

**MIDDLESEX COUNTY COLLEGE
2600 WOODBRIDGE AVENUE
P.O. BOX 3050
EDISON, NEW JERSEY 08818**

SQ # 10242 - Packaged Gas/Electric Rooftop Heating/Cooling Units, Supply Only

General

The college is currently soliciting bids to replace three (3) packaged, Gas heat and AC units serving the Bookstore. The bid is to supply three (3) replacement units in kind. The vendor will provide a fully assembled and packaged unit as indicated in the specifications including delivery to the college. The basis of design is two (2) 20 ton units Trane model # YSH240F3RLA 208-230 volt/60 Hz/3 phase and one (1) 5 ton unit Trane model # YSC060E3RLA 208-230 volt/60 Hz/3 phase. Supplier shall provide a minimum of 48 hours notice prior to delivery. The college will offload and *install* the units. Because the units will be connected to existing Ductwork, Gas, and Electric, the replacement units should be configured as close as possible to the existing units so that all reconnections can be made with minimal alteration.

The units shall be dedicated horizontal airflow. The operating range shall be between 115 degree F and 0 degree F in cooling as standard from the factory for all units. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A and, 100 percent run tested to check cooling operation, fan and blower rotation and control sequence, before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be UL listed and labeled, classified in accordance to UL 1995/C 224-236-05 3rd Edition.

Casing

Units casing shall be constructed of zinc coated heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. Service panels shall have lifting handles and no more than three screws to remove. All exposed vertical panels and top covers in the indoor air section shall be insulated with a ½ inch, 1 pound density foil-faced, fire-resistant, permanent, odorless, glass fiber material.

Compressors

All units shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motors shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of the nameplate voltage. Internal overloads shall be provided with the scroll compressors. All models shall have crankcase heaters, phase monitors and low and high pressure control as standard. The 20 ton units shall have dual compressors.

Controls

Units shall be completely factory wired with the necessary controls and contactors pressure lugs or terminal block for power wiring. Units shall provide an external location for mounting a fused disconnect device. Microprocessor controls shall be provided for all 24-volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring

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indoor and outdoor temperature. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide machine protection. All units shall include a 0 - 100% dry bulb economizer.

Crankcase Heaters

Band heaters are to be provided to warm the oil.

Defrost Controls

Adaptive demand defrost shall be provided to permit defrost whenever coil icing conditions begin to significantly reduce unit capacity.

Discharge Line Thermostat

A bi-metal element discharge line thermostat shall be installed on the discharge line of each system. This provides extra protection to the compressors against high discharge temperatures in cases of loss of charge, extremely high ambient and other conditions which could drive the discharge temperature higher. The discharge line thermostat shall be wired in series with the high pressure switch.

Evaporator and Condenser Coils

Microchannel coils will be burst tested by the manufacturer. Internally finned copper tubes mechanically bonded to an aluminum plate fin shall be standard. Microchannel condenser coils shall be standard on all units. The evaporator coils and condenser coils shall be leak tested to 225 psig and pressure tested to 450psig. Sloped condensate drain pans are standard.

Filters

Standard filters shall be factory supplied on all units.

Gas Heating Section

The heating section shall have a drum and tube heat exchanger design using corrosion resistant steel components. A forced combustion blower shall supply premixed fuel to a single burner ignited by a pilotless hot surface ignition system.

A negative pressure gas valve shall be standard. On initial call for heat, the combustion blower shall purge the heat exchanger 45 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat. Unit shall use natural gas and shall comply with California requirements for low NOx emissions. The units shall have two stage heating.

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Indoor Fan

Units shall be belt driven, FC centrifugal fans with adjustable motor sheaves. Units shall have adjustable idler-arm assemblies. All motors shall be thermally protected. All indoor fan motors meet the US Energy Policy Act of 1992.

Outdoor Fans

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motors shall be permanently lubricated and shall have built in thermal overload protection.

Phase Monitor

A three-phase line monitor that protects against phase loss, phase reversal and phase unbalance shall be provided. It will have an operating input voltage range of 190-600 Vac, and LED indicators for On and Fault. The module shall automatically reset from a fault condition.

Refrigerant Circuits

Each refrigerant circuit shall have independent fixed orifice or thermostatic expansion devices, service pressure ports, and refrigerant line filter driers factory installed. An area shall be provided for replacement suction line driers.

Unit Top

The top cover shall be one piece or where seams exist, double hemmed and gasket sealed to prevent water leakage.

Variable Frequency Drive (20 ton units only)

Variable frequency drives shall be factory installed and tested to provide fan motor speed modulation, as well as modulating gas heat. All VFDs shall allow for bypass, if required. Bypass control will provide full nominal airflow in the event of drive failure.

Warranty

A 5 year compressor warranty shall be provided. The heat exchanger shall be warranted for 5 years on the 5 ton unit; 1 year on the 20 ton unit. A 1 year parts warranty shall be provided.

Schedule

Units shall be delivered no later than 4 weeks after vendor's receipt of a college purchase order.