



# PLASTICS·PIPE·INSTITUTE®

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BUILDING COMMUNITY



## MELTING AWAY SNOW & DOUBT IN MICHIGAN

HOLLAND, MI -- In the summer of 1988, the city of Holland, Mich., began a \$3 million downtown renovation project. The city planners hoped the facelift would attract more shoppers and help recruit new businesses.

When a Holland businessman suggested installing a hydronic snow and ice melting system under the downtown streets and sidewalks, civic leaders were initially skeptical.

Given that 75 to 100 inches of snow falls on Holland's streets each winter, how could tubing placed under the surface be a superior alternative to plowing, shoveling, sanding or applying salt?

With a snow and ice melting system made by UPONOR, shoppers are able to walk the downtown streets safely and easily.

UPONOR'S snow and ice melting system keeps the streets free of snow and ice, eliminating the need for plows, salt or sand.



Today, Holland is a city of believers. Warm water circulates through 325,000 linear feet of crosslinked polyethylene (PEX) tubing, keeping five street blocks, adjacent sidewalks and two parking lots free of snow and ice all winter long.

The system has proven its ability to keep up with Holland's considerable annual snowfall. Even after the biggest storms, Holland's streets remain clear and dry. It also attracts new business.

"It's not the only consideration for a relocating business, of course," says one downtown manager. "But having the system makes us unique and is an important element in our future development efforts."

### Summary of Benefits

- Improved Business Environment The downtown streets and sidewalks are clearer and drier, so shoppers can move easily from store to store without the worry of slipping and sliding. Sand and salt are no longer tracked into stores, allowing store owners to get more wear out of their tile and carpeting. Additionally, productivity is improved because employees no longer have to take time to shovel storefronts.

### - Low Operating Cost

The snow and ice melting system uses free energy — heat recovered from Holland's power plant. The heat transfers to the snow and ice melting circulating loop via water-to-water heat exchangers. The system works automatically, so it requires only minimal attention from city



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maintenance workers. Because falling snow melts on contact, expensive labor and equipment are not needed to remove snow or to spread snow-melting agents.

- Improved Life of Streets and Sidewalks  
Because freeze-and-thaw cycles do not occur, cracking and buckling is reduced in streets and sidewalks. Also, damage from snow-removal equipment, salt and chemicals is eliminated.



## Mechanical System Information

The PEX tubing serves as the cooling mechanism for the turbines in Holland's power plant. River water pumps to water-to-water heat exchangers where heat from the turbines transfers to the loops, raising water temperature to 80 to 90°F for the snow and ice melting system. Two pumps circulate the water through the system. The water then returns to a nearby river at an acceptable cool temperature.

The system is in a permanent mode of snow and ice melting, continuously delivering 80 to 90°F water. The only controls it uses are a low-water temperature alarm and a manual override on/off switch.

Tubing in the streets and sidewalks is buried in 3 inches of road base material. The streets are then covered with asphalt, and the sidewalks are covered with a 1-inch layer of fine sand and topped with brick pavers.

## Project Data

- Area Heated: 167,000 square feet (325,000 linear feet)
- Design Temperature: 0°F
- Wind Speed: 0 mph
- Surface Temperature: 36°F
- BTU/h per Square Foot: 80 BTU/h
- Tubing Spacing: 6" on center
- Average Loop Length: 700 ft.
- Supply Water Temperature: 80 to 90°F
- Differential Temperature: 20°F
- Temperature Drop: 35°F
- System Flow: 762 gallons per minute (gpm)

**About PPI** - The Plastics Pipe Institute, Inc. (PPI) is a Texas-based, non-profit organization, founded in 1950, that is the major trade association representing all segments of the plastic piping industry. PPI is dedicated to expanding awareness about plastic pipe systems and promoting plastics as the material of choice for pipe applications. It is the premier technical, engineering and industry knowledge resource that publishes data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods. For more information about PPI and available information, go to: [www.plasticpipe.org](http://www.plasticpipe.org).