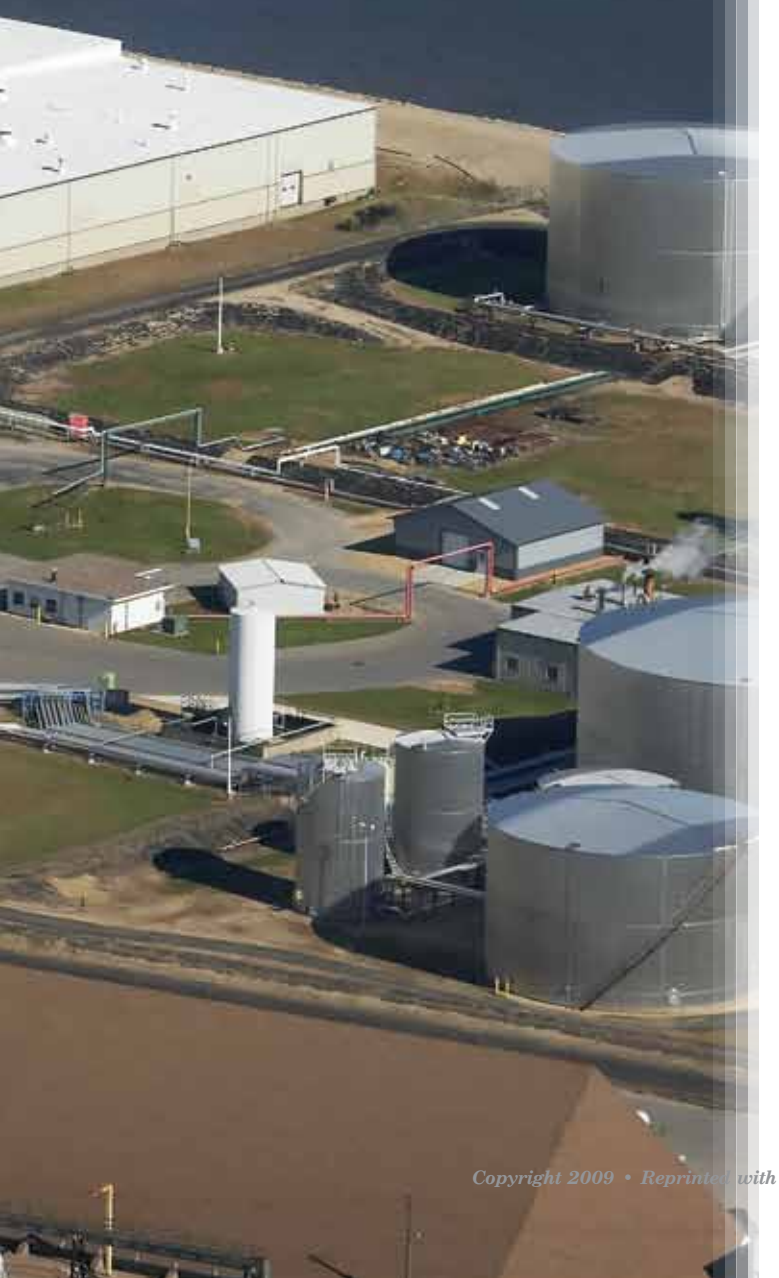
With more than 20 years in the SPF roofing business, the crew from Kohls Foam Systems was confident that they could handle anything that a leaking roof could throw their way. Large-scale jobsite? Check. Multiple problems on one roof? Check. Out-of-town project? Check. Environmentally sensitive location? Check. Weather-rushed deadline? Check. But combining all of these elements on one roof, the Hodge Company project would require careful planning and skilled teamwork to turn a weather-worn roof into an SPF masterpiece.

RIVERFRONT ROOF NEEDS SPF HELP

By Syndee Holt

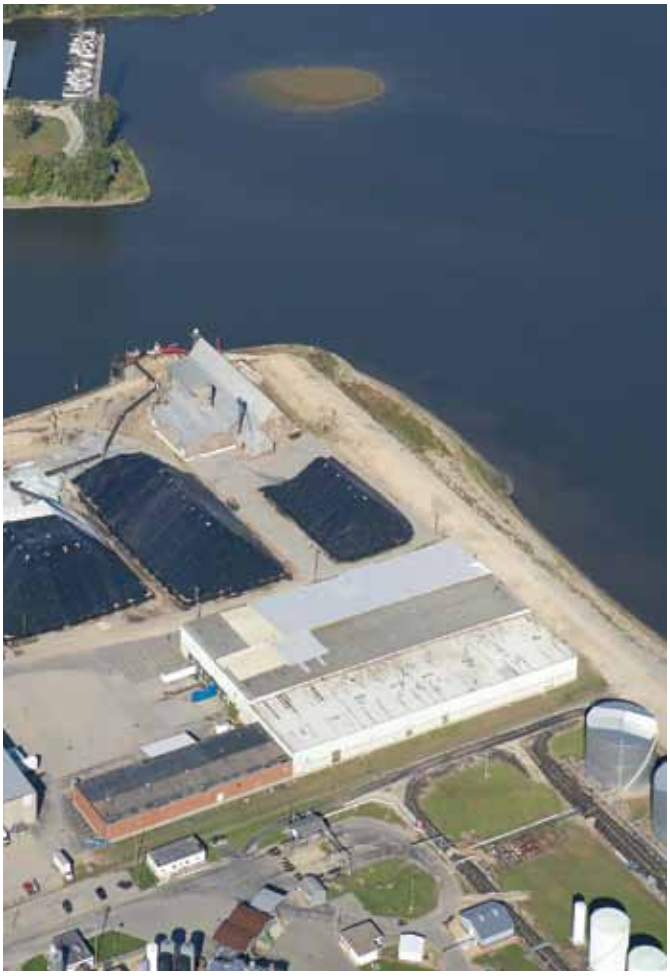


The Hodge Companies, a bustling materials handling and warehousing business located on a Mississippi river bank in Dubuque, Iowa, had a big problem — about 127,000 square feet of problem. Their building's huge, flat, corrugated metal roof was badly leaking and was starting to affect tenant businesses. So, in February 2006, Tim Hodge, the owner of Hodge Companies, did what millions of other people in need of service do — he hit the Internet. He was considering using Ethylene Propylene Diene Monomer (EPDM), the single-ply roofing membrane already partially covering the roof. After researching it, however, he decided that an SPF system would provide the most cost-effective re-roofing solution, while at the same time decrease the building's year-round energy consumption. It was this research that led him to the Kohls Foam Systems' Web site.

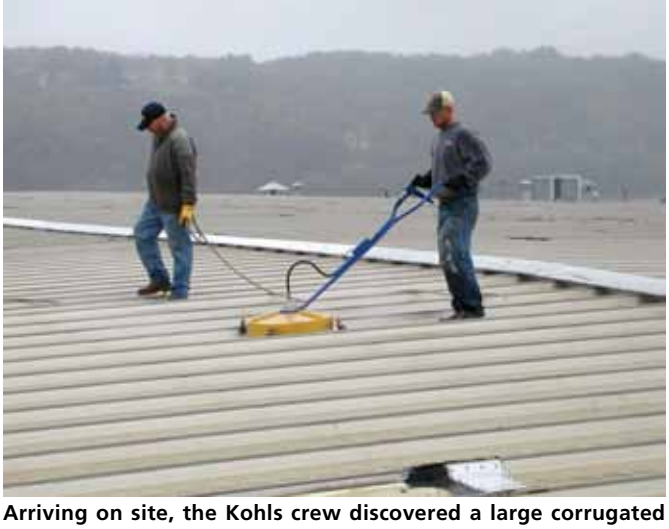
Kohls Foam Systems, located in Norwood/Young America, Minnesota, has been in the SPF business since 1987. Jon Kohls was just finishing college and working for an SPF installation company when the owner of the company decided to sell the business and move to another state. So, Jon bought the business. In 1997, his brother Pat joined the business, taking over the marketing/sales/managerial duties while Jon worked in the field as an on-site spray foam applicator. Having entered the industry from the ground up, the brothers provide a strong presence, promoting the growth of the SPF industry both in the field and on the Web.

Taking the Extra Step

Once contacted by Hodge, Kohls immediately sent Bruce Kelaver, head of sales, and Pat Horan, the rep for the SPF manufacturer Roof-Tek, to make the initial sales call. After several weeks of calls and e-mails containing the facts and figures of the tremendous roofing project, the contract was signed in early August. Chief among Hodge's concerns was the fact that the building would need to remain open 24 hours a day/six days a week during the re-roofing process. With decades of commercial and residential roofing experience, this was not a problem for the Kohls crew.



Because the warehouse is located on the banks of the Mississippi River, the jobsite was classified as extremely environmentally sensitive. The crew had to carefully guard against overspray. Not only did they want to avoid tagging cars and people, they also had to avoid getting any overspray in the river. Once cured, the SPF was immediately trimmed and disposed of so that wind and rain would not carry it off.



Arriving on site, the Kohls crew discovered a large corrugated metal roof — approximately 127,000 sq. ft. — covered in a variety of failing coatings. In addition to 49 leaking fiberglass skylights, 108,000 sq. ft. of the roof was covered in fully adhered EPDM membrane, while the remaining 19,200 sq. ft. was covered in gravel built-up.

There was, however, a problem looming — Mother Nature. The roof had to be completed by the end of the "roofing season," which typically arrives in the last couple of weeks of October in Dubuque. Out-of-area projects, such as this roof, also need a more defined timeline for the work crews who will be traveling to the area to complete the project.

Pat Kohls explains their out-of-area project success: "You always want to do your best on a project, but when doing out-of-town work, you tend to go the extra step, because the last thing you want to do is to have to return the long distance to do a repair. We go the extra mile on the initial application so we won't have to come back." Additionally, they assure the client that if an after-project completion need arises, they can have crews on-site within 24 to 48 hours on out-of-town work.

Kohls Foam Systems also encourages a joint warranty with the manufacturer on larger projects. "Face it," Kohls states, "roofing companies are all one big lawsuit from going out of business. A joint warranty with the manufacturer will protect the customer if the contractor is forced to go out of business." In fact, Roof-Tek had numerous representatives on-site in Dubuque throughout the application process, to assist both the Hodge Company and the Kohls crew with technical information. Kohls explains, "We use BASF-Roof Tek because of people like Jim Andersen at BASF and Pat Horan at Roof-Tek. The product is a great product, and we've had a great relationship with these two gentlemen from the beginning of our spray foam business. Their customer service and product knowledge makes them a valuable addition to our project teams."

Through Wind and Rain, Snow and Sleet ...

When the Kohls crew arrived at the jobsite, they found many challenges. Throughout the large roof, the screwheads that fastened the seams of the roofing were starting to loosen, and the metal was starting to lift up, causing leakage over the entire roof. The roof's 49 fiberglass skylights were also in need of leak repair because the metal flanges that held them in place had deteriorated.

Not only did the crew face a huge expanse of corrugated metal roofing, but about 19,200 square feet of the west side of the roof was built-up gravel, which would need to be removed. Fortunately, the roof's east end, an area comprising roughly half the structure, was fully adhered EPDM rubber roofing membrane, which could be easily coated over.

In addition to the roof's split personality, the atmospheric conditions themselves were unstable. Located directly on a Mississippi riverbank, the site's weather and wind conditions changed at a moment's notice. Throughout the project, the crew faced weather that varied from a sunny 75ºF to rain, snow, and even ice. And then there was the wind. "We had to watch the weather forecasts the night before and try to anticipate what the wind and weather would be. Then, the next morning, we'd block off the affected areas below for parking so we could work in that particular section," Kohls explains. "If we were wrong, we had to try to contact drivers and move cars and trucks around to protect them from overspray. This would take a good amount of time each morning, or they would have to wait for the next shift to come in."

Due to the proximity of the project to the river, great care was taken to ensure that the frequent rains and winds did not wash

JOB at a GLANCE

RIVERFRONT WAREHOUSE ROOF

PROJECT:
Apply SPF to a 127,000-sq.-ft. roof — 108,000 sq. ft. of corrugated metal covered in EPDM, 19,200 sq. ft. covered in gravel built-up — on warehouse located on shores of Mississippi River.

SPF CONTRACTOR:
Kohls Foam Systems
18055 Cole Court
Eden Prairie, MN 55347
(612) 708-4111
www.kohlsfoamsystems.com

SIZE OF CONTRACTOR:
8-10 employees
A 6- to 8-man crew worked this project

PRIME CLIENT:
The Hodge Companies
Dubuque, IA

SUBSTRATE:
127,000 sq. ft. of corrugated metal roofing, about half of which was covered with fully adhered EPDM membrane; approximately 19,200 sq. ft. of the roof was covered with gravel built-up

SUBSTRATE CONDITION:
The roofing was leaking at several seams and around the numerous skylights

DURATION:
22 days beginning in September

UNUSUAL FACTORS:
- River bank location demanded environmental sensitivity
- River bank location created constant windy conditions
- Building open 24 hours a day/ six days a week during project

MATERIALS/PROCESS:
For Metal Roof:
- Prep surface by acid etching with Conklin Company's Rust Off spray-applied with Hudson sprayers
- Pressure wash metal substrate using 4,000 psi power washers
- Install new metal flanges to 49 fiberglass skylight panels
- Towel-apply acetone to new metal flanges
- Roller-apply Roof-Tek 7500 Acrylic Primer to new metal flanges
- Any areas of roof in which the EPDM was fully adhered, Roof-Tek 500 EPDM Cleaner/Primer was spray-applied using Hudson sprayers
- Spray-apply Conklin Company's WAK Cleaner onto the EPDM area of roof using Hudson sprayers
- Power wash twice using 4,000 psi power washers
- Spray-apply Conklin Company's Tack Coat II for EPDM using Hudson sprayers
- Spray-apply 1.5" of BASF-FE Roof-Tek TR 2716 Series, 2.7 Roof foam using a Graco/Gusmer H-20/35 Pro
- Spray-apply 27 to 30 mils DFT of acrylic latex elastomeric coating Roof-Tek 4200 using Graco 733 airless sprayers

For Gravel Over Built-Up Roof:
- Remove gravel using roof brooms
- Remove dust and dirt using Stihl blowers
- Spray-apply 1.5" of BASF-FE Roof-Tek TR 2716 Series, 2.7 Roof foam using a Graco/Gusmer H-20/35 Pro and 2 Gusmer H-2s fitted with GX-7 guns
- Spray-apply 27 to 30 mils DFT acrylic latex elastomeric coating Roof-Tek 4200 using Graco 733 airless sprayers

SAFETY CONSIDERATIONS:
- The crew used safety lines around the ladder and the 4-foot perimeters of the areas in which they were working
- Safety monitors in place while crew on roof
- The crew wore 3M respirators while spraying as well as long-sleeved shirts, pants, and steel-toed boots

or blow any cured scraps of SPF off of the roof. "Cured SPF was immediately trimmed off, retrieved, and disposed of before the winds could blow them into the Mississippi," Kohls recounts. The crew also needed to keep themselves from blowing off the roof.

They established safety lines around the ladders and four-foot perimeter lines around the areas in which they were working. Each skylight was marked and flagged with bright orange paint. A crew member also acted as a safety monitor in each of the areas to be coated. The safety monitors were tasked with keeping the applicators aware of the surroundings, including the skylights and roof edges. All members of the crew wore 3M respirators while spraying, as well as long sleeves, heavy pants, and boots for further protection.

Gambling on Mother Nature

With safety precautions in place, the crew could focus on the roof itself. First, they removed the gravel from the 19,200-square-foot west section of the roof. Fortunately, the removal process turned out to be easier than expected. The Hodge Companies were going to install a new road next to the building's west end, so two crews of two men each swept the rock off of the roof with brooms and onto the proposed road section. "No further clean up of the gravel was needed as it would be used as the future road bed," Kohls chuckles. Then using Stihl power blowers, the crews blew the remaining dust and dirt off the roof section, repeating the cleaning process two more times.

The specification called for an acid etch surface prep, so two crews of two men each spray-applied Conklin Company's Rust-Off acid etch onto the roof using Hudson sprayers. They were immediately followed by two more two-man crews using 4,000 psi power washers to clean the prepped surface. The weather cooperated during this process with an overcast, mist-filled day. Since moisture helps the acid etch work better, the conditions were ideal.

Next, the roof was divided into five sections, and the crew marked any leak spots. New metal flanges had been made to fit around the skylights and were slid over the fiberglass skylight panels and screwed into place. The Kohls crew prepped the new metal on the skylights for foam application with acetone, which they applied with towels while wearing rubber gloves. Following the acetone application, the crew roller-applied a primer coat of Roof-Tek 7500 Acrylic Primer using half-inch nap rollers.

The roof's EPDM areas were cleaned with Conklin Company's WAK Cleaner, spray-applied with Hudson hand sprayers. The solution was allowed to sit for 20 to 30 minutes and then power washed twice with 4,000 psi power washers. Next, the crew applied Conklin Company's Tack Coat II for EPDM with Hudson sprayers to help create a better bond with the existing EPDM membrane. The Tack Coat was allowed to dry to the touch, with the drying time depending on the weather conditions at the time. The crew used 3M blue non-stick tape to create straight lines around the perimeters and around the exhaust stacks as a mask for the SPF application.

Each morning, the crew would spend about one to one and one-half hours blow drying the prepped surfaces with Stihl power blowers to remove any dew or moisture. Meanwhile, a second Kohls crew was making sure that the equipment was clean and functioning and that the 40 KW Katolight generators, mounted in the foam trailer, were fueled and ready to go.

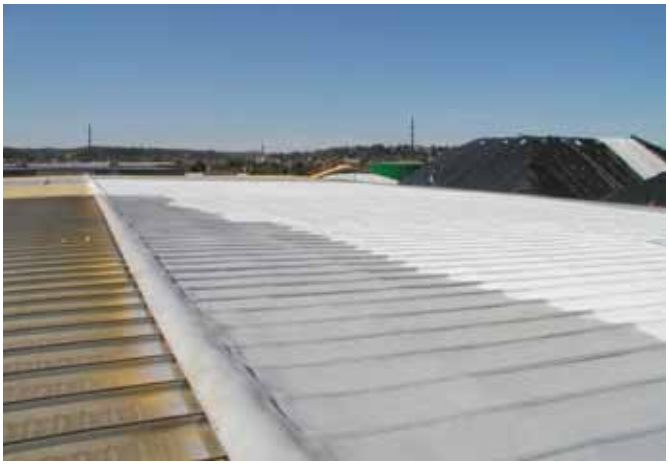
The foam was stored in the warehouse at night, so the crew

Located directly on a Mississippi riverbank, the site's weather and wind conditions were extreme. Although the contract was signed in late summer, and the job progressed according to schedule, the Kohls crew still had to plan for unplanned delays caused by Mother Nature. During the course of the job, the crew faced wind and weather conditions ranging from a sunny 75°F to rain, ice, and even snow.

would use the warehouse company's forklifts to pull the foam out and fill the pump tanks. This guaranteed that the foam's temperature would never dip below 70°F.

"When we worked with the foam, we sprayed each prepared section with BASF-FE Roof-Tek RT 2716 Series, 2.7 Roof Foam using a Graco/Gusmer H-20/35 Pro and two Gusmer H-2s fitted with GX-7 guns with hoses heating the components all the way to the gun to between 125°F to 130°F," says Kohls.

The foam was sprayed in two different directions—east to west and then west to east—to make sure both sides of the ribs and the seams were encapsulated in SPF. Each section received a 1.5-inch layer of SPF. Each exhaust stack was also sprayed. The crew sprayed up a portion of the stack, using hand rollers to finish the tops of the stacks to prevent overspray.



After an acid-etch surface prep, the crew used ½" nap rollers to apply a primer coat of Roof-Tek 7500 Acrylic Primer. Then, using a Graco/Gusmer H-20/35 Pro and 2 Gusmer H-2s fitted with GX-7 guns, they spray-applied a 1 ½" layer of BASF-FE Roof-Tek RT 2716 Series, 2.7 Roof Foam. This was followed by an acrylic latex elastomeric topcoating of Tek 4200, applied at 27 to 30 mils DFT, with Graco 733 airless sprayers.

Due to prevailing winds from the river, the foam was applied to the final section on the north-northwest quadrant under halogen lighting set up on the roof surface so that the crew could apply the foam after the winds had died down for the evening. Since this was the last section in which foam was applied and rain had fallen a number of times before they coated the area, the crew power washed the roof again before they applied the SPF in this section.

Rising to the Challenge

Kohls recounts, "This foam application was allowed 24 hours to cure whenever possible." However, due to the ever-changing weather conditions, the crew often elected to apply a light basecoat, about four mils DFT, of Roof-Tek 4200 acrylic latex elastomeric coating, applied with Graco 733 airless sprayers, to protect the SPF from the sun. When the weather permitted, the crew would return and apply a "normal" coat of approximately 27 to 30 mils DFT. "Some evenings, the crew tried to get this light basecoat on top to help the foam dry out the next day because the base coating is a darker grey color than the foam, which helped the dew dry quicker in the sun," explains Kohls. "And other times, we needed to get the light coat on to protect the foam from sun when two or three days of rain were predicted." In all cases, the final coat was applied to achieve a 27 to 30 mil DFT layer of the coating as soon as weather conditions allowed.

Working eight to 12 hours a day, the entire project took the crew of six to eight workers 22 days to complete. The October fifth completion date was well within the contracted timeline. Kohls proudly comments about his crew, "They worked extremely hard on this project — as with every other project we do. I'm very proud to have such a quality group of people working for us. They take as much pride in our projects as Jon and I do."

The best news of all? A few days before Christmas 2007, Kohls received a phone call from the Hodge Companies saying that the roof currently had three inches of ice and 10 inches of snow on it and there were no reports of leaks! In fact, Stephen "Ding" Bell of Hodges says, "When the weather causes a freeze and then thaws again, it's like the water runs backward and finds any little crack. Before the roof was repaired, we would be fighting leaks all the time after a freeze and thaw. Now, we just don't hear about any leaks anymore." ***SF***