SECTION 23 83 10
HYDRONIC SNOW MELT SYSTEMS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Furnish and install a complete hydronic snow melting system as indicated and specified.

B. Full Design provided by the manufacturer.

1.2 RELATED DOCUMENTS

A. Section 232113 – Hydronic Piping

B. Section 232116 – Hydronic Piping Specialties

C. Section 230700 – Insulation for HVAC

D. Section 230900 - Building Management System

E. Section 230993 – Automatic Control Sequences

1.3 SUBMITTALS

A. Manufacturer's design and corresponding shop drawings shall be submitted to the architect prior to installation for review.

B. Provide submittals for all equipment and accessories used.

C. System shall be "turn key" and shall include, but not limited to: pumps, expansion tank, pressure relief valves, make-up water system, heat exchanger, thermometers, pressure gauges, air eliminators, air vents, drains, equipment hangers and interfaced with the Building Management system specified.

1.4 QUALITY ASSURANCE

A. The packaged system shall comply with all local code requirements, ordinances and regulations as well as with requirements of NFPA, UL and other applicable codes.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Uponor

B. Rehau

C. Therma-HEXX

2.2 GENERAL

A. Components of the buried tubing system shall be provided by one manufacturer, including tube, fittings, manifolds and other ancillary items required for a complete installation.

2.3 TUBE

A. The tube shall be cross-linked polyethylene or equivalent material rated at 180 degrees F maximum working temperature and 90 psi working pressure. The tube shall be manufactured on accordance with ASTM standard specification F876.

B. The tube shall have an oxygen diffusion barrier capable of limiting oxygen diffusion through the tube to no greater than .10g/m3/day at 104 degrees F water temperature.

C. The tube shall be 5/8 inch nominal inside diameter (3/4 inch outside diameter) in accordance with ASTM standard specification, as above.

D. The minimum bend radius for cold bending of the tube shall not be less than six (6) times the outside diameter. Bends with a radius less than stated shall require the use of bend support as supplied by the tube manufacturer.

E. Tube shall carry a twenty (20) year non-prorated warranty against failure due to defects in material and workmanship. Manifolds and other ancillary components shall be warranted for (18) months from date of shipment.

F. The tube shall be crush proof, recovering its original cross sectional area after intermittent flattening due to construction, installation or site abuse.

2.4 PAVER RADIANT SYSTEM

A. Pavers shall have a compressive strength to 30 PSI at 140 degrees F.

B. Panels are 3/8” thick with 1” EPS insulation.

C. Panels are made of bimodal copolymer of LLDPE and HDPE PE-RT 2499 ASTM F2623.

2.5 MANIFOLDS

A. Manifolds shall be of cast brass construction, manufactured of alloys to prevent dezincification or equivalent material shall have integral circuit balancing valves. Manifolds shall be able to vent air from the system. Manifolds shall be isolated from supply and return tubing with valves that are suitable for isolation and balancing.

2.6 SENSORS

A. Provide Tekmar 664 control and sensing system with integral snow and ice detector that senses the presence of moisture on the surface of the slab and monitors the slab temperature. BMS will monitor on/off from the panel, and independently monitor pump operation and supply/return water temperatures per mechanical details.

2.7 FITTINGS

A. Fittings shall be manufactured by dezincification resistant brass or equivalent material. These fittings must be supplied by the tube manufacturer. The fittings shall consist of barbed insert, a compression ring and compression nut.

2.8 SUPPLY AND RETURN PIPING TO MANIFOLDS (INTERIOR)

A. Piping shall be metal or copper per Section 232113.

B. Fittings shall be compatible to the piping material used.

2.9 WATER TREATMENT

A. Water treatment systems shall be provided as per spec section 232500

B. Freeze protection product shall be propylene glycol industrial by Dow Chemical, 40 percent glycol/60 percent water solution by weight.

PART 3 – EXECUTION

3.1 INSTALLATION

A. For general piping installation, see Section 232113.

B. Run piping parallel with the lines of the building and work into place without springing or forcing and out of the way of all doors, window or other openings.

C. Install pipe so that it may expand and contract freely without damage to any other work or to itself.

D. Install hydronic radiant snow melt tubing loops in accordance with the manufacturer's recommendations and the details as shown on the Contract Drawings.

E. All fittings should be accessible for maintenance. Install tubing loops, without splices, as a minimum, from the point at which the tubing enters the panel to the point to which it exits the panel.

F. Installation shall follow the factory shop drawings for tubing layout, tube spacing, manifold configuration, manifold location and control. All notes on the drawings shall be followed.

G. The tubing system shall be pressurized with water or air, in accordance with applicable codes or to a pressure to 60 psig 24 hours prior to encasement in the radiant codes or to a pressure to 60 psig 24 hours prior to encasement in the radiant panel. The tubing systems shall remain at this pressure during the panel installation and for a minimum of 24 hours thereafter to ensure system integrity. The contractor shall provide the water or air for the pressurization of the tubing system. The Contractor assumes all liabilities for suitable safety precautions and testing, including the use of compressed air, when applicable.

    1. The contractor shall take all necessary measures to insure snowmelt piping is not damaged during the concrete placing process and throughout the construction period.

H. Paver system to be installed per manufacturer’s installation instructions. Provide no more than 24 pavers per row. Coordinate snowmelt manifold sizing prior to installation.

I. Prior to start-up or onset of freezing weather, the Contractor shall procure and install glycol to prevent any possibility of freezing the tubing system.

J. At start-up time, the Contractor shall follow the manufacturer's recommendations for system water and temperature balancing, record these balance settings at each manifold location and deliver to the Owner a complete record of these settings for inclusion in the Operation and Maintenance Manuals.

K. Close piping system openings with caps and plugs after installation to prevent entrance of foreign materials before final connection.

L. Piping shall have top of reducers level with top of pipe and mains shall be graded slightly up to ends to facilitate venting of air and for drainage of system. Eccentric fittings shall be used for each change in size of mains or branches.

M. Mitering of pipes to form elbows, notching straight runs to form tees, etc. will not be permitted. Weldolets or Thredolets may be used for branch take-offs from the main and where main is not less than 2 inches.

N. Provide manual air vents at all high points piping systems.

O. Locate tubing a point midway between slab surface and bottom of slab or in accordance with manufacturers installation requirements, secure to rebar per manufacturer's recommendations.

P. Provide loops at slab expansion joints per manufacturer's recommendations.

END OF SECTION