

ROSEWOOD MIDDLE DEMOLITION

SECTION 237200 – AIR-TO-AIR ENERGY RECOVERY EQUIPMENT

PART 1 - GENERAL

1.1. SUMMARY

- A. Section includes air-to-air, total energy fixed-membrane heat exchangers.

1.2. SUBMITTALS

- A. Product Submittals: For each type of product indicated.
 - 1. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, furnished specialties, and accessories.
 - 2. Shop Drawings: For air-to-air energy recovery equipment. Include plans, elevations, sections, details, and attachments to other work.
- B. Close-Out Submittals:
 - 1. Operation and Maintenance Data: For air-to-air energy recovery equipment to include in maintenance manuals.

1.3. MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Filters: One set of each type of filter specified.

1.4. QUALITY ASSURANCE

- A. AHRI Compliance: Capacity ratings for air-to-air energy recovery equipment shall comply with AHRI 1060, "Performance Rating of Air-to-Air Heat Exchangers for Energy Recovery Ventilation Equipment." Capacity ratings for air coils shall comply with AHRI 410, "Forced-Circulation Air-Cooling and Air-Heating Coils."
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup." Capacity ratings for air-to-air energy recovery equipment shall comply with ASHRAE 84, "Method of Testing Air-to-Air Heat Ex-changers."
- C. Electrical Components, Devices and Accessories: UL listed and labeled as defined by NFPA 70, the National Electric Code, or equivalent by a qualified testing agency marked for the intended location and application and accepted by the Authority Having Jurisdiction and Engineer.
- D. Mechanical Equipment and Materials: UL listed and labeled as defined by State Building Codes or equivalent by a qualified testing agency marked for the intended location and application and accepted by the Authority Having Jurisdiction and Engineer.
- E. Testing and listing laboratories of mechanical and electrical equipment shall be accredited by the North Carolina Building Code Council (NCBCC).

1.5. WARRANTY

- A. Warranty: Manufacturer agrees to replace components of units that fail in materials or workmanship within specified warranty period.

ROSEWOOD MIDDLE DEMOLITION

1. Total Energy Fixed-Plate Heat Exchangers: 10 years from date of Owner Acceptance.

PART 2 - PRODUCTS

2.1. GENERAL REQUIREMENTS

- A. Manufacturers: Subject to compliance with requirements, provide fixed-plate total energy exchangers by the following:
 1. Daikin McQuay
 2. RenewAire
 3. Venmar CES / Nortek Air Solutions
 4. Manufacturer of air handling or packaged unit with standard factory-installed energy recovery equipment
- B. Refer to mechanical detail drawings for general arrangement elevation views of air handling units with energy recovery.
- C. Refer to mechanical equipment schedules for additional energy recovery information.

2.2. FIXED-PLATE TOTAL ENERGY EXCHANGERS

- A. Description: Factory-fabricated fixed-plate cross-flow air-to-air sensible and latent heat exchangers without moving parts. The heat exchanger shall be able to withstand a 5-inch w.g. pressure differential.
 1. Frost Prevention: Exchangers shall not condense or frost at outside air temperatures above (-)10 deg F and exhaust air relative humidity below 40 percent. Supplemental defrost elements, such as electric resistance heat, is not acceptable.
- B. Casing: Casing materials shall match that of the air handling or packaged unit the exchanger is installed.
 1. Access Doors: Comply with the requirements of Section 237316.
- C. Plates: Evenly spaced and sealed and arranged for counter airflow such that supply and exhaust air streams shall never mix.
 1. Plate Material: Chemically treated paper or polymer with selective hydroscopicity and moisture permeability, and gas barrier properties.
- D. Bypass Plenum: Within casing, with gasketed face-and-bypass dampers having operating rods extended outside casing.
- E. Filters: Comply with requirements of Section 234100.

ROSEWOOD MIDDLE DEMOLITION

PART 3 - EXECUTION

3.1. INSTALLATION

- A. Fixed-Plate Exchangers: Install heat exchangers so supply and exhaust airstreams flow in opposite directions.
 - 1. Install access doors in both supply and exhaust airstreams, both upstream and downstream, for access to heat exchanger. Access doors and panels shall comply with the requirements of Section 237316.
- B. Install units with clearances for service and maintenance.
- C. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.
- D. Pipe drains from drain pans to nearest floor drain; use ASTM B 88, Type L, drawn-temper copper water tubing with soldered joints, same size as condensate drain connection.
- E. Install motorized isolation dampers at outside air inlet and exhaust air outlet from heat exchanger. Where manufacturer does not offer integral isolation dampers, field-installed motorized isolation dampers shall be provided at the outside air and exhaust air ductwork connections to the air handling unit casing. Dampers shall be interlocked to open when the respective fan is operating.

3.2. CONNECTIONS

- A. Comply with requirements for piping specified in Sections 232113 and 232116. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to unit to allow service and maintenance.
- C. Connect piping to units mounted on vibration isolators with flexible connectors.
- D. Connect cooling condensate drain pans with air seal trap at connection to drain pan and install cleanouts at changes in pipe direction.
- E. Comply with requirements for ductwork specified in Section 233113.
- F. Install electrical devices furnished with units but not factory mounted.

3.3. FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Adjust seals and purge.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 4. Set initial temperature and humidity set points.
 - 5. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
 - 6. Prepare test and inspection reports.

3.4. DEMONSTRATION

ROSEWOOD MIDDLE DEMOLITION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain air-to-air energy recovery equipment.

END OF SECTION 237200