15770 ROOF MOUNTED SINGLE PACKAGED AIR-CONDITIONING UNITS

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SPECIFIER:
CSI MasterFormat 2004 number: 237413
An optional keynote to the Drawings follows major product titles, for A/Es using National CAD Standard.

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PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: One-piece factory-assembled, pre-charged, pre-wired, tested, and ready to operate roof mounted single packaged air-conditioning units. Complete with factory fabricated roof curb, discharge plenum, platform, and remote-control panel in size and performance requirements as indicated on Construction Documents.

B. Related Sections:

1. 15240 – Vibration Isolation.
2. 15890 - Ductwork.

1.2 SUBMITTALS

A. Shop drawings.
B. Submit wind load calculations and connection details for the air-conditioning unit(s), framework and supports, all signed and sealed by a Florida registered engineer, demonstrating compliance with FBC and American Society of Civil Engineers (ASCE) 7.

1.3 QUALITY ASSURANCE

A. Efficiency Rating: Comply with FPL Commercial/Industrial Energy Conservation Program Standards.

1.4 WARRANTY

A. Provide all labor, materials and equipment necessary to repair and/or replace any component and/or accessory that fails (except for items replaced under normal maintenance), for a period of two (2) years from the date of substantial completion of the project.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Roof Mounted Single Packaged Air-conditioning Units.

1. Trane.
2. Carrier.

3. Lennox.
4. McQuay.
5. Petra.
6. TempMaster.

2.2 EQUIPMENT

A. Unit Casing:

1. Cabinet: Single, enclosed, and weatherproof casing constructed of heavy gage zinc coated steel, bonderized. Unit casing shall be capable of withstanding a 500-hour salt spray test exposure as per ASTM B117.
2. Cooling Section: Fully insulated to prevent condensation and to attenuate sound. Section shall have a sloped condensate pan with a steel drain connection.
3. Provide opening for electrical power connections. Side panels and top cover shall be removable for service access.
4. Finish: Baked enamel.
5. Fiberglass is not allowed in contact with airstream. The entire air path of this unit, shall be lined with closed cell elastomeric foam material of sufficient thickness to prevent condensation either inside or outside of unit cabinet. Double wall construction is acceptable In lieu of the lining specified.
6. Electrical point of connection for the unit shall be protected from the weather, electrical feed shall rise to the unit from the attic space below through a chase in the unit, which is external to and does not penetrate the unit floor pan to avoid leakage through accidental carry-over of condensate.

B. Fans:

1. Evaporator: Forward curved centrifugal, belt driven type. Fan bearings shall have a 200,000-hour operating life in accordance with ANSI B3.15.
2. Condenser: Propeller, direct driven type discharging up. Fan blades shall be corrosion resistant.

C. Coils:

1. Coils: Non-ferrous construction with mechanically bonded plate fins.
2. Evaporator and Condenser Tubes: Copper.
3. Condenser coils to be factory coated with Heresite, Bronze Glo, Adsil, or an alternate M-DCPS approved epoxy coating.
4. Provide hail guards for condenser coils.

D. Compressor: Welded hermetic type with internal vibration isolation, overload, reverse rotation and short cycling protection. Scroll or reciprocating type.

E. Plenums:

1. Discharge Plenums: Complete with services access door.
2. Suction Plenums: Intake hood for outside air with volume damper.

F. Filter: As indicated on drawings.

G. Accessories:

1. Controls: Factory wired and located in a readily accessible location.

    a. Overload Devices: Provide compressor and fan motor with both thermal and current sensitive devices.
    b. Capacity Control: Units up to 5 Tons refrigeration capacity shall be single compressor with 100%-0% capacity steps. Units 6 Tons capacity and above shall be provided with multiple compressors. Units 6 to 20 Tons capacity will be capable of 100% 75% 50% 25% and 0% capacity steps. Units 21 to 50 Tons capacity will be capable or operating at 100%, 87.5%, 76%, 67.5%, 50%, 37.5%, 25%, 0% capacity steps. Capacity reduction may be accomplished by shutting down compressors, unloading cylinders, varying speed, hot gas bypass, or a combination of the above. Evaporator coils shall be intertwined, split by rows and maintain a full energized face at all times. Coils split by face are not acceptable.
    c. Safeties shall include low and high-pressure cutouts. Provide pump down control where available from the manufacturer.
    d. Time Delay: Provide five-minute time delay to prevent compressor short cycling.
    e. Operation of the unit's outside air damper shall be interlocked with the evaporator fan.
    f. A moisture sensor in the condensate pan shall stop the unit's operation in case of backup in the condensate drainage line

2. Transformer: Factory installed 24V control circuit transformer.
3. Refrigerant circuit shall include a liquid line solenoid valve, sight glass and moisture indicator.

H. Refrigerants:

1. HCF 134a.
2. HCFC 410A.

PART 3 EXECUTION

3.1 INSPECTION

A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

3.2 INSTALLATION

A. Locate foundations, platforms, curbs, and hangers for the proper installation of equipment.

B. Coordinate locations of equipment foundations and anchor bolts with concrete work specified elsewhere.

C. Install units on vibration isolators, as indicated, according to Section 15240:

1. Mount factory assembled air handling units directly on stable bare steel spring isolators, except where units are furnished with internal structural frames and external lugs, both of suitable strength and rigidity. Additional structural frames are not required beneath units without any severe overhangs.

2. Motor: Integrally mount to unit on slide rails.
3. Mountings shall provide static deflection shown on drawings.
4. Vibration: After installation, adjust equipment to operate without noticeable vibration.
5. Belt Guards: Arrange to allow the use of tachometer, oiling, and testing with the guards in place.
6. Rigidly anchor unit to roof slab to withstand wind velocity pressures as determined by FBC – American Society of Civil Engineers (ASCE) 7.
7. Unit and roof curb shall be certified to meet the Miami Dade County High Velocity Zone criteria for large missile impact resistance, air and water infiltration and wind load resistance as required by FBC.
8. Fit equipment and accessories to the space provided. Install level and locate equipment and accessories to provide working clearance space under overhead equipment, and working space for servicing, replacing and adjusting drives and motors, lubricating, and gaining access to controls.

END OF SECTION