SECTION 235113
DRAFT CONTROL FANS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Vent exhaust fans.

B. Related Requirements:
   1. Section 235123 "Gas Vents" for Type B and BW vents, Type L vents, and listed special gas vents.

1.02 ACTION SUBMITTALS

A. Delegated Design & Submittals: Manufacturer/Representative of products listed under this section shall coordinate with existing conditions (for existing to remain venting) and design of venting configuration, lengths, and sizes, as well as appliance capacity and venting requirements (draft design window).
   1. Draft Calculations: By Manufacturer of product(s) under this section and confirmed with gas burning appliance manufacturer.

B. Product Data: For each type of product.

C. Shop Drawings: For each type of product.
   1. Include plans, elevations, sections, and attachment details.
   2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Detail fabrication and assembly of hangers and seismic restraints.
   4. Include diagrams for power, signal, and control wiring.

1.03 INFORMATIONAL SUBMITTALS

A. Warranty Certificate: Issued with identified model and serial numbers.

1.04 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For draft control fans to include in emergency, operation, and maintenance manuals.

1.05 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of products specified in this that fail in materials or workmanship within specified warranty period.
   1. Failure includes failure of the fan due to corrosion.
   2. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 VENT EXHAUST FANS

A. Description: Variable Speed Chimney Termination Draft Control Vent Fan System, Designed and Listed for use with Condensing Appliances

B. Manufacturer:
   1. Basis of Design Product:
      a. System: ENERVEX CASV 400
      b. Fan: ENERVEX RSV 400 Chimney Fan

C. Test Standard: UL 378, UL 705, UL 60947

D. AMCA 99-0401

E. Maximum Operating Temperature: 575°F

F. Fan Construction: Type B, Spark Resistant
   1. Cast-aluminum housing painted manufacturer's standard color of baked enamel.
   2. Stainless-steel vent.

3. Cast-aluminum wheel.
4. Backward-inclined centrifugal or axial fan wheel statically and dynamically balanced.
5. Access panel at the discharge area.

G. Motor: Maintenance Free, TEFC, variable-speed duty, permanent-split capacitor, out of the airstream, with prelubricated and sealed ball bearings.
1. Minimum Temperature Rating: 320°F

H. Variable-Speed Controls: Programmable fan speed control system, designed to maintain appropriate draft by sensing breaching/vent pressure and moducling vent termination fan speed. Boiler interlock relay(s) starts fan when any burner control cycles on. Pressure controller, control transformer, and miscellaneous controls for automatic modulation of fan speed to maintain preset negative pressure between zero- and minus 1.0-inch wg (zero and minus 249 Pa). Include controller with indicator lights, pressure-differential transmitter, chimney pressure-sensor probe, and fan-proving switch adjustable between minus 0.07- and minus 0.15-inch wg (minus 17 and minus 37 Pa). Include tubing.
1. Adjustable Setpoints via digital interface.
2. Control Logic: PID variable speed

I. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

J. Capacities and Characteristics:
1. Design Airflow: 2000 CFM
2. Design Static Pressure 1.072 inwg
3. Fan HP: 1HP
4. Electrical: 208V/3ph, 4.3A

PART 3 EXECUTION

3.01 INSTALLATION

A. Install listed components in a manner complying with the listing.

B. Install with manufacturer recommended curb and flashing.

C. Complete structural, mechanical, and electrical connections in accordance with manufacturers' printed instructions.

D. Installing contractor shall install all Chimney Automation System components as indicated on drawings and per manufactuer's installation instructions including coordination of all necessary field wiring.
1. Allow satisfactory arrangement in the space available.
2. Verify fan operating voltage is the equivalent to the supply voltage AND rated voltage of the MSC.

E. Low Voltage Wiring by Div23: TCC or Manufacturer's Representative

F. Line voltage wiring from to the chimney fan and power connections from source by Div 26.

G. Connecting to stack: Install per plans and in accordance with manufacturer's printed instruction.

3.02 CONNECTIONS

A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.03 OPERATING TESTS, START-UP, AND ON-SITE SERVICES

A. System vendor's service organization or factory authorized subcontractor shall provide startup, testing, and commissiioning of vent draft DDC control sytem.

B. Verify Installation of fan, controls, and associated equipment. Perform tests, inspection, startup, and commissioning per manufactuer's recommendations including but not limited to:

1. Increase and decrease draft setting to verify the mechanical draft system reacts as specified.
2. Increase and decrease firing rate to verify the mechanical draft system reacts as specified.
3. Verify that the ramp-up time during start up does not exceed 20 seconds. This is defined as the time from the burner is released until the draft settles at the specified draft value.
4. Use an external manometer (draft gauge) to verify that the draft does not drift more than +/- 0.01” W.C. during a stable load.
5. Test safety control by firing boiler and:
   a. Shut off the chimney fan
   b. Shut off the control.
   c. Provide services of factory representative of chimney automation system manufacturer to:
   d. Confirm proper installation of chimney fan and controls.
6. Start-up and adjust control and balancing baffles.
7. Set Draft Setpoint(s)
8. Test Safeties
9. Provide Factory Startup Report

3.04 TRAINING

A. Instruct Owner’s Representative and designated personnel in the proper operation and maintenance of the packaged system.

END OF SECTION 235113

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