

Snow and ice is a thing of the past at First Division Museum at Cantigny



A Case Study

CLIENT

The editor and publisher who helped grow the Chicago Tribune into a nationally renowned newspaper, Robert R. McCormick was also a World War I veteran who desired to establish a museum honoring valiant soldiers killed in wars past. Now carefully preserved and overseen by a foundation, the First Division Museum, part of McCormick's private estate, continues to be one of the foremost military museums in the nation.

Nestled in a wooded area in Chicago's northwest suburbs, the 37,700 square-foot facility had a unique roof design that, while architecturally pleasing, posed maintenance challenges. During a renovation period, it was decided to rework the roof style. Since the original roof was treated with a Delta-Therm roof deicing system that worked well and was still operational, board members at the museum opted to purchase another Delta-Therm system for the new roof.

CHALLENGE

First Division Museum board members met with Delta-Therm staff to discuss ways to keep the new roof free of snow and ice while preserving its architectural integrity. The horseshoe-shaped building needed to be protected at its corners, drip edges, and where seams between its wings met its center portion. Board members sought a product that would keep up with the lifespan of the roof so they chose Delta-Therm's MI cable and opted for an extended warranty of 15 years instead of the standard 10-year warranty that covers the product.

"They redesigned it and got rid of the steps," sales rep Chuck Garcia said of the roof's original design. "Now the roof slopes straight down on all sides except for in the center where there are two flat roofs on the east and west sides of the building."

METHOD

The renovated roof design needed less heat trace than its predecessor. A central trough that drains down into a lower trough allows for snow melt drainage.

“We put a run of heat trace all the way around in that center trough,” said Garcia. “It wraps all the around there to make sure it doesn’t get clogged up.” The M.I. cable used, he said, is a “seamless copper cable with high density polyethylene outer jacketing.”

Four moisture sensors are strategically placed on the roof with one temperature sensor. The moisture disks react to the moisture on the surface. When the sensor indicates less than 40 degree temperatures and the moisture disks detect moisture, the system is activated. For protection, manufacturers recommended a thermoplastic material to serve as a buffer between the heat trace and the roof. To find something appropriate, Garcia and Delta-Therm owner Tom Slagis looked at different products at 3M and talked with the electrician. They recommended a 3M double-sided adhesive tape to serve as a barrier.

“That worked out fine,” said Garcia.

Project manager Michael Blair of Anchor Electric Company in Carol Stream helped with the installation of the cables.

“Installation went pretty well,” he said. “The process was pretty standard – lay out the cables, mount them to the roof membrane, and extend the circuits to the control panel and power.”

Since Delta-Therm cables had been used on the previous roof, Blair said, “no other system was inquired about.”

RESULTS

At one corner of the building, there used to be a problem with snow accumulation.

“There was no heat trace there to help melt that snow and ease it down away from the roof,” said Garcia. “It would continue to build up and eventually a large plop of snow would fall straight down into the courtyard.”

Now, that problem has been eliminated since there is a flow path on all sides of the building.

The direct benefits of the system are protection of the building’s structure because of reduced risk of seams coming apart due to freeze/thaw. No snow accumulation on the roof reduces its stress, increasing its longevity, making it a more stable platform, and ultimately reducing the risk of any moisture getting inside the building where timeless historic treasures need to be delicately preserved.

Finally, aesthetics were respected by hiding the heat trace between panel ridges in the roof’s design.

“The challenge with a historic building or museum buildings is that they don’t want to see any heat trace,” explained Tom Duszynski, a sales manager at the time of the first installation. “They don’t want anything to work against their design.”

Delta-Therm's unobtrusive stainless steel clips were installed to blend seamlessly. Engineers worked directly with the architect to ensure satisfaction. For the future, there is talk of a new wing being added onto the First Division Museum.

"I believe that's going to become serious in the spring," said Garcia. "So far the notion is that the roof and gutter there will have heat trace, and that heat trace will be Delta-Therm's."

About Delta-Therm

Located in Crystal Lake, IL., Delta-Therm Corporation is a family-owned manufacturer and designer of innovative heat trace systems for commercial and industrial applications. The company celebrates its 50th year in 2018. www.delta-therm.com