

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide Heating, Cooling, and Ventilating Equipment as specified herein and shown on the Drawings.
- B. Equipment capacity and size shall be as indicated on the Drawings.
- C. Related Work: The requirements of Section 23 05 00, Common HVAC Materials and Methods, also apply to this section.

1.02 QUALITY ASSURANCE

- A. Air Handling Equipment: Rated in accordance with AMCA certified rating procedures and AMCA labeled.
- B. Air Conditioning and Refrigeration Equipment Rating: Rated in accordance with ARI certified rating procedures and ARI labeled.
- C. Gas-fired Equipment: Design certified by American Gas Association.

1.03 SUBMITTALS

- A. Submit catalog data, construction details and performance characteristics for each HVAC unit.
- B. Submit operating and maintenance data.

PART 2 – PRODUCTS

2.02 ROOF MOUNTED HVAC EQUIPMENT

- A. Packaged Roof-Mounted Gas Heating/Electric Cooling Unit:
 - 1. Manufacturers: Carrier, Daikin, Trane, York or approved.
 - 2. Supply Fan Section: Commercial class air condition duty, direct or belt driven centrifugal air supply fan. Provide with minimum 2-speed fan control for RTU-1 and 2, to meet OEEC 2014, 503.2.10.3.2.
 - 3. Propeller Power Exhaust(RTU-2, 3, 4)/Centrifugal Power Exhaust (RTU-1): To be used in conjunction with an integrated economizer. Shall be controlled by economizer controller operations. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
 - 4. Heating Section: AGA and serving utility approved gas burner with aluminized steel heat exchanger. Include automatic gas valve, bonnet switch, high limit, main and pilot gas cocks, automatic electric and electronic ignition system, draft diverter and vent.
 - 5. Cooling Section: Include hermetic compressor, capacity matched vertical discharge, air cooled condenser, direct expansion cooling coil, complete refrigeration circuit, including high and low pressure cutouts, short cycling protection, refrigerant filter dryer, etc.
 - 6. Casing: Enclose complete assembly in weatherproof formed steel enameled cabinet with 1" thick, non-organic casing insulation; 1" disposable air filters of standard sizes, extended housing for downward supply and return air ducts connections; 1/2" galvanized mesh bird screen over rain hood inlet. Mount unit on leveled factory furnished steel support curb with ductwork, electrical connections brought up through the roof within the curb.

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7. Economizer: Factory assembled and insulated outside air intake, relief and return air housing with automatic dampers for economizer operation. Assembly shall fit the HVAC unit specified above and shall be furnished complete with damper operators, bird screen over intake and relief air dampers. Unit to be dual Enthalpy control
8. Controls: Minimum accessories shall include all necessary internal circuiting and fused disconnects for the following:
 - a. Single field electrical power connection.
 - b. Programmable 7-day, night set back, electronic thermostat and economizer/controller.
 - c. Automatic outside and return air damper controlled to maintain a set mixed air temperature with the outside air damper closing on fan shutdown and going to a minimum position above 60 deg. F (automatic minimum outside air intake damper to close on fan shutdown) and the thermostat shall operate the heating and cooling as required to maintain space temperatures.
 - d. Provide clear plastic guards with separate mounting base over thermostats indicated.
9. Economizer Logic Controller with Demand Control Ventilation (DCV): Where units with CO2 (DCV) and economizer control are shown, provide solid state economizer logic module to proportion outdoor and return air dampers to control for "free" cooling and for indoor ventilation CO2 levels. Unit to include inputs for one indoor CO2 sensor, **one outdoor CO2 sensor**, dual enthalpy input (outdoor and indoor) (, **(dry bulb)** temperature input, and mixed air input. Unit to also include minimum and maximum damper potentiometers (to correspond to min ventilation OSA and max ventilation OSA), one ISI (Indoor sensor input – CO2 sensor) potentiometer (to correspond to CO2 sensor output derived from desired CO2 set point, **(600ppm)**, and one exhaust fan potentiometer. Unit to modulate outdoor dampers based on ventilation demand and cooling demand. Honeywell W7215A/B or equal.
10. CO2 Sensor: Provide Wall mounted CO2 sensor without LCD display. Unit range to be 0-2000ppm with an annual drift of not more than 20ppm. Analog output to be set for 500 to 1500ppm. Honeywell C7232 or equal.

2.03 ROOFTOP VIBRATION ISOLATION BASES

- A. Mount rooftop air handling units on OSHPD approved, factory fabricated vibration isolation curbs that fit under the isolated equipment. Construct the lower member of rectangular steel tube containing adjustable and removable steel springs that support the upper floating member. The upper frame shall provide continuous support for the equipment and shall be captive so as to resiliently resist wind and seismic forces. A continuous flexible aluminum seal joined at the corners with EPDM bellows shall be nailed to the wooden port frame to weatherproof the assembly. Hardware shall be cadmium plated or galvanized with springs plated or provided with an approved rust-resistant finish.
- B. Acceptable Manufacturers: Mason Industries ISA (**RSA**) sized to fit equipment furnished. Acceptable equivalents - Consolidated Kinetics and Vibration Eliminator Co, Vibrex, Thycurb, Amber Booth, Micrometl.
- C. Where required, provide perimeter angle and cross members to support two layers of 5/8" sheet rock. See Part 3 for acoustical protection. Mason Industries RSCA or approved.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install and arrange equipment as shown on the Drawings and as recommended by the equipment manufacturer.
- B. Piping: Refer to applicable sections for piping, ductwork, insulation, painting, etc.

3.02 ROOF MOUNTED EQUIPMENT INSTALLATION

WARM SPRINGS TRAVEL CENTER

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- A. All roof mounted mechanical equipment shall be supported and seismically anchored on leveled, flashed and counterflashed and vibration isolated (where noted on equipment schedule sheet) curbs anchored to resist seismic forces and suitable for the roof construction. Minimum curb height shall be 12" above the roof unless indicated otherwise on the Drawings. Flashing into the roof is specified in another Section.
- B. Make all piping, electrical and duct penetrations for each piece of equipment within the curb unless shown otherwise on the Drawings. Piping and electrical conduit routed above and across the roof shall be supported on flashed and counterflashed curbs with pipe guides anchored to the curbs in "pitch pockets." Submit shop drawings on other arrangements for approval.
- C. Acoustical Protection: Install two layers of 5/8" weatherproof sheet rock with staggered joints on the perimeter angle and cross members provided with the vibration isolator bases. Apply sheet rock around all ductwork above the roof and caulk all joints and seams. Provide additional acoustical materials as recommended by acoustical engineer.

3.03 AIR HANDLING INSTALLATION

- A. Installation and Arrangement: Air handling equipment shall be installed and arranged as shown on the Drawings. Comply with the manufacturer's recommendations for installation, connection, and start-up.
- B. Lubrication: All moving and rotating parts shall be lubricated in accordance with the manufacturer's recommendations prior to start-up.
- C. Filters: Specified filters or approved temporary construction filters shall be installed in supply units prior to start-up or used for drying and/or temporary heat.

3.04 SMOKE DETECTOR INSTALLATION

- A. Provide duct-mounted smoke detectors at air handling units in accordance with Code requirements.
- B. Where detectors are mounted in a concealed location, provide remote indicating panel located as directed.
- C. Automatic Smoke Detector Fan Shutdown: Coordinate with Automatic Temperature Controls specified elsewhere in these specifications.

3.05 CONTROLS

- A. Wiring: All wiring shall be in accordance with the National Electrical Code and local electrical codes.
- B. Mounting: All controls intended to be operable by the occupants shall be mounted with the operating portion no more than 46" above the floor or as otherwise required by applicable codes.

END OF SECTION