

**SECTION 23 37 10  
FABRIC AIR OUTLETS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Fabric Air Dispersion Products

**1.2 RELATED WORK**

- A. General Mechanical Requirements: Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION.
- B. Testing and Balancing of Air Flows: Section 23 05 93, TESTING, ADJUSTING, AND BALANCING FOR HVAC.

**1.3 QUALITY ASSURANCE**

- A. Fire Safety Code: Comply with NFPA 90A.
- B. Building Codes and Standards:
  - 1. Product must be Classified by Underwriter's Laboratories in accordance with the 25/50 flame spread / smoke developed requirements of NFPA 90-A and are also classified in accordance with ICC Evaluation Service AC167 and UL2518.
  - 2. All product sections must be labeled with the logo and classification marking of Underwriter's Laboratories.
  - 3. Product must be treated with an EPA registered antimicrobial agent.
- C. Design & Quality Control
  - 1. Manufacturer must have documented design support information including duct sizing, vent and orifice location, vent and orifice sizing, length, and suspension. Parameters for design, including maximum air temperature, velocity, pressure and fabric permeability, shall be considered and documented.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit manufacturer's specifications on materials and manufactured products used for work of this section.
- C. Building Code Data: Submit UL file number under which product is Classified by Underwriter's Laboratories for NFPA 90-A, ICC AC167 and UL2518.

**1.5 WARRANTY**

- A. Manufacturer must provide a 10 Year Product Warranty for products supplied for the fabric portion of this system as well as a Design and Performance Warranty.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- A. Protect fabric air dispersion systems from damage during shipping, storage and handling.
- B. Where possible, store products inside and protect from weather. Where necessary to store outside, store above grade and enclose with a vented waterproof wrapping.

## **PART 2 - PRODUCTS**

### **2.1 FABRIC AIR DISPERSION SYSTEM**

- A. Air diffusers shall be constructed of a woven fire retardant fabric complying with the following physical characteristics:
  - 1. Fabric Construction: Fabric shall be constructed of a polyester that includes 55% recycled content, treated with a machine wash-able anti-microbial agent by the fabric manufacturer, of a non-linting filament yarn to meet the requirements of ISO Class 3 environment, and 100% flame retardant.
  - 2. Weight: 6.8 oz. /yd<sup>2</sup> per ASTM D3776
  - 3. Color: Custom as selected by Owner.
  - 4. Fabric Porosity: 2 (+2/-1) cfm/ft<sup>2</sup> per ASTM D737, Frazier
  - 5. Temperature Range: 0 degrees F to 180 degrees F
  - 6. Fire Retardancy: Classified by Underwriters Laboratories in accordance with the flame spread/smoke developed requirements NFPA 90, ICC AC167 and UL 2518.
  - 7. Antimicrobial agent shall be proven 99% effective after 10 laundry cycles per AATCC Test Method 100.
- B. SYSTEMS FABRICATION REQUIREMENTS
  - 1. Air dispersion accomplished by linear vent and permeable fabric. Linear vents must be sized in 1 CFM per linear foot increments (based on .5" SP), starting at 1 CFM through 90 CFM per linear foot. Linear vent is to consist of an array of open orifices rather than a mesh style vent to reduce maintenance requirements of mesh style vents. Linear vents should also be designed to minimize dusting on fabric surface.
  - 2. Size of vent openings and location of linear vents to be specified and approved by manufacturer.
  - 3. Inlet connection to metal duct via fabric draw band with anchor patches as supplied by manufacturer. Anchor patches to be secured to metal duct via zip screw fastener - supplied by contractor.
  - 4. Inlet connection includes zipper for easy removal / maintenance.

5. Lengths to include required zippers as specified by manufacturer.
6. System to include Adjustable Flow Devices to balance turbulence, airflow and distribution as needed. Flow restriction device shall include ability to adjust the airflow resistance from 0.06 - 0.60 in w.g. static pressure.
7. End cap includes zipper for easy maintenance.
8. Fabric system shall include connectors to accommodate suspension system listed below.
9. Any deviation from a straight run shall be made using a gored elbow or an efficiency tee. Normal 90 degree elbows are 5 gores and the radius of the elbow is 1.5 times the diameter of the fabric diffuser.

C. DESIGN PARAMETERS

1. Use fabric diffusers only for positive pressure air distribution components of the mechanical ventilation system.
2. Do not use fabric diffusers in concealed locations.
3. Fabric diffusers shall be designed from 0.25" water gage minimum to 3.0" maximum, with 0.5" as the standard.
4. Fabric air diffusers shall be limited to design temperatures between 0 degrees F and 180 degrees F (-17.8 degrees C and 82 degrees C).
5. Design CFM, static pressure and diffuser length shall be designed or approved by the manufacturer.

D. SUSPENSION HARDWARE

1. 3x1 Suspension: System shall include a 3 Row connection to fabric system at 10, 12, and 2 o'clock locations. The powder-coated aluminum hangers are secured and connected to a single (1 Row) tension cable every 3'-0" and connect to the fabric system at the 10 and 2 o'clock locations with detachable D-Clasps. The fabric system will also have intermediate cable clips located at 12 o'clock and between the hangers to attach directly to the single galvanized steel tension cable system located 3" above top-dead-center location of the fabric system. Tension cable hardware to include cable, eye bolts, thimbles, cable clamps, adjustable gripple mid-supports, and turnbuckles as required.

**PART 3 - EXECUTION**

**3.1 INSTALLATION OF FABRIC AIR DISPERSION SYSTEM**

- A. Install suspension system in accordance with the requirements of the manufacturer. Instructions for installation shall be provided by the manufacturer with product.

### 3.2 CLEANING AND PROTECTION

- A. Clean air handling unit and ductwork prior to the system unit-by-unit as it is installed. Clean external surfaces of foreign substance which may cause corrosive deterioration of facing.
- B. Temporary Closure: At ends of ducts which are not connected to equipment or distribution devices at time of ductwork installation, cover with polyethylene film or other covering which will keep the system clean until installation is completed.
- C. If systems become soiled during installation, they should be removed and cleaned following the manufacturers standard terms of laundry.

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