

## SECTION 15500 - HEATING, VENTILATING, AND AIR CONDITIONING

### PART I - GENERAL

#### 1.01 DESCRIPTION

- A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.
- B. Codes, Ordinances, and Permits: The air conditioning and heating contractor shall promptly obtain all permits, arrange for all necessary inspection, and furnish a certificate of inspection and approval from the public authorities having jurisdiction, at this contractor's expense, before any work has been started. Should any changes be necessary in the drawings or specifications to secure such approval, this contractor shall include in the base bid all costs for such changes, to comply with these departments before any work has been started, without additional costs to Walgreen Co.
- C. Work under this section of the specifications includes the furnishing of all labor and material to provide a complete and operating, heating, ventilating, and air conditioning system.
- D. All components of equipment in this section and all devices installed on those units shall be accessible for service.

#### 1.02 SUBMITTALS

- A. This contractor shall submit to Walgreen Co. product data of the packaged roof-top HVAC units before starting work.

#### 1.03 WARRANTIES

- A. All warranties shall be of the length indicated and commence from the date of acceptance by Walgreen Co.
- B. One (1) year on the packaged units and electric strip heaters.
- C. Five (5) years on the compressors.
- D. Five (5) years on the condenser coils with protective coating.
- E. Ten (10) years on natural gas heat exchangers in all HVAC equipment.

### PART II - PRODUCTS

#### 2.01 ROOFTOP HEATING, VENTILATION, AND AIR CONDITIONING UNITS

- A. Units shall be packaged combination heating and cooling type, consisting of compressor section, air-cooled condenser section, cooling section, heating section, air handling section, and mixing box/filter section assembled on a common base. Provide units complete with control panel. Units shall be prepiped and prewired. All compressor motors to have thermal overload, over and under voltage protection (loss-of-phase protection) on three legs (factory installed and wired). Furnish factory installed non-fused disconnect switches internal/interural type. Units shall be U.L. listed and A.G.A. approved.

~~Acceptable manufacturers – Carrier, Lennox and Trane. Disconnect switches shall be factory installed integral type. Unit shall be U.L. and A.G.A. approved.~~  
~~Acceptable manufacturers – Carrier, Lennox and Trane.~~

- B. The units shall be A.G.A. approved and be a complete automatic heater. Controls furnished with the unit shall be supplied for the specific gas type and specification and in accordance with local utility regulations.
- C. The heat exchanger shall be an integral, completely welded aluminized steel unit composed of venturi-shaped, baffle-free sections welded to top and bottom header plates. Flue gases shall be power vented. Separated combustion type shall be used when indicated with integral exhaust/combustion air inlet and concentric adapter.
- D. Controls to include fan and limit controls, electronic ignition, pressure regulator, and shut-off cocks.
- E. In locations where natural gas is available near the site, utilize natural gas furnaces with the following exceptions and constraints:
  - 1. Provide all electric stores using only resistance heat, in Hawaii, Puerto Rico and the southern half of Florida where the winter outside design temperature is 40 deg. F. or greater.
  - 2. Provide all electric stores using air source heat pumps for locations served by the Southern Co. Territory where the winter outside design temperature is 25 Deg. F. or greater. The Southern Company includes the Florida panhandle, Georgia, Alabama, and Southeast Mississippi. Contact J. Booker at 1-404-506-2124 to confirm locations served by Southern Company.
  - 3. Air source heat pumps may be used in all electric stores in lieu of natural gas within a 160-statue mile radius of downtown Phoenix, AZ, Tucson, AZ, San Diego, CA, Los Angeles and Las Vegas, NV where the winter outside design temperature is 25 Deg. F. or greater.
  - 4. Air source heat pumps may be specified in other locations when all of the following conditions are met: (1) the winter outside design temperature is 25 Deg. F. or greater, (2) air source heat pumps are the most common local practice, (3) heat pumps are economically justified by the Engineer-of-Record, and (4) approved in writing by Walgreens.
  - 5. For all electric stores, when the dehumidification option (Hot Gas Reheat) is required on a RTU and when the air source heat pump option is not available in that configuration; those RTUs may have only electric resistance heat.
  - 6. Air source heat pumps shall supplemental resistance heat. The sum capacity of both heat sources shall be determined by heat loss calculations for the highest heat operation with an allowance for timely morning warm-up.
  - 7. Propane may be used when all of the following conditions are met: (1) natural gas is not available, (2) the winter design outside air temperature is less than 25 Deg. F., (3) Propane heat is the most common practice and (4) approved in writing by Walgreens.
- F. Unit shall be capable of fully automatic operation with ambient temperatures down to about (standard with manufacturer) 25 degree F for refrigeration cycle.

- G. Rooftop units shall have factory-installed economizers with pressure relief dampers when specified on the mechanical drawings, or as required by Code. Units with economizers shall have enthalpy based control that optimizes the use of outdoor air for free cooling. A differential enthalpy, comparative enthalpy or dry bulb control should not be used.
- H. Unit sizes 7 1/2 ton and above shall be two-stage heating (medium and high) and two-stage cooling, complete with multiple refrigeration circuits and time delay.
- I. All units shall be provided with roof curbs, at least 14" high. The roof curbs shall include a wood nailer, a galvanized sheet metal cap with space between for at least 3/8 inch thick roof flashing material. The roof curbs may be without insulation. Top of roof curb shall be installed level, shimmed from beneath so top of curb will be at least 12 inches higher than all adjacent roof surfaces. Refer to architectural drawing(s) for details, A1.4, Detail 6.
- J. All RTUs shall use programmable 24/7 electronic thermostats of the same manufacturer as the RTUs. ~~Carrier equipment shall utilize Carrier Premier-Link temperature control devices when the EMS system is specified. Trane equipment shall use Trane programmable thermostats.~~
- K. Provide 2 sets of throwaway type filters in accordance with manufacturer's specifications, with one set to be used during construction and the second set to be installed after substantial completion of construction.
- L. External High-Low pressure cut-outs factory installed are required on all rooftop units.
- M. Provide all necessary contactors, relays, motor starters, etc. for a complete operating unit.
- N. Provide crankcase heaters for all Trane units. Provide crankcase heaters on Carrier units with a Humidimizer, ~~and on the Energy Recycler.~~
- O. For all projects in Puerto Rico and those projects in the 50 United States, 5 miles (or less) from all salt water coastlines, bays, tributaries, etc. furnish each unit with standard aluminum fins, copper tubing condenser coil(s) with ~~and~~ Carrier E-Coat, Lemnox E-Coat or Trane Epoxy Coat coil treatment.
- P. Housings shall be painted and weatherproofed with gasketed hinged access doors and factory insulated.
- Q. All units shall have belt driven evaporator fans with adjustable pitch. If not available, then direct drive will be acceptable. The manufacturers of the HVAC equipment shall furnish the proper adjustable pulleys and belts necessary to achieve the specified design conditions be they factory installed, shipped loose, provided later, or any combination thereof.
- R. A duct smoke detector (SD) shall be furnished and factory installed in each unit having a capacity greater than 2,000 cfm on the return and/or supply as required by the governing building code and the authority having jurisdiction. Provide smoke sampling tube(s) as required for proper smoke detection. Each SD shall be factory wired to stop the respective fan upon detecting the presence of smoke. The SD shall not be powered from the RTU. At the discretion of the HVAC equipment manufacturer, the manufacturer and model of the unit mounted SD (s) shall be as specified in the fire alarm section of the Specifications or may be the GE/Telaire Series TSD. ~~If the Telaire TSD is selected, all Walgreens RTUs shipped from that manufacturer shall be made ready for easy and proper installation of these smoke detectors in the field.~~ Each RTU that has a smoke detector (s) shall be

furnished with a remote test station of the same manufacturer and shall be compatible with the SD(s). All unit mounted SDs shall be compatible with the actual Walgreens fire alarm system installed in that store. The RTU manufacturer shall test the proper operation of the smoke detection system for each model, size, configuration and environmental condition of units they furnish. The RTU, with all components as shipped, shall be UL listed.

- S. On each RTU with a factory installed duct smoke detector, provide an accessible wiring termination board for the specified remote test/reset station specified in section 16720 of the specifications.

## 2.02 AIR CURTAINS

- A. An air curtain shall be furnished as specified on the drawings.
- B. See drawings and schedule for quantities, size (kW capacities when applicable)
- C. Acceptable manufacturers – Berner

## 2.03 ENTRANCE HEATERS

- A. Furnish a packaged, roof curb-mounted heating and ventilating unit with downward discharge air, upward return air, filter rack with 2-inch throwaway air filters, 14" minimum high roof curb per size, capacity as indicated in the schedule on the drawings.
- B. Unit shall have a powered vent, spark ignition, an ODP motor and belt drive.
- C. Heat exchanger shall be aluminized steel with a 10 year warranty.
- D. Burner shall be fueled from a two-stage natural gas valve, controlled by a room temperature sensor or factory furnished thermostat located in the Sales area. When there is a vestibule, an additional factory furnished freeze protection thermostat shall be provided and located within the vestibule near the return air grille.
- E. Provide SD per paragraph 2.01 R.
- F. The complete unit shall be as specified, manufactured by Greenheck, Modine, Reznor and Trane.

## 2.04 FLUES

- A. Flues from all heating equipment shall be of double wall construction with type "B" vent classification.
- B. Flues shall be sized and run as required. Flues to be 3 feet above roof with weather cap, unless otherwise noted.

## 2.05 GAS PIPING

- A. The heating contractor (unless local jurisdiction requires the plumbing contractor) shall provide a complete system of gas piping extending to all equipment requiring the same.
  - 1. Include valves, pipes, fittings, hangers, supports, gas pressure regulators, dirt legs and all other necessary appurtenances. Valves shall be at each piece of equipment.

2. Rough-in and connect all fixtures and equipment furnished by Walgreen Co. Include all gas piping required to completely connect the equipment.
3. All gas piping to be standard weight black steel with standard weight malleable iron fittings and run within building, generally above ceilings, out through roof.
4. Valves shall be *Jomar* Model T/S100 ball type (or equal).
5. Test piping systems per Utility Company requirements.

#### 2.06 CONDENSATE DRAIN

- A. This contractor shall furnish and install a condensate control device (Costgard) from each air conditioning unit. This contractor shall provide condensate drain piping when required by Note 3.3 on drawing M1.1.
- B. Condensate piping shall be supported as per manufacturers' recommendations.

#### 2.07 REFRIGERANT SYSTEM CHARGING

- A. Follow manufacturer's recommended charging procedure for both refrigerant and refrigerant oil.
- B. Replace any refrigerant or oil lost from the system during the guarantee (one year) period at no expense to Walgreen Co.

### PART III - EXECUTION

#### 3.01 INSTALLATION

- A. Install units in accordance with the manufacturer's instructions.
- B. For occupied operation, set the minimum position of the outside air intakes to the CFM shown on the equipment schedules, not less than required by the applicable code.

#### 3.02 TESTING REFRIGERANT PIPING SYSTEM

- A. The piping shall be pressure tested and load tested twice in the presence of a Walgreen Co. representative, and then blown out with dry nitrogen.
- B. Expansion valves and compressor crankcases are not to be pressure tested.
- C. All refrigerant gas piping shall be leak tested and comply with appropriate codes. Air test at 1 1/2 times working pressure for 1 hour with no loss in pressure unless otherwise noted.

END OF SECTION

