SECTION 238123 - COMPUTER ROOM AIR CONDITIONERS

PART 1-GENERAL

1.1 SECTION INCLUDES

A. Air conditioning unit intended specifically for computer rooms including package unit, refrigerant piping and specialties, humidifier, reheat control, valves, and unit controls.

1.2 SUBMITTALS

A. Submit shop drawings and product data per applicable Division I Specification.

B. Shop drawings shall include product data noting capacity, materials, controls, dimensions, and accessories.

1.3 QUALITY ASSURANCE

A. Refrigeration system shall meet ASHRAE 15.

B. Energy-efficiency ratio shall meet ASHRAE 90.1.

B. Performance rating shall comply with ARI 310/380.

C. All three phase motors shall be protected with phase loss protection. Protection shall be provided by the electrical system, by built in protection, or by protection built into a variable frequency drive.

1.4 WARRANTY

A. The entire unit shall be warranted for 5 years.

B. Contractor shall warranty entire systems and equipment for a period of one (1) year.

PART 2-PRODUCTS

2.1 MANUFACTURERS

A. Liebert

B. APC – Stulz

C. United CoolAir

D. Data-Aire

2.2 GENERAL

A. Summary

1. These specifications describe requirements for an environmental control system. The system shall be designed to control temperature and relative humidity conditions within a room. The manufacturer shall design and furnish all equipment in the quantities and configurations shown on project drawings. System shall be supplied with ETL and CSA (NRTL) listing according to UL 1995. See schedule for size and capacity.

B. Design Requirements

1. The environmental control system shall be a Liebert Mini Mate2 factory assembled unit. On direct expansion models, the refrigeration system shall be split, with the compressor located in a remote or close-coupled condensing unit. Contractor shall note on drawings the distance the remote condensing unit is located from the indoor unit. Any piping modifications required shall be accounted for in his bid.

2. The evaporator section shall be designed to be installed above dropped-ceiling installation. Condensing units shall be designed for outdoor installation.

C. Quality Assurance

1. The specified system shall be factory tested before shipment. Testing shall include, but shall not be limited to: Quailty Control Checks, ”Hipot” test (two times rated voltage plus 1000 volts, per NRTL agency requirements), and Metering Calibration Tests. The system shall be designed and manufactured to world class quality standards. The manufacturer shall be ISO 9001 certified.

2.3 PRODUCTS

A. Evaporator Cabinet Construction

1. The cabinet and chassis shall be constructed of heavy gage galvanized steel and shall be serviceable from one side only. Mounting brackets shall be factory attached to the cabinet.

2. Provide a minimum 2 inch, 2 pound density fiber insulation.

B. Air Distribution

1. The air distribution system shall be constructed with a quiet, direct-drive fan assembly equipped with double-inlet blower, self-aligning ball bearings, and lifetime lubrication. Fan motor shall be permanent-split capacitor, high efficiency type, equipped with two speeds for air flow modulation. Dehumidification shall utilize the lower fan speed.

C. Microprocessor Control

1. The control system shall be microprocessor based. The wall-mounted control enclosure shall include a 2- line by 16 character display.

2. LCD display providing continuous display of operating status and alarm condition. An 8-key membrane keypad for setpoint/program control, no/off, and fan speed shall be located below this display.

3. Temperature and humidity sensors shall be located in the wallbox which shall be capable of being located up to 300 ft. from the evaporator unit, via field supplied and wired thermostat type wire.

D. Monitoring

1. The LCD display shall provide an on/off indication, fan speed indication, operating mode indication (cooling, heating, humidifying, dehumidifying) and current day, time, temperature and humidity (if applicable) indication. The monitoring system shall be capable of relaying unit operating parameters and alarms to the Liebert Site scan monitoring system.

E. Direct Expansion Coil

1. The evaporator section shall include evaporator coil, thermostatic expansion valve, and filter dryer.

2. The evaporator coil shall have 3.1 sq. ft. face area, 3 rows deep. It shall be constructed of copper tubes and aluminum fins. The coil shall be provided with a stainless- steel drain pan. Refrigerant flow shall be controlled by an externally equalized thermostatic expansion valve.

F. Air-Cooled Prop Fan Condensing unit

1. The condenser coil shall be constructed of copper tubes and aluminum fins with a direct-drive propeller-type fan, and shall include a scroll compressor, high pressure switch, and lee-temp receiver. All components shall be factory assembled, charged with refrigerant, sealed, and be capable of being connected to the evaporator section using pre-charged refrigerant lines sets. No internal piping, brazing, dehydration, or charging shall be required. Condensing unit shall be designed for 95ºF ambient and be capable of operation to –30ºF.

2. A hot gas bypass circuit shall be provided to ensure operation under low load conditions.

G. Steam Generating Humidifier

1. The environmental control system shall be equipped with a steam generating humidifier that is controlled by the microprocessor control system. It shall be complete with disposable canister, all supply and drain valves, steam distributor, and electric controls. The need to change canister shall be annunciated on the microprocessor wallbox control panel. See schedule for size and capacity. An LED light on the humidifier assembly shall indicate cylinder full, over-current detection, full system fault, and end of cylinder life conditions.

H. Electric Reheat

1. The electric reheat shall be low-watt density, 304/304 stainless steel, finned-tubular and shall be capable of maintaining room dry bulb condition when the system is calling for dehumidification. The reheat section shall include a U.L. approved safety switch to protect the system from overheating.

I. Disconnect Switch, Non-Locking

1. The non-automatic, non-locking molded case circuit breaker shall be factory mounted in the high voltage section of the electrical panel. The switch shall be accessible for the front of the unit.

J. Air Distribution Plenum

1. The evaporator section shall be supplied with an air distribution plenum with integral filter. The plenum shall be 2'X4' in size and shall provide 4-way distribution, for installation into a standard 2'X4'ceiling grid. Filter size shall be 4", deep pleated type with minimum efficiency of 20%, based on ASHRAE 52-76.

K. Condensate Pump

1. The condensate pump shall have the minimum capacity of 30 GPH at 20 ft. head. It shall be complete with integral float switch, pump, motor assembly, and reservoir.

L. Refrigerant Line Sweat Adapter Kit

1. Provide a sweat adapter kit to permit field brazing or refrigerant line connections.

PART 3-EXECUTION

3.1 INSTALLATION

A. General

1. Install air conditioning unit in accordance with manufacturer's installation instructions. Install unit plumb and level, firmly anchored in location indicated, and maintain manufacturer's recommended clearances.

B. Electrical Wiring

1. Install and connect electrical devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's electrical connection diagram submittal to electrical contractor.

C. Piping Connections

1. Install and connect devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's piping connection diagram to plumbing contractor.

D. Supply and Drain Water Piping

1. Connect water supply and drains to air conditioning unit. Unit drain shall be trapped internally.

E. Startup and training to be provided by a factory-trained service technician.

F. Contractor shall verify the length of refrigerant piping and make any allowances for larger piping if required.

3.2 TRAINING

A. Startup and training to be provided by a factory-trained service technician for a total of two (2) hours. These hours of training are to be "bankable hours" used within one full warranty year.

B. All training and start-up shall be videotaped with a professional videographer and present two (2) copies of the training on DVD format to the Construction Manager within one (1) week of the training session. This DVD will be provided to the owner.

END OF SECTION 238123

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