

James S. McDonnell Planetarium

JOB PROFILE



The Project

Name: James S. McDonnell Planetarium re-roof

Address: 5050 Oakland Avenue, St. Louis, MO

Square Footage: 4,000 square feet

Completion Date: April 2019

Project Duration: 1 month

Contractor: Bade Roofing Co., Inc.



The Saint Louis Science Center, located in St. Louis, MO, is one of the only free nonprofit science museums in the country. It serves more than one million people each year, making it one of the largest science centers in the United States. The James S. McDonnell Planetarium, a main attraction at the Saint Louis Science Center, opened in 1963, and features a 24-meter dome and one of the world's best opto-mechanical star projectors, the ZEISS UNIVERSARIUM Model IX.

The Problems

1. The existing roof was saturated with moisture and was starting to develop leaks, so a total tear-off was required. However, the planetarium houses sensitive equipment that CANNOT get wet: a multimillion-dollar projection system that displays on a 360-degree domed screen.
2. There were concrete step-offs located under the existing roof around the perimeter of the building, and there were no dimensions on the original plans, so creating the tapered insulation layout would be especially tricky.
3. The roof itself is unusual; it's perfectly round, yet slightly bowl-shaped, with an interior round penthouse. The unique shape made it difficult to design a tapered system, flashings, and terminations for this 30-year project.
4. The facility hosts daily educational presentations for school children, as well as special events and exhibits, so work couldn't take place during business hours.
5. The entire roof is surrounded by 5-foot-tall parapet walls, so tear-off and loading material would be complicated.

The Proposal

1. The roof had to be torn off, but the \$1.6 million projection system inside the building absolutely could not get wet.
2. Bade Roofing decided to go with a SureMB 120TG Base Ply/Temporary Roof to ensure the expensive equipment inside the building would be safe and protected throughout the installation process. Of the decision to use SureMB 120TG, Drew Bade from Bade Roofing says, "It was a secondary line of defense that allowed us to remove the entire roof all at once and not have to rely on tie-ins from the old roof to the new one when the crew started and stopped each night."
3. Concrete step-offs around the perimeter of the building were under the existing roof, and there were no dimensions on the original plans, so creating the tapered insulation layout was tough.
4. Drew Bade says, "This is another reason we decided to use the SureMB 120TG; it allowed us to really see what was going on with the tapered and make adjustments prior to ordering."
5. The roof itself is perfectly round, yet slightly bowl-shaped, making it difficult to design a tapered system, flashings, and terminations for this 30-year project.

6. Drew says, "The Science Center and the architect both have a history of using EPDM on their projects because they've had a lot of success with it. And with the uncommon design and shape of this roof, EPDM was perfect to mold into all the unique angles and it did a good job conforming to the many curves of the building. We used a 90-mil EPDM to get the 30-year warranty the Science Center wanted and for the overall longevity of the roof."
7. Work couldn't take place during business hours. "For this job, we brought in light towers and worked from about 5 pm until 2 or 3 o'clock in the morning," reports Drew.
8. The entire roof is surrounded by 5-foot-tall parapet walls, making tear-off and loading material extra complicated. Drew says, "We brought in a larger crane that could clear the parapet walls to remove the tear off and load the new material."

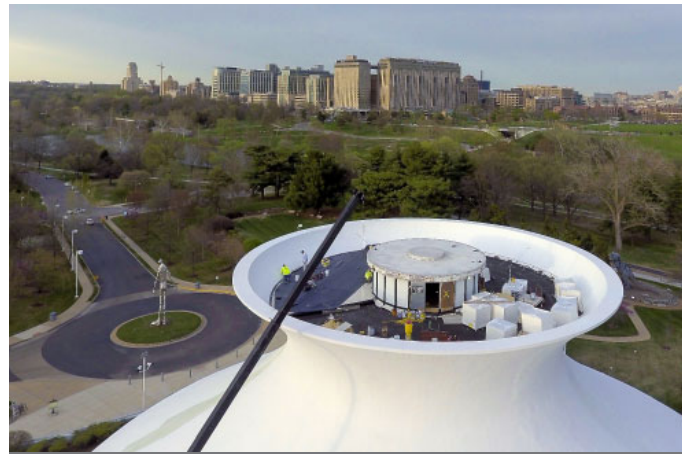
The Products

- .090 VersiGard® EPDM fully adhered with G200SA Bonding Adhesive
- ½" SECUROCK® fully adhered with Flexible DASH™ Adhesive
- Tapered SecurShield® Polyiso fully adhered with Flexible DASH
- Base layer of 2" SecurShield Polyiso fully adhered with Flexible DASH
- SureMB 120TG Base Ply
- CAV-GRIP® 3V Low-VOC Adhesive/Primer applied to concrete deck

The Process

"We started by priming the concrete deck with CAV-GRIP 3V," says Drew. CAV-GRIP 3V is an easy-to-apply, low-VOC aerosol adhesive/primer ideal for use on a variety of substrates. "Then we installed the SureMB 120 TG Base Ply/Temporary Roof." Installing a temporary roof ensured that the multimillion-dollar projection equipment inside the building would stay dry throughout the roofing project, even if the project was delayed by weather.

"After that we used Flexible DASH Adhesive to install a base layer of 2" SecurShield polyiso, which has a special facer, followed by a layer of tapered SecurShield polyiso, also adhered with Flexible DASH." SecurShield polyiso's coated glass facers improve the product's fire resistance, moisture resistance, and dimensional stability, and Flexible DASH offers excellent wind uplift performance and enhances the roof's resistance to hail and punctures.



The James S. McDonnell Planetarium is located in Forest Park, a 1,300-acre public park operated by the City of St. Louis. Forest Park opened in 1876 and today it attracts 13 million visitors each year.

"We then used Flexible DASH to install a coverboard to make the roof even more durable, followed by a 90-mil VersiGard EPDM over top of the coverboard. The EPDM did a great job conforming to the building's angles and curves. We adhered the EPDM with Versico's standard Bonding Adhesive because it's got a long track record and it works," said Drew. Then once the job was complete, we issued a 30-year Versico warranty."

Conclusions/Why Versico?

"Bade Roofing's been in the industry for 50-plus years and we've been installing Versico for about 25 of those years," says Drew. "One of the main benefits of a Versico system, from a contractor perspective, is the support from Versico's tech reps. It's second to none; they make sure the job's done right and they're there every step of the way."



A SINGLE SOURCE FOR SINGLE-PLY ROOFING

Versico, PO Box 1289, Carlisle, PA 17013
Tel: **800.992.7663** Fax: 717.960.4036 Web: **www.versico.com**