SECTION 23 21 20  
PEDESTRIAN WALKWAY SNOW MELT SYSTEMS

PART 1 – DESIGN DIRECTIVES

1.1 SUMMARY

A. Where possible, pedestrian walkways should be designed to be a minimum of 5 (five) feet in width with sufficiently gentle curves and grades to facilitate maintenance with conventional sidewalk plows. Designs should include adequate areas for snow storage.

B. Use of exterior stairways without coverings should be minimized where possible. Where such stairways are deemed to be necessary, open metal grates with non-slip surfaces should be considered to minimize the need for manual snow and ice removal. Snow melt systems should be considered where feasible if open grates are not possible.

C. In order to conserve energy, use of snow melt systems should be limited to pedestrian walkways in the vicinity of building entrances where one or more of the following conditions exist.

1. Inability to easily maintain the area with mechanized equipment due to access issues or concerns regarding structural limitations to use of such equipment.

2. Inadequate area(s) for long-term snow storage immediately adjacent to the walkways.

3. Areas immediately adjacent to building entrances with a high level of pedestrian traffic that must continually be kept clear of snow and ice for safety reasons.

1.2 DESIGN CRITERIA

A. Snow melt systems may include electric or hot water heating elements. Energy system capacity and operating cost should be considered in selecting the type of system used.

B. Snow melt systems shall use an inhibited propylene glycol and water solution mixed to a minimum concentration of 50% glycol by weight.

C. System shall be capable of communication with the campus building automation system (BAS) via BACnet IP.

D. At a minimum, the following read/write points shall be available via BACnet:
a. BAS outdoor air temperature.
b. Melt setpoint.
c. Idle setpoint.
d. Warm weather shutdown.
e. Cold weather cut out.
f. Outdoor air temperature sensor enable.
g. Idle mode enable/disable.

E. Snow melt systems must include automatic controls capable of turning the system on and off according to the following criteria.

1. System shall be provided with the following functionality:
   a. Ability to use campus BAS outdoor air temperature input.
   b. Ability to use snow/ice sensors to automatically detect snow or ice and begin operation of the system.
   c. Ability to be manually started/stopped via command at the BAS workstation.
   d. Warm weather shutdown and cold weather cut out mode.
   e. Idle mode operation.

2. System shall turn on if precipitation is detected and outdoor air temperature is less than 40 degrees Fahrenheit, or via command at the campus BAS workstation.

3. System turns off when pavement temperatures reach 50 degrees Fahrenheit and outdoor air temperature exceeds 40 degrees Fahrenheit.

4. System shall be provided with idle mode capability to maintain a snow melt surface pre-set temperature.

F. All designs must include consideration of snow and ice falling from adjoining roofs. This condition should be avoided wherever possible, but if a limited amount of falling snow and/or ice are anticipated, safety precautions must be taken to protect pedestrians, and this added material must be considered when designing snow melt systems and/or necessary capacity for snow storage.

G. Where a snow melt system is to be installed, there must be provision for adequate drainage for melted snow and ice to readily drain off the surface and not re-freeze.

H. Installation of energy submetering should be considered, especially for large snow melt systems, to allow Dartmouth to monitor energy use and system operation.
PART 2 – PRODUCTS

2.1 NO SPECIAL REQUIREMENTS