

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

SECTION 23 84 00
HUMIDITY CONTROL EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies standalone duct mounted electrode steam humidifiers.

1.2 RELATED WORK

- A. Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS: Seismic requirements for non-structural equipment.
- B. Section 23 05 11, COMMON WORK RESULTS FOR HVAC: General mechanical requirements and items, which are common to more than one section of Division 23.
- C. Section 23 22 13, STEAM AND CONDENSATE HEATING PIPING: Requirements for field steam and condensate piping.
- D. Section 23 31 00, HVAC DUCTS AND CASINGS: Requirements for sheet metal ducts and fittings.
- E. Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC: Requirements for controls and instrumentation.
- F. Section 23 05 93, TESTING, ADJUSTING, AND BALANCING FOR HVAC: Requirements for testing, adjusting and balancing of HVAC system.
- G. Section 26 29 11, LOW-VOLTAGE MOTOR STARTERS: Requirements for motor starters.

1.3 QUALITY ASSURANCE

- A. Refer to the GENERAL CONDITIONS.
- B. Refer to specification Section 01 00 00, GENERAL REQUIREMENTS for performance tests and instructions to VA personnel.
- C. Refer to paragraph, QUALITY ASSURANCE, in specification Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
- D. Unit(s) shall be provided by a manufacturer who has been manufacturing desiccant humidifiers and have been in satisfactory service for at least three (3) years.

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

1.4 SUBMITTALS

- A. Submit in accordance with specification Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Technical data on design operating inlet and outlet conditions, air flows with diagram showing air volumes and conditions throughout the system, humidification capacity, and fan motor and electrical power data.
 - 2. A general arrangement diagram with overall dimensions showing all major components with overall dimensions, utility and duct work connections, bolting arrangement, operating weight and required service and equipment removal clearances.
 - 3. Control diagrams for stand alone use for humidifying air, electric circuits interface all control set points.
- C. Shop drawings shall indicate assembly, unit dimensions, weight loading, required clearances, construction details, and field connection details.
- D. Submit unit control system documentation required for interface with BACnet protocol DDC control system. Submit BACnet compliant Protocol Implementation Conformance Statement (PICS) for all controllers.
- E. Submit electrical requirements for power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
- F. Certificate: Evidence of satisfactory performance on three similar installations.
- G. Provide installation, operating and maintenance instructions, in accordance with Article, INSTRUCTIONS, in specification Section 01 00 00, GENERAL REQUIREMENTS.
- H. Performance test report: In accordance with PART 3.
- I. Completed System Readiness Checklists provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 23 08 00 COMMISSIONING OF HVAC SYSTEMS.

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

1.5 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
62.1-10.....Ventilation for Acceptable Indoor Air Quality (ANSI)
- C. American Bearing Manufacturers Association (ABMA)
9-1990 (R2008).....Load Ratings and Fatigue Life for Ball Bearings (ANSI)
- D. National Fire Protection Association (NFPA)
90A-09.....Standard for the Installation of Air-Conditioning and Ventilating Systems
70-11.....National Electrical Code

1.6 QUALITY ASSURANCE

- A. Fan Performance Ratings: Conform to AMCA 210 and bear the AMCA Certified Rating Seal.
- B. Sound Ratings: AMCA 301; tested to AMCA 300 and bear AMCA Certified Sound Rating Seal.
- C. Fabrication: Conform to AMCA 99.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.
- B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures and finish.
- C. Comply with manufacturer's rigging and installation instructions.

1.8 PROJECT CONDITIONS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, fan has been test run, all piping is connected and energized and all wiring complete and tested.

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

1.9 ADDITIONAL REQUIREMENTS

- A. Provide one additional spare disposable steam cylinder.

PART 2 - PRODUCTS

2.1 HUMIDIFIER UNITS

- A. General: Provide electrode steam type self contained disposable cylinder humidifier with duct mounted short absorption manifold.
- B. Steam Generators:
 - 1. Advanced water management utilizing the patented proportional plus integral auto-adaptive control system for optimal energy efficiency, water usage and cylinder life.
 - 2. Modulating output between 20 - 100% of rated capacity.
 - 3. Microprocessor controlled fill and drain valve allowing automatic water management.
 - 4. Internal drain water tempering to ensure maximum 140°F drain water.
 - 5. Integral fill cup with minimum 1" air gap to prevent back siphoning.
 - 6. Full cylinder indication and pre-notification of automatic shutdown at end of cylinder life.
 - 7. Automatic pulse feature to clean any obstruction from the drain solenoid valve when needed.
 - 8. Automatic off-season shut down (after 3 days of "no call") will completely drain the cylinder and automatically restart on call for humidity. Adjustable on/off and time sequence. Provides extended cylinder life, while ensuring stagnant water does not remain in the system.
 - 9. Plumbing door interlock safety switch to allow power interruption when installing or servicing the humidifier.
 - 10. Total controller microprocessor with alphanumeric backlit display.
- C. Cabinet:
 - 1. Humidifier Cabinet shall have key lockable access on the access door . Cabinet shall be constructed with corrosion resistant material with a scratch resistant powder paint finish.
- D. Short Absorption Manifold:
 - 1. Steam dispersion panel consisting of one horizontal stainless steel header supplying steam to a bank of vertical tubes spaced

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

on 3" centers. Absorption distance shall not exceed the scheduled value.

2. Headers shall be welded stainless steel construction.
3. Steam inlet and condensate return located on the same side of header. Condensate return shall be located at the lowest point of header.
4. Vertical stainless steel distribution tubes with stainless steel nozzle inserts to ensure condensate free steam is discharged from the center of the distribution tubes.
5. Provide tube and header insulation constructed from stainless steel sheilding isolated from the tubes and header using synthetic foam strips. Insulation to provide an air gap to minimize conduction and convection, and provide reflective surface to minimize radiating heat transfer.

E. Controls:

1. The humidifier shall be configured to accept an analog humidity demand signal from the BAS.
2. All controls and humidity sensors shall be provided by the BAS provider.
3. The humidifier shall be provided with remote fault indication option to include four built-in status relays to be interfaced with the BAS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. In accordance with manufacturer's recommendations.
- B. Provide reducing valve with shut off valve and gauge to limit water supply pressure to 35 psi.
- C. Install duct mounted humidistat, and high limit controller, and air flow switch. Wire same to humidifier as recommended by manufacturer.
- D. Extend drain line to nearest floor drain.
- E. Piping between steam generator and steam distribution system to be rigid hard copper and insulated.

3.2 STARTUP SERVICE

- A. Perform the following final checks before startup:
 1. Verify that shipping, blocking, and bracing are removed.

WARD 3D PHYSICAL THERAPY RENOVATION
VA WNY Health Care System
3495 Bailey Ave
Buffalo, New York

2. Verify that unit is secure on mountings and supporting devices and that connection to piping, ducts, and electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
 3. Perform cleaning and adjusting specified in this Section.
- B. Perform the following starting procedures for humidification units:
1. Energize motor; verify proper operation.
 2. Measure and record motor electrical values for voltage and amperage.
- C. Complete installation and startup checks according to manufacturer's written instructions.
- D. Startup Report: Report findings during startup. Identify startup steps, corrective measures taken, and final results.

3.3 ADJUSTING

- A. Adjust initial temperature and humidity set points.

3.4 INSTRUCTIONS

- A. Provide services of manufacturer's technical representative for eight hours to instruct VA personnel in operation and maintenance of desiccant dehumidifiers.

3.5 DEMONSTRATION AND TRAINING

- A. Provide services of manufacturer's technical representative for four hours to instruct VA personnel in operation and maintenance of units.

- - - E N D- - -