SECTION 238239.19 - WALL AND CEILING UNIT HEATERS

This Section includes requirements for sustainable design systems. However, equipment specified in this Section may not meet requirements of those systems. Verify, with manufacturers, that the requirements can be met. To comply, HVAC system design alternatives that do not include wall and ceiling unit heaters may be required.

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			1. SUMMARY
				1. Section includes wall and ceiling heaters with propeller fans and electric-resistance heating coils.
			2. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.

Include rated capacities, operating characteristics, furnished specialties, and accessories.

* + - * 1. Shop Drawings:

Include plans, elevations, sections, and details.

Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

Include details of anchorages and attachments to structure and to supported equipment.

Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.

Wiring Diagrams: Power, signal, and control wiring.

Retain "Samples" paragraph below for single-stage Samples, with a subordinate list if applicable.

* + - * 1. Samples: For each exposed product and for each color and texture specified.
			1. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: For wall and ceiling unit heaters to include in emergency, operation, and maintenance manuals.
1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products.

* + - 1. MANUFACTURERS
				1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

INDEECO.

Markel Products; TPI Corporation.

Marley Engineered Products.

Ouellet Canada Inc.

Trane.

Approved equivalent.

* + - 1. DESCRIPTION
				1. Assembly including chassis, electric heating coil, fan, motor, and controls. Comply with UL 2021.
				2. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
			2. CABINET
				1. Front Panel: **[Stamped-steel louver] [Extruded-aluminum bar grille]**, with removable panels fastened with tamperproof fasteners.
				2. Finish: Baked enamel over baked-on primer with manufacturer's **[standard] [custom]** color selected by Director’s Representative, applied to factory-assembled and -tested wall and ceiling heaters before shipping.

"Airstream Surfaces" paragraph below may be required to comply with Project requirements or authorities having jurisdiction and is required for sustainable design systems.

* + - * 1. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
				2. Surface-Mounted Cabinet Enclosure: Steel with finish to match cabinet.
			1. COIL
				1. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware, and limit controls for high-temperature protection.**[ Provide integral circuit breaker for overcurrent protection.]**
			2. FAN AND MOTOR
				1. Fan: Aluminum propeller directly connected to motor.

Motor characteristics such as NEMA designation, temperature rating, service factor, enclosure type, and efficiency are specified in Section 230513 "Common Motor Requirements for HVAC Equipment." If different characteristics are required, insert paragraphs below to suit Project.

* + - * 1. Motor: Permanently lubricated**[, multispeed]**. Comply with requirements in Section 230513 "Common Motor Requirements for HVAC Equipment."
			1. CONTROLS
				1. Controls: Unit-mounted thermostat.**[ Low-voltage relay with transformer kit.]**
				2. Electrical Connection: Factory wire motors and controls for a single field connection**[ with disconnect switch]**.
			2. CAPACITIES AND CHARACTERISTICS

If Project has more than one type or configuration of heater, delete this article and schedule wall and ceiling heaters on Drawings.

* + - * 1. Airflow: **<Insert cfm>**.
				2. Fan Speed: **<Insert rpm>**.
				3. Heating Coil: **<Insert kilowatts>**.
				4. Electrical Characteristics for Single-Point Connection:

Volts: **<Insert value>**.

Phase: **<Insert value>**.

Hertz: **<Insert value>**.

Full-Load Amperes: **<Insert value>**.

Minimum Circuit Ampacity: **<Insert value>**.

Maximum Overcurrent Protection: **<Insert amperage>**.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine areas to receive wall and ceiling unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
				2. Examine roughing-in for electrical connections to verify actual locations before unit-heater installation.
				3. Proceed with installation only after unsatisfactory conditions have been corrected.
			2. INSTALLATION
				1. Install wall and ceiling unit heaters to comply with NFPA 90A.
				2. Install wall and ceiling unit heaters level and plumb.

Retain first paragraph below if controls are provided by unit-heater manufacturer. To comply with requirements of the Americans with Disabilities Act, verify mounting height with authorities having jurisdiction.

* + - * 1. Install wall-mounted thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.
				2. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
				3. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

END OF SECTION 238239.19