SECTION 233433 - AIR CURTAINS

PART 1 - GENERAL

1.1 SUMMARY
A. This Section includes air curtains [with electric heat] [with fuel-fired heater].

1.2 SUBMITTALS
A. Product Data: For each model indicated, provide dimensions, weights, capacities at scheduled conditions, required clearances, electrical requirements, components, and location and size of each field connection.
B. Operation and maintenance data.

1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NSF 37, "Air Curtains for Entranceways in Food and Food Service Establishments."

1.4 WARRANTY
A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace air curtains that fail in materials and workmanship within two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Berner International.
   2. Biddle Air Systems Limited.
   3. Cambridge Engineering, Inc.
   4. Disco Engineering, Inc.; Part of Tucson Transatlantic Trade, Inc.
   5. Fantech.
   6. King Company; a company of Mestek, Inc.
   7. Loren Cook Company.
   8. Marley Engineered Products.
2.2 MATERIALS
   A. Housing Materials: Galvanized steel or aluminum with electrostatically applied epoxy enamel finish over powdered mirror or heavy-gage, electroplated-zinc steel with welded construction and polyester coated finish.
   B. Intake Louvers: Integral part of the housing, mechanically field adjustable and capable of reducing air-outlet velocity by 60 percent with louver in totally closed position.
   C. Discharge Nozzle: Integral part of the housing, wedge shaped, containing adjustable air-directional vanes with 40-degree sweep front to back.

2.3 FANS
   A. Fans: Galvanized steel or aluminum, centrifugal, forward curved, double width, double inlet; statically and dynamically balanced.
   B. Fan Drives: Direct.

2.4 MOTORS
   A. Comply with the requirements in Division 15 Section “Common Motor Requirements for HVAC Equipment.”
   B. Motor Type: Resiliently mounted, continuous duty, totally enclosed, air over or totally enclosed, fan cooled, with integral thermal-overload protection.
   C. Bearings: Permanently sealed, life-time, prelubricated, ball bearings.
   D. Disconnect: Internal power cord with plug and receptacle.

2.5 ELECTRIC HEATING COILS
   A. Coil Assembly: Comply with UL 1096.
   B. Frame: Galvanized-steel frame.
   C. Heating Elements: Coiled resistance wire of 80 percent nickel and 20 percent chromium; surrounded by compacted magnesium-oxide powder in tubular-steel sheath; with spiral-wound, copper-plated, steel fins continuously brazed to sheath.
D. Heating Elements: Open-coil resistance wire of 80 percent nickel and 20 percent chromium, supported and insulated by floating ceramic bushings recessed into casing openings, fastened to supporting brackets, and mounted in galvanized-steel frame.

E. Overtemperature Protection: Disk-type, automatically reset, thermal-cutout, safety device; serviceable through terminal box without removing heater from duct or unit.
   1. Secondary Protection: Load-carrying, manually reset or manually replaceable, thermal cutouts; factory wired in series with each heater stage.

F. Control Panel: [Unit] [Remote] mounted with disconnecting means and overcurrent protection. Include the following controls:
   1. Magnetic contactor.
   3. Solid-state stepless pulse controller.
   4. Toggle switches; one per step.
   5. Step controller.
   6. Time-delay relay.
   7. Pilot lights; one per step.
   8. Airflow proving switch.

2.6 FUEL-FIRED HEATERS

A. Comply with AGA Z83.8, "Gas Unit Heaters."
   1. AGA Approval: Bear AGA label.
   2. Type of Gas: [Natural] [LP].

B. Assembly and Wiring: Heaters factory assembled, piped, wired, and tested for 120-V ac.

C. Housing: Steel, with integral draft hood and inserts for suspension-mounting rods.
   1. External Casings and Cabinets: Baked enamel over corrosion-resistant-treated surface.

D. Heat Exchanger: [Aluminized] [Stainless] steel.

E. Burners: Cast iron or aluminized steel with stainless-steel inserts.

F. Venting Provision: Gravity.

G. Power Venter: 120-V ac, with stainless-steel shaft.

H. Automatic Gas Control: [Single-] [2]-stage, 24-V ac valve.

I. Ignition: [Standing pilot] [Electronically controlled spark with flame sensor].

2.7 FILTERS

A. Disposable Panel Filters: Factory-fabricated, viscous-coated, flat-panel-type, disposable air filters with holding frames.

B. Washable Panel Filters: Removable, stainless-steel, baffle-type filters with spring-loaded fastening; with minimum 0.0781-inch- thick, stainless-steel filter frame.

C. Mounting Frames: Welded, galvanized steel with gaskets and fasteners and suitable for bolting together into built-up filter banks.

2.8 ACCESSORIES

A. [Built-in][Field-Installed] Thermostat: Line voltage, factory installed and wired to the junction box on air curtain.

B. Automatic Door Switch: Remotely installed in door area to activate air curtain when door opens and to deactivate air curtain when door closes.

C. Start-Stop, Push-Button Switch: Manually activates and deactivates air curtain.

D. Time-Delay Relay: Factory installed and adjustable to allow air curtain to operate from 1 to 300 seconds after door closes.

E. Motor-Control Panel: Complete with motor starter, 115-V ac transformer with primary and secondary fuses, terminal strip, and NEMA 250, Type [1][12] enclosure.

F. Mounting Brackets: Adjustable mounting brackets for drum-type roll-up doors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install air curtains with clearance for equipment service and maintenance.

3.2 CONNECTIONS

A. [Install piping adjacent to air curtain to allow service and maintenance.]

B. [Breaching: Comply with applicable requirements in Division 15 Section, "Breechings, Chimneys, and Stacks." Connect breaching to full size at flue outlet.]

C. Ground equipment according to Division 16.

D. Connect wiring according to Division 16.

3.3 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:
1. After installing air curtains completely, perform visual and mechanical check of individual components.
2. After electrical circuitry has been energized, start unit to confirm motor rotation and unit operation. Certify compliance with test parameters.

B. Repair or replace malfunctioning units. Retest units until satisfactory results are achieved. Operate electric element through each stage and verify proper operation of electrical connection.

C. Test gas train and verify that there are no gas leaks.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

END OF SECTION