximum IAQ control).
  - 4. Service access for all duct mounted units shall include a galvanized steel plate. Removal of the ion generator shall be accomplished with machine screws to permit easy access and replacement of the ion generator.
  - 5. No protruding needlepoint "needles" shall be allowed to be in the air stream for safety and to protect from incidental damage.
- B. Products shall be tested by UL or Intertek proving conformance to UL 2998 Third Edition (2020) ozone standard when tested using UL 867 Fifth Edition (2011) methodology. Testing must be large chamber environment testing and peak ozone test for electronic devices in accordance with the standard.
- C. Ozone Generation
  - 1. Devices must be listed on the UL SPOT environmental claim validation website, or the Intertek Sustainability Certification Directory website, proving compliance with UL 2998.
- D. Design Requirements:
  - 1. Installations must include the required number of electrodes and power generators sized to the air handling equipment capacity.

2. NPBI™ Electrodes: Made from carbon fiber to prevent oxidation over time. Carbon fiber clusters must contain a minimum of 45,000 needles.
  - a. Not Acceptable: titanium, stainless or any other metal.  
Not Acceptable: Bipolar ionization tubes manufactured of glass, composite, mica, or similar dielectric materials.
  - b. Energize when main unit disconnect is turned on and fan is operating.
    - 1) Not Acceptable: Ionization systems requiring mechanical air pressure switches to cycle electrodes when fan is operating.

Electrode Pair: Provide electrodes to generate both positive and negative ions.
  - c. Mechanical friction auto-cleaning systems to ensure needle tips are properly cleaned.
    - 1) Not Acceptable: Systems using vibration, high frequency or plunging action as a means of auto-cleaning
3. Multi-Voltage Input: **[24V to 240V AC or DC] [24V or 110 to 240V AC or DC]**.
4. Magnets for mounting to fan inlet.
5. Auto-Cleaning Mechanisms: Mechanical friction auto-cleaning systems to ensure needle tips are properly cleaned.
  - a. Not Acceptable: Systems using vibration, high frequency or plunging action as a means of auto-cleaning.

E. Control Requirements:

1. NPBI™ Devices:
  - a. Internal short circuit protection.
  - b. Overload protection.
  - c. Automatic fault reset circuit breakers.
  - d. Capable of interfacing with the BAS system.
    - 1) Provide dry contacts to prove the unit is receiving adequate input power.
  - e. Not Acceptable: Manual fuses.
2. Ionization output: Varies as airflow velocity changes.
  - a. Not Acceptable: Mechanical airflow switch to activate NPBI™ devices, due to high failure rates and possible pressure reversal.
3. Mount and wire NPBI™ devices within air handling units specified or as shown on the Drawings. Follow manufacturer IOM instructions during installation.

F. Design Requirements for Non-Coil Cleaning Installations:

1. Installations must include the required number of electrodes and power generators sized to the air handling equipment capacity.

2. NPBI™ Electrodes: Made from carbon fiber to prevent oxidation over time. Carbon fiber clusters must contain a minimum of 45,000 needles.
  - a. Not Acceptable: titanium, stainless or any other metal.
  - b. Not Acceptable: Bipolar ionization tubes manufactured of glass, composite, mica, or similar dielectric materials.
  - c. Energize when main unit disconnect is turned on and fan is operating.
    - 1) Not Acceptable: Ionization systems requiring mechanical air pressure switches to cycle electrodes when fan is operating.
  - d. Electrode Pair: Provide electrodes to generate both positive and negative ions.
  - e. Mechanical friction auto-cleaning systems to ensure needle tips are properly cleaned.
    - 1) Not Acceptable: Systems using vibration, high frequency or plunging action as a means of auto-cleaning
3. Multi-Voltage Input: **[24V to 240V AC or DC] [24V or 110 to 240V AC or DC]**.
4. Magnets for mounting to fan inlet.
5. Auto-Cleaning Mechanisms: Mechanical friction auto-cleaning systems to ensure needle tips are properly cleaned.
  - a. Not Acceptable: Systems using vibration, high frequency or plunging action as a means of auto-cleaning.

G. Design Requirements for Coil Cleaning Installations: GPS-iMOD®

1. NPBI™ Electrodes: Made from carbon fiber to prevent oxidation over time. Not Acceptable: titanium, stainless or any other metal.
  - a. Provided in 6 inch (152 mm) sections for field assembly by installer. Assemble such that entire finned width of the coil is covered.
  - b. One modular ionization bar for every 5 ft (1524 mm) of coil height.
  - c. Electrode Spacing: 0.5 inch (13 mm) apart.
    - 1) Not Acceptable: Ionization Bars with ion output spaced greater than 1 inch (25 mm) apart.
  - d. Output: A minimum of 140M ions/cc per inch of bar measured 1 inch (25 mm) from carbon fiber brushes.
  - e. Ionization Bars: Provided with separate power supply capable of powering up to 4 ionization bars requiring no more than 20 watts of power up to a total connected bar length of 48 ft (14.63 m). Single bar length limit is 12 feet.
    - 1) The ionization bars and power supply to be alternating current output.
    - 2) Provided with an on/off switch with LED light.
    - 3) BAS interface capable using dry alarm contacts.
  - f. AC Output Power Supply: Accept 24 VAC, 110 VAC or 208 to 240VAC input.

2. NEMA 4 Enclosure: For external power mounts.
- H. Electrical Requirements: Wiring, conduit, and junction boxes.
1. Installed within housing plenums in accordance with NEC NFPA 70.
  2. NPBI™ Units: Accept electrical service of 24 VAC to 240 VAC, universal 2 wire input, 1 phase, 50/60 Hz.
  3. Coordinate electrical requirements with air ionization device manufacturer during submittals.
- I. Control Requirements:
1. NPBI™ Devices:
    - a. Internal short circuit protection.
    - b. Overload protection.
    - c. Automatic fault reset circuit breakers.
    - d. Capable of interfacing with the BAS system.
      - 1) Provide dry contacts to prove the unit is receiving adequate input power.
    - e. Not Acceptable: Manual fuses.
  2. Ionization output: Varies as airflow velocity changes.
    - a. Not Acceptable: Mechanical airflow switch to activate NPBI™ devices, due to high failure rates and possible pressure reversal.
  3. Mount and wire NPBI™ devices within air handling units specified or as shown on the Drawings. Follow manufacturer IOM instructions during installation.

## 2.04 NON-AUTO-CLEANING - AC VOLTAGE OUTPUT

- A. Product: GPS-iMOD®. Modular Bipolar Ionization Device. Made of composite and carbon fiber. Handles 50 to 250 CFM per inch of bar. Voltage selector switch, illuminated On/Off switch, operation status LED, six HV output ports, integral Building Automation System (BAS) alarm contacts, auxiliary terminals for connection of an optional GPS-iDETECT-P™ Ion Sensor. GPS-iMOD® Bar: 6 inch (152 mm) Sections, nine brushes per section, up to 144 inch (3658 mm) total length, with rare earth magnets for easy spacing and mounting.
1. Electrical Listings: UL, cUL.
  2. Standards Compliance: UL 2998, UL 867, IAQP, OSHPD Seismic (OSP), CE, CARB.
  3. Input Voltage: 24/120/208-240 VAC.
  4. Amps: 0.500 A/0.120 A/0.065 A.
  5. Frequency: 50/60 Hz.
  6. Output Voltage: 5 kV RMS.
  7. Output Frequency: 50/60 Hz.
  8. Total Ion Output: Greater than 140M ions/cc per inch of bar.
  9. Temperature Range: -40 to 140 degrees F (-40 to 60 degrees C).
  10. Relative Humidity Range: 0 to 100 percent.
  11. Power Entry: UL Listed, line cord with 3-prong plug.

12. Power Unit Dimensions (LxWxH): 9.00 x 3.25 x 4.75 inches (229 x 83 x 121 mm).
13. Ionizer Bar Dimensions (HxW): 1.6 x 0.75 inches (41 x 19 mm).
  - a. Length per Section: 6.0 inches (152 mm). Plus 1.2 inches (30.5 mm).
  - b. Maximum Length: 144 inches (3658 mm)
14. Power Unit Weight: 4.63 lbs (2.1 kg).
15. Ionizer Bar Weight: 0.24 lbs (113 grams) per 6.0 inch (152 mm) section.
16. Install locations: Duct work, in the air flow, between evaporator coil and filter.
17. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.
  - a. Primary voltage may vary in range of 24 to 240 VAC.

## 2.05 NON-AUTO-CLEANING - DC VOLTAGE OUTPUT

- A. Product: GPS-iRIB®-18, Flexible needlepoint bipolar ionization strip. Made from flexible chemical, heat, and cold resistant inert polyimide material. Contains a circuit with carbon fiber ion emitters soldered into the circuit traces. Designed for up to 3,200 CFM or 8 tons. Fixed lengths of 18 inches (457 mm), for use up to 36 inch applications, operation status LED, integral Building Automation System (BAS) alarm contacts, hook and loop tape for easy installation, and voltage input range of 110 to 240 VAC.
  1. Electrical Listings: UL, cUL.
  2. Compliance and Certifications: UL 2998, UL 867, IAQP, CE, CARB.
  3. Input Voltage: 110 to 240 VAC.
  4. Power Consumption: 5 Watts.
  5. Frequency: 50/60 Hz.
  6. Output Voltage: 2 kV.
  7. Total Ion Output: Greater than 35 M ions/cc per ft.
  8. Airflow Capacity: 0 to 3,200 CFM or 8 tons.
  9. Alarm Contact Rating: 250 VAC / 1A, N.O. "dry" contact.
  10. Temperature Range: -40 to 140 degrees F (-40 to 60 degrees C).
  11. Relative Humidity Range: 0 to 100 percent.
  12. Power Unit Dimensions (WxLxH): 1.75 x 3.75 x 1.00 inches (44 x 95 x 25 mm).
  13. Ionizer Strip Dimensions (WxLxH): 1.50 x 18.00 x 0.05 inches (38 x 457 x 1.3 mm).
  14. Combined Weight: 0.50 lbs (227 grams).
  15. Install locations: In the air flow.
  16. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.
    - a. Primary voltage may vary in range of 24 to 240 VAC.
    - b. The high voltage output to be regulated to less than 1 percent variance.
- B. Product: GPS-iRIB®-36, Flexible needlepoint bipolar ionization strip. Made from flexible chemical, heat, and cold resistant inert polyimide material. Contains a circuit with carbon fiber ion emitters soldered into the circuit traces. Designed for up to 3,200 CFM or 8 tons. Fixed lengths of 36 inches (914 mm), for applications over 36 inches, operation status LED, integral Building Automation System (BAS) alarm contacts, hook and loop tape for easy installation, and voltage input range of 110 to 240 VAC.
  1. Electrical Listings: UL, cUL.
  2. Compliance and Certifications: UL 2998, UL 867, IAQP, CE, CARB.
  3. Input Voltage: 110 to 240 VAC.



4. Power Consumption: 5 Watts.
5. Frequency: 50/60 Hz.
6. Output Voltage: 2 kV.
7. Total Ion Output: Greater than 35 M ions/cc per ft.
8. Airflow Capacity: 0 to 3,200 CFM or 8 tons.
9. Alarm Contact Rating: 250 VAC / 1A, N.O. "dry" contact.
10. Temperature Range: -40 to 140 degrees F (-40 to 60 degrees C).
11. Relative Humidity Range: 0 to 100 percent.
12. Power Unit Dimensions (WxLxH): 1.75 x 3.75 x 1.00 inches (44 x 95 x 25 mm).
13. Ionizer Strip Dimensions (WxLxH): 1.50 x 36.00 x 0.05 inches (38 x 914 x 1.3 mm).
14. Combined Weight: 0.50 lbs (227 grams).
15. Install locations: In the air flow.
16. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.
  - a. Primary voltage may vary in range of 24 to 240 VAC.
  - b. The high voltage output to be regulated to less than 1 percent variance.

- C. Product: **[GPS-FC-3-BAS, 24 VAC] [GPS-FC-3T-BAS, 110 to 240 VAC]** NPBI™ bipolar ionization device with BAS alarm contacts. Designed for up to 3,200 CFM or 8 tons. Carbon fiber brush emitters, operation status LED, integral Building Automation System (BAS) alarm contacts, mounting tabs, positive and negative ion output.

1. Electrical Listings: UL.
2. Standards Compliance: UL 2998, IAQP, CE, CARB.
3. Input Voltage: **[24 VAC] [110 to 240 VAC]**.
4. Power Consumption: 1.2 Watts.
5. Frequency: 50/60 HZ.
6. Total Ion Output: Greater than 350 M ions/cc.
7. Airflow Capacity: 0 - 3,200 CFM or 8 tons.
8. Temperature Range: -20 to 140 degrees F (-28.9 to 60 degrees C).
9. Relative Humidity Range: 0-100 percent.
10. Unit Dimensions (LxHxD): 2.6 x 1.9 x 1.3 inches (66 x 48 x 33 mm).
11. Unit Weight: 0.23 lbs (104 grams).
12. Alarm Contact Rating: 24 VAC, 0.1 A, N.O. "dry" contacts.
13. Install locations: Fan Inlet, in the air flow, zoner diffuser.
14. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.
  - a. Primary voltage may vary in range of 24 to 240 VAC.
  - b. The high voltage output to be regulated to less than 1 percent variance.

## 2.06 AUTO-CLEANING – DC VOLTAGE OUTPUT

- A. Product: GPS-FC24™-AC, Auto-Cleaning Needlepoint Bipolar Ionization System. Handles up to 2,400 CFM or 6 tons. Composite construction allows for mounting in corrosive environments. Universal voltage input, in line On/Off switch, programmable autocleaning cycle, operation status LED, integral Building Automation System (BAS) alarm contacts, magnets for ease of installation and replaceable carbon fiber brush emitters.

1. Electrical Listings: UL, cUL.
2. Compliance and Certifications: UL 2998, UL 867, IAQP, CE, CARB.
3. Input Voltage: 24 to 240 VAC.
4. Amps: Operating: 0.170 to 0.017 A. Cleaning Cycle: 0.33 to 0.03 A.
5. Power: Operating: 4 watts. Cleaning Cycle: 8 watts.

6. Frequency: 50/60 Hz.
7. Total Ion Output: Greater than 300M ions/cc.
8. Airflow Capacity: 0 to 2,400 CFM or up to 6 tons.
9. Temperature Range: -20 to 140 degrees F (-29 to 60 degrees C).
10. Relative Humidity Range: 0 to 100 percent.
11. Ionizer Unit Dimensions (LxWxH): 7.9 x 1.1 x 5.0 inches (200 x 28 x 127 mm).
12. Ionizer Unit Weight: 1.25 lbs (567 grams).
13. Alarm Contact Rating: 250 VAC, 1A, N.O. "dry" contact.
14. Install locations: Fan inlet, In the air flow, zone diffuser.
15. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.

- a. Primary voltage may vary in range of 24 to 240 VAC.
- b. The high voltage output to be regulated to less than 1 percent variance.

- B. Product: GPS-FC48™-AC, Auto-Cleaning Needlepoint Bipolar Ionization System. Handles up to 4,800 CFM or 12 tons. Composite construction allows for mounting in corrosive environments. Universal voltage input, in-line On/Off switch, programmable autocleaning cycle, operation status LED, integral Building Automation System (BAS) alarm contacts, magnets for ease of installation and replaceable carbon fiber brush emitters.

1. Electrical Listings: UL, cUL.
2. Compliance and Certifications: UL 867, UL 2998, IAQP, CE, CARB.
3. Input Voltage: 24 to 240V AC/DC.
4. Amps: 0.41 to 0.041 A.
5. Power Consumption: 10 Watts.
6. Frequency: 50/60 HZ.
7. Total Ion Output: Greater than 400 million ions/cc.
8. Airflow Capacity: 0 to 4,800 CFM or up to 12 tons
9. Temperature Range: -20 to 140 degrees F (-29 to 60 degrees C).
10. Relative Humidity Range: 0 to 100 percent.
11. Unit Dimensions (LxWXH): 11.1 x 1.84 x 3.52 inches (282 x 47 x 89 mm).
12. Weight: 1.32 lbs (600 grams).
13. Alarm Contact Rating: 250VAC, 1A, N.O. "dry" contact.
14. Install locations: Fan inlet, in the air flow, zone diffuser.
15. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.

- a. Primary voltage may vary in range of 24 to 240 VAC.
- b. The high voltage output to be regulated to less than 1 percent variance.

- C. Product: GPS-DM48™-AC. Auto-Cleaning, Duct Mounted, needlepoint bipolar ionization system. Handles up to 4,800 CFM or 12 tons. Universal voltage input, integral display, programmable auto-cleaning cycle, operation status display, integral Building Automation System (BAS) alarm contacts, 3/4 quick turn duct adapter, 6 ft of watertight flexible conduit, and carbon fiber brush emitters.

1. Electric Approvals: UL, cUL.
2. Compliance and Certifications: UL 867, UL 2998, IAQP, CE, CARB.
3. Input Voltage: 24 to 240 V AC/DC.
4. Power Consumption: 12 Watts.
5. Frequency: 50/60HZ.
6. Total Ion Output: Greater than 400M ions/cc.
7. Airflow Capacity: 0 to 4,800 CFM or up to 12 tons.
8. Temperature Range: -20 to 140 degrees F (-29 to 60 degrees C).

9. Relative Humidity Range: 0 to 100 percent.
10. Unit Dimensions: 3.75 inches (95 mm) diameter. Length: 7 inches (178 mm).
11. Weight: 2.31 lbs (1.048 kg).
12. Alarm Contact Rating: 250 VAC, 1A, N.O. "dry" contact.
13. Install locations: In duct work, in the air flow.
14. Includes weathertight seals for external duct mounting.
15. Power Requirements: Operate from 24 VAC to 240 VAC without the use of an external power supply or transformer.

- a. Primary voltage may vary in range of 24 to 240 VAC.

## **2.07 ELECTRICAL REQUIREMENTS:**

- A. Wiring, conduit, and junction boxes shall be installed within housing plenums in accordance with NEC NFPA 70. Electrical service shall be 24 VAC.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION:**

- A. The Contractor, prior to installing any equipment, shall examine the conditions under which the equipment is to be installed, and shall notify the Architect of conditions detrimental to the proper installation of the equipment.
- B. All equipment shall be installed in accordance with the latest manufacturer's written instructions, and in accordance with governing codes and recognized industry standards and practices.
- C. Coordinate all work with other trades as necessary for proper interfacing.
- D. All proper equipment shall be protected from any form of damage. Any damaged equipment shall be replaced without additional cost.

### **3.02 SYSTEM INSTALLATION:**

- A. The air purification system manufacturer shall complete all interconnecting control and power wiring located within the air unit.
- B. Ion generators shall be installed in accordance with the manufacturer's instructions by the mechanical or electrical contractor. The electrical contractor shall complete single point power connections to the integral unit ion generator.
- C. All equipment shall be assembled and installed in a quality workman-like manner to the satisfaction of the owner, architect, and consulting engineer.
- D. Any material damaged by handling, water or moisture shall be replaced, by the mechanical contractor, at no cost to the owner.
- E. All equipment shall be protected from dust and damage throughout construction. Clean all components prior to commissioning.

### **3.03 TESTING:**

- A. Provide the manufacturer's recommended electrical tests.

**3.04 COMMISSIONING & TRAINING:**

- A. A manufacturer's factory employed representative shall be available to provide start-up supervision and training of owner's personnel in the proper operation and maintenance of all equipment (as required).
- B. Provide three copies of Operating and Maintenance Manuals.

**3.05 WARRANTY:**

- A. The equipment shall be warranted against defects in material and workmanship for the soonest to occur of 15 months from date of factory shipment or 12 months from date of initial use.

**END OF SECTION**