

Project Profile



Project

Frederic C. Hamilton Building
Denver, Colorado

Owner

Denver Art Museum

Roofing Contractor

Black Roofing, Inc.
Boulder, Colorado

Consulting Engineer

Simpson Gumpertz & Heger
San Francisco, California

Roofing System

Adhered 80 mil Sarnafil® G410
membrane in custom “arrow” color

Project Size

15,000 square feet

Completed

October 2010

Sika Sarnafil Roof on Denver Art Museum a Thing of Beauty

It's not often that a roof is considered a work of art, but the almost-vertical roof of the uniquely shaped Frederic C. Hamilton Building plays an important role in the building's distinctive look. Designed by world-renowned architect Daniel Libeskind, the Hamilton building was considered to be an architectural stand-out when it opened in 2006, and soon became a local landmark.

There was one problem, however. Three weeks after its grand opening, the titanium roof began leaking.

“The original roof was leaking around the detail areas, and there were also problems with air movement beneath the roof,” said Dr. Raymond LaTona, senior principal / vice president at engineering firm Simpson Gumpertz & Heger (SGH) of San Francisco. “As you can imagine, this was not a good scenario for a museum housing millions of dollars of artwork.”

A Classic Performer

LaTona said that SGH spent several years investigating and repairing the museum's roof until a permanent solution could be found. “We wanted a roofing system that would be cost-effective and which could be implemented without disrupting

the operation of the museum and while continuing to keep the building watertight,” he explained. “We also wanted something that would simulate the look of the original titanium.”

The Sika Sarnafil roofing system met the above criteria, and “we were confident it would be an appropriate system for this application,” LaTona remarked. “My firm has designed and installed Sika Sarnafil systems for many years, so we knew it was a proven system.”

Terri Cross, manager of protective and facilities services at the Denver Art Museum, said she was pleased that they selected the Sika Sarnafil system. “We have used Sika Sarnafil roofs on other parts of the museum and have always had good experiences with the company and its employees,” she said.

A Masterful Installation

Black Roofing, Inc. of Boulder, Colorado was selected to install the multi-level roof with a 10/12 and 6/12 pitch — a roof so steep that “it was more like a wall than a roof,” said Rich Rutledge, former deputy director of operations at the Denver Art Museum. “We believe this was the most difficult re-roof project in the history of Colorado!” remarked Tim Black, president. “We had three issues that were constantly in front of us: the

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crew's safety, the public's safety, and the crane safety. Not one thing could fall to the ground, come loose, or appear to be out of control."

Preparation the Key

To prepare for this perilous installation, Black Roofing spent months and \$29,000 custom-designing and building 24-inch-wide galvanized scaffold support platforms to support 40 12-foot-long, 24-inch-wide scaffold planks. "The pre-planning stage for this was more intense than I've ever seen," Black stated. "We built a mock-up of the roof in the shop and scaffolding support in our shop and did 'live tests' on the platforms. We only had seven months to complete this project so we didn't want to waste a minute once we were on the job site. The entire job took 31 men from April to October to complete."

Despite all this advance work, there were still some problems with the safety harnesses and ropes at first. "We had problems with crossed ropes until we learned to work perpendicularly up the 10/12 slope, and not cross into the next guy's territory," Black explained. "We also learned that sometimes six men could work more efficiently than 10 men in an area."

Alan Nedelea, project manager for Black Roofing, added that for public safety, a debris net was fabricated and installed around the perimeter "to prevent anything from falling on the people below." Chain link fences and scaffolding were also used to keep the public out of potentially dangerous areas, including near the crane.

Weather-Proofing Job Site

Keeping the museum and its contents watertight the entire time was also a main concern. Black Roofing built tarps with ropes welded to the back sides so that the crew could fold the tarps up and down the slope almost immediately if a storm was approaching. Velcro was glued to the side laps so the tarps would be instantly bonded on the vertical lap. Custom-built tarps were used to keep three very large skylights watertight. The skylight subcontractor



removed the old frames, installed new curbs and filled in one skylight to make it smaller.

"I was constantly monitoring the weather on a computer – which was important since we had a very wet spring and summer and so had many opportunities to use our tarp system," Nedelea said. "If it looked like rain the crew had to cover the roof within 15 minutes or less. Fortunately we never had a significant leak all summer."

Despite these difficult challenges, Black Roofing did a "very good" job on the installation, according to LaTona. "Working in and around a museum comes with its own challenges because of art and security, and Black Roofing was able to work around that and was very safety conscious," Rutledge stated. Cross added, "Black Roofing's

customer service is very strong, and they have proven themselves over and over to us." It was this professionalism and attention to detail that earned Black Roofing First Place in Sika Sarnafil's 2010 Contractor Project of the Year, Steep Slope Category.

Nedelea pointed out that Sika Sarnafil representatives were very helpful in making this a successful installation. "They were there from the pre-planning material procurement to the close-out process," he explained. "In the field they helped us find solutions and simplify extremely difficult specifications, which allowed us to keep the project on schedule. I was very impressed."

Work of Art Shines Again

Today the Denver Art Museum and its patrons are once again delighting in the Hamilton building "We're very happy with the way the roof is performing" Rutledge said. "This unique building and the Sika Sarnafil roofing system are good mates."

"I could not be any more pleased," added Cross. "I would definitely use the Sika Sarnafil roofing system again."

Sounds like another Sika Sarnafil masterpiece.

Sika Sarnafil

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