SECTION 238413

HUMIDIFIERS

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. This Section includes self-contained humidifiers.
	2. SUBMITTALS
		1. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories.
		2. Shop Drawings: Detail fabrication and installation of humidifiers. Include piping details, plans, elevations, sections, details of components, manifolds, and attachments to other work.
			1. Include wiring diagrams.
		3. Operation and maintenance data.
	3. QUALITY ASSURANCE
		1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
		2. Comply with ARI 640, "Commercial and Industrial Humidifiers."
2. PRODUCTS

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**NOTE TO SPECIFIER**

Verify manufacturer information, Product numbers, and availability at time of Project Manual preparation for Project.

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* 1. SELF-CONTAINED HUMIDIFIERS
		1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
			1. Armstrong International, Inc.
			2. Carel USA, LLC.
			3. Carnes Co., Inc.
			4. Herrmidifier.
			5. Condair, Inc.
		2. Electric-Resistance Heater Container: Cleanable, ASTM A 666, stainless steel. Comply with UL 499.
		3. Electrode Cylinder: Replaceable plastic assembly. Comply with UL 499.
		4. Manifold: ASTM A 666, Type stainless-steel tube extending across entire width of duct or plenum and equipped with mounting brackets on ends.
		5. Cabinet: Sheet metal enclosure for housing heater cylinder, electrical wiring, components, controls, and control panel. Enclosure shall include baked-enamel finish, hinged or removable access door, and threaded outlet in bottom of cabinet for drain piping.
		6. Control Panel:
			1. Factory-wired disconnect switch.
			2. Liquid-crystal display.
			3. Programmable keyboard.
			4. Set-point adjustment.
			5. Warning signal indicating end of replaceable cylinder[ or ionic bed insert] life.
			6. Low-voltage, control circuit.
			7. Diagnostic, maintenance, alarm, and status features.
			8. High-water sensor to prevent overfilling.
		7. Controls:
			1. Microprocessor-based control system for modulating or cycling control, and start/stop and status monitoring for interface to central HVAC instrumentation and controls.
			2. Solenoid-fill and automatic drain valves to maintain water level and temper hot drain water.
			3. Field-adjustable timer to control drain cycle for flush duration and interval.
			4. Controls shall drain tanks if no demand for humidification for more than 72 hours.
			5. Conductivity-type level controls.
		8. Accessories:
			1. Airflow switch for preventing humidifier operation without airflow.
1. EXECUTION
	1. INSTALLATION
		1. Install humidifiers with required clearance for service and maintenance.
		2. Seal humidifier manifold duct or plenum penetrations with flange.
		3. Install humidifier manifolds in metal ducts and casings constructed according to SMACNA's "HVAC Duct Construction Standards, Metal and Flexible."
		4. Install stainless-steel drain pan under each manifold mounted in duct.
			1. Construct drain pans with connection for drain; insulated
			2. Connect to condensate trap and drainage piping.
			3. Extend drain pan upstream and downstream from manifold a minimum distance recommended by manufacturer but not less than required by ASHRAE 62.1-2004.
		5. Install manifold supply piping pitched to drain condensate back to humidifier.
		6. Piping installation requirements are specified in other Division 22 and 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
			1. Install piping adjacent to humidifiers to allow service and maintenance.
			2. Install shutoff valve, strainer, backflow preventer, and union in humidifier makeup line.
		7. Install electrical devices and piping specialties furnished by manufacturer but not factory mounted.
		8. Retain first four paragraphs below for gas-fired, self-contained humidifiers.
		9. Install piping from safety relief valves to nearest floor drain.
		10. Connect gas piping full size to steam-generator, gas-train inlet with union. Gas piping materials and specialties are specified in Division 23 Section "Fuel Gas Piping."
		11. Connect breeching full size to steam-generator outlet. Venting materials are specified in Division 23 Section "Breechings, Chimneys, and Stacks."
		12. Connect combustion-air inlet to intake terminal using PVC piping with solvent-cemented joints. Run from boiler connection to outside and terminate adjacent to flue termination.
		13. Ground equipment according to Division 26 Section "Grounding and Bonding."
		14. Connect wiring according to Division 26 Section "Conductors and Cables."
	2. FIELD QUALITY CONTROL
		1. 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.
		2. Remove and replace malfunctioning units and retest as specified above.
	3. DEMONSTRATION
		1. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain humidifiers.

END OF SECTION

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