SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Split-system air-conditioners.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Sustainable Design Submittals:
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:
 - 1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
- C. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. For Compressor: 5 years from date of Substantial Completion.
 - b. For Parts: 5 years from date of Substantial Completion.
 - c. For Labor: 1 year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SPLIT-SYSTEM AIR-CONDITIONERS

- A. Subject to compliance with requirements, provide products by one of the following:
 - 1. LG
 - 2. Mitsubishi
 - 3. Or approved equal.
- B. Indoor Units (5 tons (18 kW) or Less:
 - 1. Wall-Mounted, Evaporator-Fan Components:
 - a. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
 - b. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
 - c. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
 - d. Fan: Direct drive, centrifugal.
 - e. Fan Motors:
 - Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230500 "Common Work Results for HVAC."
 - 2) Multitapped, multispeed with internal thermal protection and permanent lubrication.
 - 3) Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in electrical Sections.
 - f. Condensate Drain Pans:
 - 1) Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil

headers, and return bends) and humidifiers, and to direct water toward drain connection.

- g. Air Filtration Section:
 - 1) General Requirements for Air Filtration Section:
 - a) Comply with NFPA 90A.
 - b) Minimum MERV according to ASHRAE 52.2.
 - c) Filters: Washaable.
- C. Outdoor Units (5 tons (18 kW) or Less)
 - 1. Air-Cooled, Compressor-Condenser Components:
 - a. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
 - b. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - 1) Compressor Type: scroll or rotary.
 - 2) vVriable-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - 3) Refrigerant: As recommended by manufacturer.
 - 4) Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 206/110.
 - c. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
 - d. Fan: Aluminum-propeller type, directly connected to motor.
 - e. Motor: Permanently lubricated, with integral thermal-overload protection.
 - f. Low Ambient Kit: Permits operation down to 0deg F.
 - g. Mounting Base: Polyethylene.
- D. Accessories:
 - 1. Thermostat: Low voltage with subbase to control compressor and evaporator fan.
 - 2. evaporator fan, with the following features:
 - a. Compressor time delay.
 - b. 24-hour time control of system stop and start.
 - c. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
 - d. Fan-speed selection including auto setting.
 - 3. Automatic-reset timer to prevent rapid cycling of compressor.

- 4. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
- 5. Drain Hose: For condensate.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install roof-mounted, compressor-condenser components on equipment supports specified in Section 077200 "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.
- D. Equipment Mounting:
 - 1. Install ground-mounted, compressor-condenser components on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
 - 2. Install ground-mounted, compressor-condenser components on polyethylene mounting base.
 - 3. Comply with requirements for vibration isolation devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."
- E. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

- B. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.
- D. Prepare test and inspection reports.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 238126