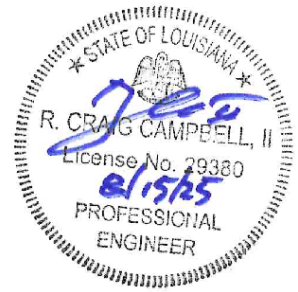


SECTION 23 80 00 - AIR CONDITIONING, HEATING AND VENTILATING



1.1 GENERAL

- A. The air conditioning system, in general, shall be for the entire building, providing cooling and dehumidification in summer and heating in winter. A constant amount of outside air shall be taken into the system and all air shall be filtered.

1.2 HIGH EFFICIENCY CONDENSING UNIT- OUTDOOR SECTION

- A. Furnish and install high-efficiency, air-cooled top discharge condensing unit where shown and with capacities scheduled. UNIT SHALL BE COMPLETELY FACTORY ASSEMBLED, PRE-CHARGED AND TESTED, AND SHALL BE SUPPLIED FROM THE FACTORY WITH ALL FEATURES LISTED BELOW.
- B. Condenser coil shall be constructed of aluminum fins mechanically bonded to an aluminum coil and shall be protected with stamped louvered panels on outside of unit.
- C. Condenser fan shall be propeller type, direct driven. Motor shall have inherent protection and be of the permanently lubricated type, resiliently mounted. Fans shall be complete with safety guards.
- D. Compressor shall be a single speed serviceable hermetic or sealed hermetic design complete with crankcase heater and external spring isolators and compressors, and shall have a 5-year warranty. Unit shall be equipped with time delay to prevent compressor from starting within five minutes of "off" time.
- E. All controls shall be factory wired and shall consist of condenser fan overload devices, hard start kit (single phase only), internal pressure relief valve, filter dryers, pressure taps for refrigerant check, quick connect refrigerant couplings and liquid and suction line service valves. Unit shall also be furnished with outdoor expansion valve or metering valve and check valve, switch-over valve, time and temperature defrost control system, "thermister" outdoor temperature sensor and an evaporator defrost control kit to permit the cooling system to operate down to 30°F outdoor temperature.
- F. Casing shall be fully weatherproof for outdoor installation and shall be bonderized steel with baked enamel finish. Panels shall be removable to provide access for servicing. Unit shall be set in place on rubber mounting pads.
- G. Contractor shall advise the Electrical Contractor of the manufacturer's recommended fuse size if different from that specified on the Electrical Drawings. Mechanical Contractor shall pay any additional costs required to change fuse sizes.
- H. Units shall be Trane, Lennox or prior approved equivalent.

1.3 HIGH EFFICIENCY AIR CONDITIONING UNIT- INDOOR SECTION

- A. Furnish and install vertical discharge/bottom return, or horizontal type (as indicated on plans) air conditioning unit of size, type and capacities as scheduled. Units shall be Lennox or prior approved equivalent.
- B. Units shall be complete with fan, multi-speed direct drive blower, motor, direct expansion cooling coil, low voltage control transformer, grease fittings, drain pan, etc. All units shall be factory insulated on the interior with not less than 3/4# density neoprene coated fiberglass cemented in place with waterproof adhesive.
- C. Each unit shall be mounted on a suitable base as indicated on plans or 18" (minimum) high painted angle iron base approved by the Engineer to allow for proper return air. Unit shall also be designed for continuous operation at the maximum rated static pressure. Fan capacities shall be rated with the fans in the units, and the horsepowers specified shall include all losses.
- D. Casings shall be suitable for operation at the pressures specified and constructed of bonderized steel.
- E. Cooling coils shall be of aluminum or copper and shall be tested at 400 psi air pressure. Cooling coil face velocity shall not exceed that guaranteed by manufacturer for no moisture carry-over.

- F. Electric strip heaters shall be as hereinafter specified and shall be mounted inside unit housing. Coordinate electric service to heaters and blower with Electrical Contractor. Heater and air unit shall be internally wired and fused to receive one electrical source of power.
- G. Filter shall be 1" thick, pleated, throw-way mounted in an accessible factory filter rack at unit.
- H. Contractor shall provide a new set of filters upon completion of project, to turn building over to Owner.
- I. If the manufacturer's equipment is not available internally wired to receive one source of power, necessary modifications to electric service shall be the responsibility of the equipment supplier. Any modifications required shall be submitted in writing ten (10) days prior to the bid date.

1.4 ELECTRIC STRIP HEATERS

- A. Electric strip heaters shall consist of open coils made from Grade "A" resistant wire insulated by floating ceramic bushings and supported in an aluminum steel frame.
- B. All terminal studs, nuts and washers shall be stainless steel, insulated with phenolic terminal bushings. Terminals shall be machine crimped to coils and heater shall be tested at 2000 volts before shipment. All voltages and phases shall be as scheduled.
- C. Heater shall be provided with built-in contactors, with one terminal block furnished for each circuit and separate contactors for each stage of heating. Heaters with air units supplying 2000 CFM or less shall be internally wired with air unit to receive one electric source of power.
- D. An automatic reset thermal cut-off shall be provided to break the heater load directly on over-temperature. In addition, provide manual reset thermal cut-off to break the heater load manually.
- E. Control circuit transformer shall be built into heater terminal box and sized to carry full contactor holding coil load.
- F. Heaters shall be listed by UL and shall be as manufactured by Chromalox, Electric Heaters, Inc., Industrial Engineering and Equipment Co., or an approved equivalent.
- G. Heater shall be equipped with built-in pressure type air flow switch. Heater shall be mounted inside unit housing.
- H. Where indicated on drawings, heaters in ductwork shall be provided with duct flanges. Outside of heater shall be wrapped with 2.33" thick fiberglass ductwrap with aluminum foil vapor barrier.

1.5 TESTING REFRIGERANT PIPING SYSTEMS

- A. Refrigerant lines shall be tested under 200 psi carbon dioxide pressure for 5 hours using soap suds at joints to test for leaks. Evacuate system and charge with refrigerant.

1.6 LABELING A/C UNITS:

- A. All indoor and outdoor a/c units shall be labeled with permanent laminated plate riveted to unit. Units shall be labeled as indicated in schedules. Plate shall be black with white unit numbers. Height of unit number shall be minimum of one (1) inch. Label shall also indicate area serviced by unit as noted in schedules. Height of letters shall be minimum of one-half (½) inch. Submit sample to Engineer for approval.

1.7 EMERGENCY DRAIN PAN (DX Equipment)

- A. All vertical split system air handling units shall be installed on 18"-24" high welded angle iron support in an emergency drain pan. Allow proper clearance for R.A. duct connection and removal of filters, etc.
- B. Drain pans shall be constructed of 20-gauge galvanized metal. Pan shall extend 4" beyond the edge of the unit. The sides of the pan shall be 4" high with drain connection located inside of the pan.
- C. Provide 3/4" Type "L" hard copper drain line with valve and pipe to floor drain in mechanical room.

END OF SECTION 23 80 00