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BuildingName
The Description of the Project
P00000000 0000

SPECIFICATION DIVISION 22

NUMBER SECTION DESCRIPTION

DIVISION 22 PLUMBING
SECTION 220533 - HEAT TRACING FOR PIPING

END OF CONTENTS TABLE

DIVISION 22 PLUMBING
SECTION 220533 - HEAT TRACING FOR PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, Standard General and Supplementary General Conditions, Division 1 Specification Sections, and other applicable Specification Sections including the Related Sections listed below, apply to this Section.

1.2 SCOPE OF WORK

A. Furnish and install a complete UL listed system of heaters, components, and controls to prevent pipelines from freezing. Refer to drawings for additional scope clarification.

1.3 COORDINATION

A. The heat tracing and all the necessary accessories shall be furnished and installed by the Mechanical Contractor. Electrical Contractor shall provide power supply and related wiring by the per Division 26, and as shown on electrical drawings.

1.4 MANUFACTURERS

A. Raychem.

B. Thermon.

C. Delta Therm Inc.

D. Nelson Heat Trace

PART 2 - PRODUCTS

2.1 MATERIAL

A. Electric heat tracing shall be self-limiting type suitable for temperature maintenance up to 40 degrees F.

B. The heater shall have a self-regulating factor of at least 90 percent. (the percentage reduction, without thermostatic control, of the heater output going from 40 degrees F pipe temperature operation to 150 degrees F pipe temperature operation).

C. The heater shall operate on line voltages of (select: 120, 208 or 220) volts without the use of transformers.

D. The heater shall be sized according to this table. The required heater output rating is in watts per foot at 50 degrees F. (Heater selection based on 1" fiberglass insulation on metal piping).

Pipe Size	Min. Ambient - 10 deg.F	Temp. - 20 deg. F
3" or less	5 watt	5 watt
4"	5 watt	8 watt

6"	8 watt	8 watt
8	2 strips – 5 watt	2 strips – 8 watt
12" - 14"	2 strips - 8 watt	2 strips – 8 watt

E. Connectors and fittings, and indicator lights, and other required installation accessories shall be manufacturers standard recommended for the freeze protection application. The heater shall include a tinned copper braided shield, electrically bonded at splice locations, and bonded to the branch circuit ground conductor at the power connection point.

F. All the components and system shall be U. L. listed.

2.2 ELECTRICAL PROTECTION

A. Provide ground fault circuit breakers or other ground fault protection with a 30 mA ground fault trip level. See Division 26 for more details.

2.3 CONTROLS

A. Provide heater system controls indicated below, and as shown in the drawings:

1. Outdoor air thermostat control to prevent operation when outside air temperature is above 40F (adjustable).
2. Heater failure alarm, using outdoor piping thermostats, and voltage detectors, with audible and visual alarm and alarm contact for remote monitoring by the owner's Energy Management System.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The entire installation shall comply with the manufacturer's instructions and all the applicable sections of NEC, latest edition.

B. The electrical and mechanical installation details shall strictly adhere to manufacturer's recommended practices. The manufacturer's representative shall supervise and test the installation and provide a letter to the Owner that the entire installation complies with their requirements, and the installation tested out satisfactorily.

3.2 TESTS

A. After heater installation and before and after installing the thermal insulation, subject heater to testing using a 1000 VDC megger. Minimum insulation resistance shall be 20 megohms regardless of length. Test both heating cable bus wires to verify the connection of any splices or tees.

B. After all megger testing and insulation is complete, manufacturer shall conduct functional performance test to ensure system is fully operational, and submit report.

END OF SECTION 220533