Project Profile

Project
University of Iowa Chemistry Building
Iowa City, Iowa

Owner
University of Iowa

Roofing Contractor
Horizon Roofing, Inc.
St. Cloud, Minnesota

Roofing Consultant
Benchmark, Inc.
Cedar Rapids, Iowa

Roofing System
Adhered roof system using Sarnafil® feltback waterproofing membrane and Grid System using G459 membrane along perimeters

Project Size
2,203 square feet

Completed
December 2010

"Hybrid" Sika Sarnafil System Keeps University of Iowa Chemistry Building Dry

The old roof on the University of Iowa Chemistry Building in Iowa City had suffered a lot of abuse in its day. The numerous ductwork and machinery on the roof required a lot of maintenance, which meant there was a lot of foot traffic on the EPDM roof. Servicing of equipment within the adjacent rooftop penthouse also required moving 800-pound motors across the roof, which "caused a lot of damage to the existing roof," said Tom Irvine, RRC, CDT, Senior Consultant at Benchmark, Inc. of Cedar Rapids, Iowa. "Heavy traffic occurs frequently, so we knew that the next roof would need to have a paver system for protection," he said.

Benchmark recommended a "hybrid" system borrowing from the grid and flashing technology of the Sika Sarnafil Grid Waterproofing System. The Grid System reduces the risk of expensive removal and replacement of overburden by preventing water migration under and within the underlying waterproofing. Strips of grid membrane were adhered to the structural deck around the perimeters to act as a sub-membrane water stop to prevent the infiltration of any water from the adjacent structures into the roof system. For the Chemistry Building, the adjacent rooftop penthouse structure lacked reliable watertight integrity and needed to be isolated from the roofing. The feltback waterproofing membrane was then installed in the field of the roof between the grids.

"We went with the Sika Sarnafil system because we have experience with Sika Sarnafil products and know they are durable," said Jeffery Hayes, Design Project Manager, Facilities Management at the University of Iowa. "I also like how the seams are hot-air welded. It's hard to find an equal to the Sika Sarnafil systems."

A Grinding Installation

Because of the complexity of this project only four roofing installers bid on the project. Horizon Roofing, Inc. of St. Cloud, Minnesota was one of those contractors. "In addition to being very complex, at $84 per square foot this was also one of the most expensive projects we have ever bid on," said Robert Jodsaas, general manager at Horizon Roofing.

Jodsaas said the biggest challenge of the project was removing the two-ply vapor

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barrier from the decking so they could achieve proper adhesion in areas that needed to receive the new grid strip membrane with the specified grid adhesive. "Since the concrete surface doubles as a grounding plane for the Electric Field Vector Mapping® system, the field of the roof also required cleaning," he explained. (The EFVM uses pulses of low voltage electricity to detect roof system breaches, even with overburden in place.)

To accomplish this, Horizon Roofing opened the existing EDPM roof membrane, ground the concrete, and then closed the roof back up to keep it watertight. "Grinding the concrete generated a lot of dust, so we had to sweep and vacuum as we went along," Jodsaas stated. "We also had to complete the grinding before installing the grid strip."

Open and Close

Once the decking was ready, Horizon Roofing again reopened the old roof to install the grid strip at all the perimeters and then closed the EPDM roof to allow proper curing of the strips. "We opened and resealed the existing roof 14 times throughout this process," Jodsaas remarked.

After the old roof was removed, irregularities were discovered in the concrete flashing and grid strip substrates which had to be chiseled away to create a smooth surface. Half of the concrete perimeter walls required this level of preparation. "We also repaired six holes in the decking with 3/16" stainless steel and installed the specified new custom steel ductwork pipe supports," Jodsaas stated.

After all preparation and grid-related work, the feltback membrane was adhered to the decking and welded to the grid strips. Special heat-welding equipment was used along the Sarnabar to weld in place the specified Sarnacord for additional pull resistance. Then a Sarnabar batten bar was anchored through the grid strip around the perimeters with stainless steel fasteners into the concrete substrate.

Close Quarters

All of this work was done on a roof featuring numerous overhead obstructions and penetrations, creating a very tight work space. "We had to hand-weld seams and flashings because of the limited space,"

Jodsaas pointed out. "It made seaming more time-consuming, but it was the only way to complete the work."

He added that Sika Sarnafil and Benchmark representatives were onsite quite often, and were "very helpful."

After EFVM leak detection testing was conducted, Horizon Roofing loose laid the specified membrane protection course prior to proceeding with the installation of the overburden. The overburden consisted of 40 psi extruded polystyrene insulation with 2" concrete pavers in the areas receiving heavy maintenance traffic, and flush T-clear panels on the balance of the area.

Horizon Roofing also restored the previously covered overflow scuppers, installed new insulation and jacketing on several roof top pipes, and installed new pipe supports on the horizontal pipes. "We also installed new 22 gauge stainless steel flashing and custom-made pipe jacks, and anchored them to the paver system," Jodsaas stated. "We then soldered all the metal joints and finished the project."

"This was a very difficult project because of the need to keep the building watertight while working in a very congested area," Irvine said. "The installers were constantly crawling around under pipes and through equipment, and there were lots of details and penetrations to deal with throughout the area."

"This was a very tough project because there were so many things to deal with," Hayes added. "If you can do this project, you can do almost any roofing installation."

Despite all these challenges, Horizon Roofing was able to complete the project close to budget and was awarded Third Place in Sika Sarnafil's 2010 Contractor Project of the Year, Waterproofing Category.

A Problem-Free Roof

"Today the roof is performing well – there are no issues that I'm aware of," Hayes said. "I would absolutely use Sika Sarnafil roof systems again."

"Everyone is happy with the project and how the roof is performing," Irvine said. "This is a good long-term installation and I'm looking forward to this roof being issue-free for a very long time."

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