

Project Profile



Project

Veterans Memorial Coliseum
Madison, Wisconsin

Owner

Dane County, Wisconsin

Roofing Consultant

Structural Research, Inc.
Middleton, Wisconsin

Roofing Contractor

Walsdorf Roofing Company, Inc.
Kiel, Wisconsin

Roofing System

Adhered EnergySmart Roof®
using 80 mil Sarnafil® G410
membrane

Project Size

123,000 square feet

Completed

June 2009

Sika Sarnafil Breaks the Ice on Coliseum Roof

The striking, scalloped shape of the Veterans Memorial Coliseum dome roof, as well as the architectural “waterspouts” that protrude from the perimeter valleys, make the building a distinctive landmark in the Madison, Wisconsin skyline. Unfortunately, however, the roof’s unusual shape also creates numerous problems during the winter months, when snow and ice create problems not only for the roof, but for nearby pedestrians and vehicles as well.

“The curvature of the dome and the massive depths of the valleys combine to facilitate significant snow accumulation in those areas of the roof,” explained Todd Culliton, vice president of Structural Research Inc. (SRI) of Middleton, WI.

He explained that this thick, insulating layer of snow and the heat loss from the building would melt the snow at the roof membrane level. Some of the water from the melted snow would run off the valleys and onto the unheated waterspout areas where it would freeze, creating an ice dam in the valley areas and forming huge icicles. “During the most severe conditions the icicles would grow one inch per hour and reach lengths of 25 feet,” he added.

“At times we had to have the local fire department come out to spray water on the ice to melt it,” said John Schraufnagel, project engineer for Dane County. The ice and snow formations posed a danger to Coliseum visitors, so concrete culverts were added over the pedestrian walkways. Portions of the parking lot also had to be closed at times to prevent damage to nearby vehicles.

The roof was also a victim of the damaging ice and snow. When snow and ice accumulated in the valleys, it would start melting at the lowest part of the ridges, creating one-foot voids where the water would run. This created ice bridges between the two valley slopes, which created abrasion and damaged the roofing membrane. In addition, the falling icicles damaged the flat areas of the roofs below.

SRI and Sika Sarnafil Work to Bridge the Problems

Dane County asked SRI to come up with recommendations on how to eliminate the ice and snow problems when replacing the roof of the Coliseum. “During our investigation we found out that the original roof failed for two reasons,” Culliton said. “First, the membrane was mechanically attached, allowing the ice bridge to create

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a 'wave' of membrane to be pushed up and damaged as the ice forced its way over the surface."

Culliton said the second reason for the roof's failure was because it only had 22 mils of membrane above the scrim material. "The abrasion of the slide ice eventually wore through the membrane above the scrim, exposing the non-UV stable material below," he stated.

SRI decided to use an adhered, Sika Sarnafil 80 mil polyester-reinforced roofing system for the Coliseum's new roof. "We selected the Sika Sarnafil system because of its high quality and because it also had the most mils of membrane above the scrim," Culliton explained. "We have done many projects with Sika Sarnafil and both their reputation and our experience with them are very good."

Harry Walsdorf, field supervisor at Walsdorf Roofing Co., of Kiel, WI said, "We feel more comfortable with Sika Sarnafil than with any other brand. Their products are great and their tech support is always there for you. If you don't have the answer they will find it for you."

Culliton added that the decision to fully adhere the membrane was made because that method of roof attachment would "stop the formation of a membrane wave as snow and ice unloaded from the valley."

A Dam Good Solution

SRI decided to take a "belt and suspenders" approach to the critical valley areas, Culliton explained. SRI's design called for a layer of Sika Sarnafil's 48 mil membrane to be installed in the roof valleys, reaching up to 18 inches on the valley sides. Then a layer of the Sika Sarnafil 80 mil membrane was installed over the 48 mil layer, reaching up to two feet on the valley sides. The remaining membrane sheets were then lapped and welded onto these two-foot sections and the rest of the roof system was then installed

In addition, SRI also designed a sophisticated heat trace system — managed from one internal location — for the water spout locations to reduce ice damming and stop the formation of icicles.

These unique design features and the attention to detail earned SRI accolades from those involved with the project. "SRI Consultants are phenomenal — the best



people to work with, in my opinion," Walsdorf stated. "Their design for this job was outstanding."

Added Schraufnagel, "SRI produced a good set of specifications and adapted them well to this situation, which was not an easy task. I would definitely work with them again."

A Slippery Slope

Installation of the new roof was very challenging, due to the "intimidating" steep slopes, Walsdorf said. To keep the workers safe, each Walsdorf Roofing crew member was tied off and a special railing system was installed at the lower edge of the valleys as a secondary fall protection system. Materials and tools were brought up to the top of the roof using what Culliton referred to as an "ingenious" trolley system built by Walsdorf.



"Walsdorf Roofing did a fantastic job and were very creative in their approach," Culliton said. "Their work on this was unparalleled."

Sika Sarnafil representatives also played a role in the success of the project. "They made sure everything was okay and that we weren't having any problems," Walsdorf stated. Added Culliton, "The local Sika Sarnafil representative worked with us from the very beginning and led us to our decision to go with the 80 mil membrane."

A Shining Landmark

The outstanding work of all involved was certainly recognized by Sika Sarnafil — SRI Consultants earned First Place in Sika Sarnafil's 2009 Roofing Consultant Project of the Year competition, and Walsdorf Roofing was awarded Third Place, Steep Slope category, in the company's 2009 Roofing Contractor Project of the Year event.

Today the new roof of the Coliseum is performing well. "We are very happy with the results," Schraufnagel said. "This winter has been a good test of the roof — we had 15 inches of snow in two days without any problems."

Culliton remarked, "We are confident this roof will provide problem-free performance for decades and will continue to be a trademark of the Madison skyline for years to come."

And that's no snow job.

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