



## **SECTION 23 42 00 - ULTRA VIOLET GERMICIDAL IRRADIATION (UVGI) SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

A. This Section includes the following:

1. UL listed indoor air quality system (UVGI) mounted inside air handling units and packaged units.

#### **1.2 SUBMITTALS**

A. Product Data: Manufacturer's literature for UVGI Systems indicated.

1. Dimensions, weights, capacities and ratings.
2. Wiring diagrams, fixtures and control panel.
3. UVGI system components and accessories.
4. Heat output of UVGI system into air handling unit or air stream for each size of air handling unit scheduled.

B. Catalog cuts, engineering data sheets, list of unit numbers, UVGI output and power consumption. The following shall also be included with submittals:

1. Indoor air quality systems: Calculated intensity profile of entire irradiated surface demonstrating minimum intensity ( $\text{mW}/\text{cm}^2$ ).

C. Operation and Maintenance Data: For UVGI systems to include in emergency operation and maintenance manuals:

1. Provide catalog cuts of equipment and components.
2. Include instructions for emitter replacement and component replacement.
3. Provide spare parts list.
4. Provide wiring diagram.
5. Provide installation, operation and maintenance manuals.

#### **1.3 QUALITY ASSURANCE**

A. System to be factory tested and the design, construction and installation to be in accordance with all state, local, federal or other regulations having jurisdiction.

B. Competency of Supplier/Manufacturer/Installer

1. The supplier/manufacturer/installer of the UVGI system to have a qualified service organization in active operation for a minimum of five (5) years. The organization to have had a history of competent service experience in designing, installing and maintaining the specific types of systems described in the specifications, and has on its



payroll sufficient qualified experienced personnel to guarantee satisfactory performance of the installation. All maintenance personnel used in fulfilling the requirements of the installation shall be qualified to maintain this type of equipment.

#### **1.4 WARRANTY**

- A. The UVGI system shall be warranted to be free from defects in material and workmanship for a period of five (5) years.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Subject to compliance with requirements, acceptable manufacturers are:
  - 1. **Steril-Aire.**
  - 2. **Vigilair**
  - 3. **Strion Air.**

#### **2.2 UVDI ULTRAVIOLET DISINFECTION**

- A. Provide ultraviolet disinfection for bacteria, mold and odor control inside each equipment it is installed in. The UV dosage shall be calculated for theoretical 99% air disinfection at air velocity and temperature and shall be adequate to deactivate microbial growth on all exposed surfaces.
- B. Construction. The UV System shall be of Stainless Steel, Galvanized and Aluminum Construction. Any exposed screws or fasteners shall be Stainless Steel. Safety limit switches and Exterior SPST On/Off switches shall be pre-wired and factory installed in a weatherproof junction box. All exterior safety signage shall be permanently silk-screened with UL warning requirements. Lamp supports shall be Stainless Steel. The lamps shall easily be removed for service without the use of tools or the disconnection of any wiring connections. UV System shall be complete with all miscellaneous accessories required to form a complete unit.
- C. Independent Testing. The device submitted shall be classified by UL (Underwriters Laboratories) as an Air Duct Mounted Accessory (ABQK). Also meets the UL Standards 1598, UL 153, UL 1995. Manufacturers UL file number shall be permanently marked on the exterior of the product.
- D. Ultra Violet Lamps. The lamp shall be available on the open market and not be prioritized in relationship to the UV equipment. Lamps shall be 60 Nominal Watt, 18 UV Watt High Output, Wind-chill Corrected 253.7 nanometer. The lamp shall be single ended bi-tube design so that no external wires are exposed in the air path to provide power to the opposing end of the lamp. The lamp shall withstand a 5 minute 10 lb. direct pull Stress Load Test and not become disengaged from the socket. Mercury content of the lamp shall be stated in submittal data and MSDS sheets stating lamp mercury content of less than 4.5 mg. mercury



shall be an integral part of the submittal data. Current replacement lamp costs shall be an integral part of submittal data. The lamp shall provide 175 microwatts/cm squared at 400fpm/50 degrees F, measured at a 1-meter distance from the lamp. The lamp shall provide 12.5 microwatts/cm squared per inch of arc length. The Lamp Change shall be performed without UV fixture disassembly and without the use of tools. The product shall not require maintenance personal to enter the wiring compartment of in order to facilitate lamp change. Manufacturer shall provide gloves appropriate for proper handling of the UV lamp. The manufacturer shall rate lamp life at minimum life of 8000 hours based on 3-hour start/stop cycles with a lamp depreciation not to exceed 15% at rated life.

1. Manufacturer.
  - a. **Philips**
  - b. **GE**
  - c. **Sylvania.**

- E. Ballasts. The ballast shall be available on the open market and not be prioritized in relationship to the UV equipment. Ballasts shall be UL Listed for the lamp provided. Ballasts shall be high power factor, class P, Sound Rating A, Type 1 Outdoor, Electronic. Ballasts shall be suitable for air handling spaces and shall have harmonic distortion in accordance with ANSI standards and a minimum operating temperature of B20 degrees F. Ballasts shall be warranted for a period of 5 years.

1. Manufacturer.
  - a. **Advance**
  - b. **Magnetek**
  - c. **Robertson.**

- F. Safety. The assembly shall employ a safety interlock switches, which interrupts power when the Air Handler is opened for servicing. The product employs germicidal lamps, which emit UV-C radiation, thereby posing a potential risk of exposure to eyes and bare skin during maintenance. Access doors shall have a glass visual examination port as provided by equipment manufacturer. Warning signage provided by UV equipment manufacturer shall be silk-screened on stainless steel with UL requirements as to safety aspects. Manufacturer shall provide safety glasses to protect installers' eyes in case of accidental startup of lamps during installation process.

- G. Warranty. UV Air Disinfection System, less lamps, shall be warranted to be free of defects in workmanship and material for a period of Five Years from date of shipment.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install per manufacturer's recommendation.



### **3.2 TRAINING**

- A. Train LAWA Maintenance personnel to adjust, operate and maintain the system.
- B. Provide minimum of 12 hours each (3 shifts) of classroom and hands on training to LAWA Maintenance personnel.

END OF SECTION 23 42 00