



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 lamp watts per square foot of coil shall demonstrate greater than 6 lamp watts per square foot of coil, consistent with ASHRAE 2011 Handbook, Chapter 60.8.

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 lamp 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, less lamps and ballasts, 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. **UV Resources**
 - 3. **GenesisAir**

2.2 UVGI ULTRAVIOLET DISINFECTION

- A. Provide ultraviolet disinfection for bacteria and mold control inside each equipment it is installed in. The UV dosage shall be adequate to deactivate microbial growth on all exposed surfaces. Fixtures shall be installed in sufficient quantity to provide a minimum of 6 UV-C lamp Watts per square foot of coil surface area, consistent with ASHRAE 2011 Handbook, Chapter 60.8.
- B. Construction. The UV System shall be designed and constructed of 304 stainless steel for mounting anywhere in the system, or as shown in the plans. 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. Lamp Watts shall be printed on all lamps, no exceptions. They shall be high output (HO), T5 diameter, hot cathode, mini/medium bi-pin types that produce UV-C energy primarily at the 254nm wavelength. Lamp shall be coated with FEP (Teflon™) to encapsulate glass and mercury in case of lamp breakage. Each lamp shall contain no more than 8 mg of mercury and be capable of operating in air temperatures of 1-



70° C, and any velocity. Useful lamp life shall be 9000 hours (minimum) with no more than a 15% output loss at the end of the lamps life. They shall not produce measurable ozone. Current replacement lamp costs shall be an integral part of submittal data. 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.

1. Manufacturer.

- a. **Philips**
- b. **GenesisAir**
- 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 waterproof and 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 20 degrees F. Ballasts shall be warranted for a period of 5 years.

1. Manufacturer.

- a. **Advance**
- b. **Espen**
- c. **Fulham**

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 with UL requirements as to safety aspects.

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