SECTION 23 7433 - PACKAGED INDOOR HEATING AND COOLING MAKE-UP AIR UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Direct fired make-up air heater.

B. Service platform.

C. Controls.

1.02 RELATED SECTIONS

A. Drawings and General Provisions of the Contract apply to this section.

1.03 REFERENCES

A. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment; Air-Conditioning and Refrigeration Institute.

B. ARI 270 - Sound Rating of Outdoor Unitary Equipment; Air-Conditioning and Refrigeration Institute.

C. ARI 520 - Positive Displacement Condensing Units; Air-Conditioning and Refrigeration Institute.

D. ASHRAE Std 23 - Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

E. ASHRAE Std 90.1 - Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

F. ASHRAE Std 90.2 - Energy Efficient Design of New Low-Rise Residential Buildings; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

G. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association.

H. NFPA 54 - National Fuel Gas Code; National Fire Protection Association.

I. NFPA 70 - National Electrical Code; National Fire Protection Association.

J. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems; National Fire Protection Association.

K. UL 207 - Refrigerant-Containing Components and Accessories, Non-Electrical; Underwriters Laboratories Inc.

1.04 PERFORMANCE REQUIREMENTS

A. Performance Ratings: Energy Efficiency Rating (EER)/Coefficient of Performance (COP) not less than requirements of ASHRAE Std 90.1.

B. Heating Capacity: As scheduled on the drawings.

C. Scheduled Performance: As scheduled on the drawings.

1.05 SUBMITTALS

A. Product Data: Provide data with dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.

B. Shop Drawings: Indicate dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.

C. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.

D. Project Record Documents: Record actual locations of components.

E. Operation And Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.

F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

1.07 REGULATORY REQUIREMENTS

A. Conform to NFPA 70 and requirements of authorities having jurisdiction.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.08 WARRANTY

A. Provide five year manufacturer's warranty for compressor/condenser unit.

1.09 MAINTENANCE SERVICE

A. Provide service and maintenance of units for one year from Date of Substantial Completion.

1.10 EXTRA MATERIALS

A. Provide two sets of filters.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Greenheck

B. I.C.E. (Industrial Commercial Equipment Manufacturing Ltd.)

C. Applied Air/Mestek Technology, Inc.

D. AAON, Inc.

2.02 MANUFACTURED UNITS

A. Unit: Indoor unit.

B. Construction and Ratings: In accordance with ARI 210/240 and UL 207. Testing: ASHRAE Std 23.

2.03 FABRICATION

A. Casing and Components: Steel panels, 18 gage reinforced with structural angles and channels to ensure rigidity; access panels to burner and blower motor assemblies from either side of unit.

B. Observation Port: On burner section for observing main and pilot flames.

C. Insulation: Neoprene faced glass fiber insulation 1 inch thick on complete unit.

D. Finish: Heat resistant baked enamel.

E. Suspended Installations: Service platforms complete with handrails and access ladder.

F. Outdoor Installation: Weatherproofed casing, with intake louver or hood.

2.04 FILTERS

A. Filter: Removable 2 inches thick glass fiber disposable filters in metal frames.

2.05 BURNERS

A. Assembly: For natural gas, capable of modulating turn down ratio of 4:1, including electric modulating main gas valve, motorized shut down valve, main and pilot gas regulators, pilot electric gas valve, manual shut-off valve and pilot adjustment valve.

B. Regulator: Required for initial gas pressure of 6 inch WG.

C. Pilot: Electrically ignited by spark rod through high voltage ignition transformer.

D. Damper: Motorized with end switch to prove position before burner will fire.

2.06 FAN

A. Fan: Statically and dynamically balanced centrifugal fan mounted on solid steel shaft with heavy duty self-aligning pre-lubricated ball bearings and V-belt drive with matching motor sheaves and belts.

B. Electrical Characteristics: As scheduled on the drawings.

2.07 CONTROLS

A. Controls: Pre-wire unit for connection of power supply. Field wiring from unit to remote control panel makes unit operative.

B. Remote Control Panel: On-off-auto switch, indicating lights for supply fan, exhaust fan, pilot operation, burner operation, lockout indication, and clogged filter indication.

C. Interlocks: Unit to start when exhaust fan is running. Burner to operate when flow switch located in exhaust duct proves flow.

D. Fan Discharge Thermostat: Controls modulating gas valve to maintain supply air temperature.

1. Provide room thermostat to reset discharge thermostat minimum of three temperature levels.

E. Timer: Operates fan system off at night.

F. Carbon Monoxide Monitoring System: Operates fan on high volume when pre-determined carbon monoxide concentration is detected.

G. Night Thermostat: Thermostat set at 50 degrees F energizes system on low temperature.

H. Safety Controls: Sense correct air flow before energizing pilot and sense pilot ignition before activating main gas valve.

I. Manual Reset Low and High Limit Controls: Maintain supply air temperature between set points and shut fan down if temperatures are exceeded.

J. Purge Period Timer: Automatically delays burner ignition and bypass low limit control.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install to NFPA 90A.

C. Install to NFPA 54. Provide connection to fuel gas system.

D. Install unit on vibration isolators.

E. Provide flexible duct connections on outlet from unit.

END OF SECTION 23 7433