

**SECTION 238200 – FANS**

**PART 1 – GENERAL**

**1.1 DESCRIPTION**

- A. All work specified in this section is governed by the Mechanical General Section 230100.
- B. This Section 238200 and the accompanying drawings cover the provision of all labor, equipment, appliances and materials, and performing all operations in connection with the construction and installation of the fans as specified herein and as shown. These fans include, but are not limited to the following:
  - 1. Roof-mounted centrifugal exhaust fans
  - 2. Ceiling/cabinet fans
  - 3. Sidewall propeller exhaust fans
  - 4. Air curtain fans

**1.2 INTENT**

- A. It is the intent of this Section of the specifications to provide complete, operable, adjusted fans as shown and specified which are free of excessive noise, vibration and airflow fluctuations.

**1.3 BASIS OF DESIGN**

- A. The basis of design is Greenheck. Any proposed substitutions shall be proven equal in all aspects to the equipment specified as the basis of design. Particular attention is called to the requirements of Section 230100.

**1.4 ACCEPTABLE SUBSTITUTE MANUFACTURERS**

- A. Acceptable substitute manufacturers are Carnes, Cook, Acme, and PennBarry.

**PART 2 – PRODUCTS**

**2.1 GENERAL REQUIREMENTS**

- A. All non-filtered fans shall be factory tested, rated and certified in accordance with the requirements of AMCA Standard No. 210 and shall be labeled accordingly. Filtered fans may be non-labeled but must be rated in an AMCA approved laboratory in accordance with 210.
- B. All roof-mounted fans shall be constructed such that water cannot enter the building through the fan regardless of whether or not the fan is operating.
- C. All roof-mounted fans shall be provided complete with roof curbs. Roof curbs shall be of aluminum construction, insulated, canted and complete with wood nailer strips. Insulation shall meet NFPA 25/50 flame spread/smoke developed ratings.
- D. All exhaust fans shall be provided complete with gravity-type backdraft dampers.

- E. All belt-drive assemblies shall be mounted on vibration isolators.
- F. All motors on belt-drive assemblies shall be mounted on slide bases to provide adjustment of belt tension.
- G. All belt-drives shall be rated for not less than 150% of the connected motor horsepower.
- H. All belt-drives driven by a 5 HP or larger motor shall be multiple belt arrangements.
- I. All belt-drives shall be adjustable to a minimum speed variation of plus or minus 20% of the design RPM.
- J. All centrifugal fan wheels shall be statically and dynamically balanced.
- K. All electric motors and equipment shall be UL labeled.
- L. Refer to Division 26 of these specifications and to the electrical contract drawings for electrical characteristics and connections to all equipment. Coordinate all electric motors and other equipment with these electrical documents.

## 2.2 ROOF-MOUNTED CENTRIFUGAL EXHAUST FANS

- A. Roof-mounted centrifugal exhaust fans shall be Greenheck Model G for direct drive fans and Greenheck Model GB for belt-drive fans, or an approved equal.

## 2.3 CEILING/CABINET EXHAUST FANS

- A. Ceiling/cabinet exhaust fans shall be Greenheck Model CSP (inline) or Greenheck Model SP with integral grille, or an approved equal.

## 2.4 SIDEWALL PROPELLAR EXHAUST FANS

- A. Fans shall be wall propeller type with wall mounting panel, wire fan guard, and motor guard screen. Fans used for exhaust shall have a gravity backdraft damper.
- B. Wall panel shall be steel, reinforced with steel channel for motor and fan mounting frame. Exposed surfaces shall have baked enamel or epoxy finish. Panel shall have a spun venturi formed into the panel. For exhaust service, venturi shall point out; for supply service, venturi shall point in.
- C. Fan wheel shall be axial blade type constructed of steel or aluminum. Blades shall be welded to fan hub. Fan shall have 6 blades (minimum). Fan shall have same finish as wall panel. On belt driven units, shaft bearings shall be self-aligning, pillow block type. Bearings not permanently sealed and lubricated shall have grease fittings.
- D. Fan shall be Greenheck Model SBE or approved equal.

## 2.5 AIR CURTAIN FANS

- A. Fans shall be the air curtain type designed for recessed or exposed mounting with integral inlet and discharge grills. Fans shall bear National Sanitary Foundation seal.
- B. Fan shall be provided with controls to energize fan when associated door is opened.
- C. Fan and motor housing shall be steel with factory baked enamel finish.

- D. Fan wheel shall be double width, double inlet centrifugal type. Fan shall be direct driven.
- E. Fan shall be as scheduled on the drawings.
- F. Carefully coordinate air curtain installation with associated door. Provide required mounting accessory to accommodate door hardware (especially at roll up doors and horizontal sliding doors).

**PART 3 – EXECUTION**

**3.1 INSTALLATION**

- A. Fans shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades.
- B. Centrifugal utility fans shall be installed on equipment rails or vibration isolators.

**3.2 ADJUSTMENT**

- A. The fans shall be tested and adjusted after installation to provide the capacities indicated.

**END OF SECTION 238200**