# SECTION 23 34 00 - HVAC Fans

## PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide Fans as specified herein and shown on the Drawings.

B. Equipment capacity and size as indicated in the equipment lists on the Drawings.

C. Related Work: The requirements of Section 23 05 00, Common HVAC Materials and Methods, also apply to this section.

1.2 QUALITY ASSURANCE

A. Air Handling Equipment: Rated in accordance with AMCA certified rating procedures and AMCA labeled.

1.3 SUBMITTALS

A. Submit catalog data, construction details and performance characteristics for each fan.

B. Submit operating and maintenance data.

## PART 2 - PRODUCTS

2.1 EXHAUST FANS AND UNITS

A. Ceiling Cabinet Exhaust Fan: Direct drive, forward curved centrifugal wheel, sleeve bearings, motor and wheel isolated from unit on vibration isolators; provide grille on inlet and duct connection with backdraft dampers on discharge. Size and capacity as indicated on Drawings. Carnes VCD, Acme V, Penn Zypher, Jenn-Air J‑Series, Greenheck SP, Soler & Palau SV, Jen Fan FF, Cook Gemini, Twin City T , Panasonic, or approved. Provide with spring wound 30 minute timer switch. Bathroom fans to be Energy Star Rated.

B. Inline Cabinet Exhaust Fan: Direct drive, forward curved centrifugal wheel, sleeve bearings, motor and wheel isolated from unit on vibration isolators; provide duct connection on inlet and duct connection with backdraft dampers on discharge. Size and capacity as indicated on Drawings. Carnes Greenheck, Cook, Panasonic, or approved.

C. Inline direct drive duct fan: Basis of design is S&P PV fan, or equal.

1. All PV fan models incorporate a powerful external rotor motor that has been factory matched to a non-overloading backward curved centrifugal fan wheel.

2. This powerful combination enables the PV fans to deliver exceptional airflow performances against high static pressure typically found in ducted ventilation systems. All motors within PV fans are fully speed controllable using voltage or frequency control regulators.

3. The PV series of duct exhaust or supply fans have been specifically designed for simple installation and many years of maintenance free operation. The PV fans can be mounted at any angle and at any point along the duct. The totally enclosed motor design allows the PV fans to operate in high moisture, lint and dust laden air. All models are manufactured with high quality materials and workmanship that is supported by a comprehensive five (5) year warranty.

D. Dryer Booster Fan: Inline direct drive fan specifically designed and listed for the application. Powder coated galvanized steel housing, self-cleaning wheel, permanently lubricated external rotor motor, and power cord with plug. Provide with automatic control switch, mounting brackets, and recessed lint screen with cleanout access. Fantech, Aldes approved.

E. Roof Mounted Exhaust Fan (Belt Drive): Curb mounted on roof; vertical shaft, belt driven, open BI wheel as shown on Drawings with pressure lubricated ball bearings; ball bearing fan duty motor; vibration isolated; bird screen; weatherproof aluminum housing for mounting on square base; capacity as indicated on Drawings. Provide with automatic belt tensioner. Motor located outside the air stream. Casing to be easily removed for service. Motor and fan assembly to be mounted on rubber vibration isolators. Where indicated on the Drawings, provide motorized damper in curb. Provide switch with pilot light for each fan so indicated. Provide factory mounted disconnect. Greenheck GB, Soler & Palau DB, Jen Fan DB, Carnes VEBK, Acme PV, PennBarry DOMEX, Cook ACE-B, Twin City BCRD or approved.

F. Roof Mounted Exhaust Fan (Direct Drive): Curb mounted on roof; vertical shaft, direct driven, open BI wheel as shown on Drawings with permanently lubricated sealed ball bearings; fan duty motor; bird screen; weatherproof aluminum housing for mounting on square base; capacity as indicated on Drawings. Motor located outside the air stream. Casing to be easily removed for service. Motor and fan assembly to be mounted on rubber vibration isolators. Where indicated on the Drawings, provide backdraft damper in curb. Provide switch with pilot light for each fan so indicated. Provide factory mounted disconnect. Greenheck G, Soler & Palau RED, Jen Fan RED, Carnes VEDK, Acme PRN, PennBarry DOMEX, Cook ACE-D, Twin City DCRD or approved.

G. Utility Set Exhaust Fan: AMCA rated and construction of wheel inclination, arrangement, rotation discharge, outlet velocity, tip speed and capacity as scheduled on the Drawings. Mount motor on adjustable base; pressure gun lubricated ball or roller bearings for both fan and motor. Provide with weather proof housing where located outside. Provide motorized damper on fan discharge. Utility, Cook, PennBarry, Greenheck, Peerless, Acme , Twin City or approved.

2.2 EXHAUST FAN accessories

A. Parking Garage Ventilation Controller:

1. Controller: Programmable microprocessor based controller shall accept inputs from a minimum of 8 remote carbon monoxide or nitrogen dioxide sensors. Scrolling LCD display shall indicate sensor number, type, and gas concentration. Activation and alarm setpoints shall be adjustable. Panel to include alarm annunciator with silence switch and a minimum of 4 remote alarm relays. Panel to include analog output suitable to control garage exhaust fan variable frequency drive. Exhaust fan speed shall be modulated to maintain contaminant gas levels within acceptable ranges. Provide remote high level horn/strobe alarm.

2. Sensors: Remote mount sensors for carbon monoxide and nitrogen dioxide shall be electrochemical sensors with a vandal and water resistant housing designed for wall mounting.

3. Wiring: Provide all wiring for a complete operable system. All wiring shall be enclosed in metallic conduit.

4. Installation: Install carbon monoxide and nitrogen dioxide sensors at locations and spacing as recommended by the manufacturer and set operation and alarm setpoints.

## PART 3 - EXECUTION

3.1 INSTALLATION

A. Install and arrange equipment as shown on the Drawings and as recommended by the equipment manufacturer.

3.2 AIR HANDLING INSTALLATION

A. Installation and Arrangement: Air handling equipment shall be instal­led and arranged as shown on the Drawings. Comply with the manufacturer's recommendations for installation connection and start-up.

B. Lubrication: All moving and rotating parts shall be lubricated in accordance with the manufacturer's recommendations prior to start-up.

3.3 CONTROLS

A. Wiring: All wiring shall be in accordance with the National Electrical Code and local electrical codes.

END OF SECTION 23 34 00