

SECTION 23 74 13 - PACKAGED OUTDOOR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

2.01 SECTION INCLUDES

- A. Packaged roof top unit.
- B. Unit controls.
- C. Remote panel.
- D. Roof mounting curb and base.
- E. Maintenance service.

2.02 REFERENCE STANDARDS

- A. AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment 2008, Including All Addenda.
- B. AHRI 270 - Sound Performance Rating of Outdoor Unitary Equipment 2015.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2018.

2.03 SUBMITTALS

- A. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- B. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- C. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
- E. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Filters: One set for each unit.

2.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from physical damage by storing off site until roof mounting curbs are in place, ready for immediate installation of units.

2.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS

4.01 MANUFACTURERS

- A. Carrier, a part of UTC Building and Industrial Systems, a unit of United Technologies Corp: www.carrier.com/#sle.
- B. Trane, a brand of Ingersoll Rand: www.trane.com/#sle.
- C. York International Corporation/Johnson Controls Inc: www.johnsoncontrols.com/#sle.
- D. Substitutions: See Section 01 60 00 - Product Requirements.

4.02 PERFORMANCE REQUIREMENTS

- A. Cooling Capacity:
 - 1. Rated Cooling Output: _____ Btu/hr.
- B. Supply Air:
 - 1. Air flow: _____ cfm.
 - 2. External Static Pressure: _____ inch wg.
- C. Unit Sound Rating: Maximum _____.
- D. Scheduled Performance:
 - 1. Cooling Capacity: AHRI 210/240 test conditions.
 - 2. Sound Rating Numbers: AHRI 270.

4.03 MANUFACTURED UNITS

- A. General: Roof mounted units having gas burner and electric refrigeration.
- B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, return fan, heat exchanger and burner, heat recovery coil, controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.
- C. Electrical Characteristics:
 - 1. 480 volts, three-phase, 60 Hz.
 - 2. 35 amperes maximum fuse size.
- D. Disconnect Switch: Factory mount disconnect switch in control panel.

4.04 FABRICATION

- A. Cabinet: Steel with baked enamel finish, including access panels with screwdriver operated flush cam type fasteners. Structural members shall be minimum 18 gauge, 0.0478 inch, with access doors or panels of minimum 20 gauge, 0.0359 inch.
- B. Insulation: 2 inch thick neoprene coated glass fiber with edges protected from erosion.
- C. Heat Exchangers: Aluminized steel, of welded construction.
- D. Supply and Return Fan: Forward curved centrifugal type, resiliently mounted with V-belt drive, adjustable variable pitch motor pulley, and rubber isolated hinge mounted high efficiency motor or direct drive as indicated.
- E. Air Filters:

1. 2 inch thick glass fiber disposable media in metal frames.
- F. Roof Mounting Curb: 14 inches high galvanized steel, channel frame with gaskets, nailer strips.

4.05 MIXED AIR CASING

- A. Dampers: Provide outside, return, and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fall to closed position. Relief dampers may be gravity balanced.
- B. Gaskets: Provide tight fitting dampers with edge gaskets.
- C. Damper Operator: 24 volt with gear train sealed in oil.
- D. Mixed Air Controls: Maintain selected supply air temperature and return dampers to minimum position on call for heating and above 75 degrees F ambient, or when ambient air temperature exceeds return air temperature.

4.06 OPERATING CONTROLS

- A. Provide low voltage, adjustable room thermostat to control burner operation, compressor and condenser fan, and supply fan to maintain temperature setting.
 1. Include system selector switch (heat-off-cool) and fan control switch (auto-on).
 2. Provide double acting thermostat with minimum ____ stage heating and ____ stage cooling.
 3. Locate thermostat in room as shown.
- B. Provide terminal strip on unit for connection of operating controls to remote panel by others. Control shall allow for two stages of heating and two stages cooling.

4.07 OPERATING CONTROLS - SINGLE ZONE UNITS

- A. Electric solid state microcomputer based room thermostat, located as indicated in service area with remote sensor located as indicated.
- B. Room thermostat display shall include:
 1. Time of day.
 2. Actual room temperature.
 3. Programmed temperature.
 4. Programmed time.
 5. Duration of timed override.
 6. Day of week.
 7. System model indication: heating, cooling, auto, off, fan auto, fan on.
 8. Stage (heating or cooling) operation.

PART 3 EXECUTION

6.01 EXAMINATION

- A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that proper power supply is available.

6.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NFPA 90A.
- C. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.
- D. Locate remote panels where indicated on drawings.

6.03 SYSTEM STARTUP

- A. Prepare and start equipment. Adjust for proper operation.

6.04 CLOSEOUT ACTIVITIES

- A. Demonstrate operation to Owner's maintenance personnel.

6.05 MAINTENANCE

- A. Provide a separate maintenance contract for specified maintenance service.
- B. Provide service and maintenance of packaged roof top units for one year year from Date of Substantial Completion.
- C. Provide routine maintenance service with a two-month interval as maximum time period between calls.
- D. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.
- E. After each service call, submit copy of service call work order or report that includes description of work performed.

END OF SECTION