Sure-Seal® EPDM
Cool Gray Membrane

CASE STUDY

Balancing Form, Function, and Fun at the Great River Children's Museum

Accessibility, imagination, and education: Those are the foundational concepts for the Great River Children's Museum (GRCM) in St. Cloud, Minnesota. The new museum, which opened in late June of 2025, is the second-largest children's museum in MN and features eight permanent exhibit areas, including a three-story atrium simulating the clouds and weather. Each area is crafted to inspire creativity, physical movement, critical thinking, and connection to Central Minnesota's culture and environment. The museum was designed with a deep understanding of how children learn through playing.

The 31,000-square-foot museum is in a renovated 100-year-old bank building, designed by GLT Architects of St. Cloud and built by BCI Construction of Sauk Rapids, MN. Given the meticulous thought put into every element of the museum, it was not a surprise that the 17,000-square-foot roofing project was awarded to McDowall Company of Waite Park, MN. McDowall Company is a 130-year-old contractor specializing in HVAC, roofing, and architectural exterior systems, as well as service and support. The company is a long-time Carlisle SynTec Systems Authorized Applicator and has been recognized with Carlisle's Excellence in Single-Ply (ESP) Award, Perfection Award, and Perfection Council, and has been inducted into the Carlisle SynTec System Hall of Fame.

JOB PROFILE

PROJECT LOCATIONS:
St. Cloud, Minnesota

CARLISLE APPLICATOR:
McDowall Company

BUILDING OWNER:
The Great River Children's Museum

ROOFING SYSTEM:
- 60-mil Sure-Seal EPDM Cool Gray membrane with Factory-Applied Tape™
- CAV-GRIP® III Adhesive

THE GREAT RIVER CHILDREN'S MUSEUM

McDowall Company was brought on early in the process by BCI Construction to help identify a roofing solution that would not only protect the facility for decades to come, but also work with the building's redesign and accommodate the structure.

"Great River Children's Museum was a great project for us," said Matt McDowall, president of McDowall Company. "Not only is it a special project for our community, but from a roofing perspective it has a little bit of everything including steel, wood, and structural concrete decks, tapered insulation, both fully adhered and ballasted roofs, and a rooftop activity area. We couldn't have asked for a better project!"

Multiple Roofs and Assemblies

In total, there were five different roof areas on four different levels, comprised of both new construction and reroofing work. Each area had different requirements and assembly components due to the deck type, slope, drainage, and penetrations.

The entire structure was originally covered with a ballasted EPDM roofing system. Parts of the roof were old and had reached their service life expectancy, and other sections were removed or demolished to accommodate the building's new design. About half of the 17,000-square-foot roof had low-slope structural concrete decks. The other half of the roof had both steel and wood plank decks.

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"We recommended Carlisle's 60-mil Sure-Seal Cool Gray EPDM membrane for several reasons," said McDowall. "We've worked with Carlisle for over 40 years and have had great success with their products and super support from their technical team. Additionally, we really like the gray membrane, which is easy to work with, and, given the multiple deck types on the structure, we felt that it was the ideal solution for this project."

The first step for the McDowall team was to strip each roof section down to the deck to accommodate the new insulation and other roof components. But rather than filling dumpsters with old rubber membrane and ballast, the team was able to recycle it, keeping quite a lot of material out of the local landfill.

Over the largest section of concrete deck, about 5,000 square feet, McDowall first installed VapAir Seal™ 725TR Air and Vapor Barrier, a 40-mil composite consisting of 35-mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film, using Carlisle CAV-GRIP III Adhesive. "Our guys really like the CAV-GRIP product because it's very easy to use for quick, even coverage and can be used in cold temperatures like we commonly face here in Minnesota during the winter," said McDowall.

Next, the McDowall team installed two layers of 4 x 4-foot, 2.6-inch InsulBase® Polyiso insulation using Flexible FAST™ Adhesive. Tapered insulation was also installed using the same adhesive in each roof area to provide a consistent slope to the internal drains and scupper downspouts. Given the cooler Minnesota temperatures during the late fall, the McDowall team used a heated spray rig with heated hoses to keep the adhesive warm during application.

"The project was pushed back three months due to design changes and delays for structural steel, which moved the roofing work into the fall and winter months. At times, the temperature dipped into the 20s," said McDowall, "so it was critical that we not only keep the adhesive warm during application, but we also had to keep the unused adhesive inside and warm until we needed it."

Several of the roof sections included areas where old mechanical units had to be removed, leaving large holes in the deck which had to be repaired before the roofing work could begin. In addition, each of the roof sections included internal and overflow drains that had to be replaced with new construction drain bowl assemblies.

The 10-foot-wide, 60-mil Cool Gray EPDM membrane with Factory-Applied Tape was then installed using CAV-GRIP III Adhesive, a low-VOC, spray-applied aerosol contact adhesive. The process involved rolling out the membrane and folding it back, then applying the CAV-GRIP III to both the deck and the bottom of the membrane for 100% coverage. The membrane was then unfolded onto the deck, broomed, and rolled in to ensure complete contact. Given the colder weather, the team had to heat the primed seam area on the bottom of the membrane with a heat gun while the top sheet with Factory-Applied Tape was pressed into place using a steel hand roller.

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"Our guys really like the Factory-Applied Tape, which dramatically reduces jobsite labor during installation," said McDowall.

In addition, the largest part of the museum, which is nearly 35 feet tall, includes a host of rooftop mechanical and air-handling equipment, as well as a roof hatch. For this section, the McDowall team had to install the membrane under some of the air-handling ductwork which was about four feet above the roof's surface.

"Working around and under that ductwork was a challenge for the crew who had to be hunched over or crawling to install the membrane," said McDowall.

In addition, that section of the roof included several tall curbs that had membrane adhered to the sides and metal caps over the top. Carlisle walkway pads were also installed on this section to protect the roof's surface during routine maintenance to the air conditioning system and ductwork.

Other Challenges

One of the museum's eight permanent displays is a large, three-story climbing structure called 'Climber to the Clouds.' This interactive exhibit allows children to reach high vantage points for a wide view of the museum while exploring elements of weather where they can create thunder, control the wind, and race kites through the clouds.

"One of the biggest challenges we faced was the roof section over the 'Climber to the Clouds' display," said McDowall. "New building code in Minnesota requires an extensive smoke evacuation system over that area which has several duct penetrations through the roof as well as roof-mounted ductwork." For this section, the McDowall team had to work around and under the smoke evacuation equipment and carefully flash several large curbs holding the air handling units.

In addition, each of the five roof sections have parapet walls ranging from one to six feet tall. The McDowall crew terminated the membrane at the base of the parapet walls and then applied another sheet up the wall and over the top using the CAV-GRIP Adhesive. They then installed a shop-bent coping cap on top of each wall for a consistent look across each section of roof.

Rooftop Patio

In the center of the structure is a rooftop patio and play area measuring approximately 35 x 75 feet. The patio includes a quarter-round section of artificial turf, and about 2,200 square feet of 24-square-inch architectural porcelain pavers, which the McDowall team set on pedestals installed on top of the membrane. A series of three steel supports were installed over the top of the patio to support a series of brightly colored shade 'sails' for sun protection on the patio.

"I'm very proud of the work our team did on this project," said McDowall. "There were significant challenges between the different roof levels, the rooftop equipment, the weather, and the detailed finishing touches, which all required a high degree of professionalism and true craftsmanship."

Best of all, St. Cloud, MN now has a world-class museum for children of all ages, thanks in part to McDowall Company and Carlisle SynTec Systems.

McDowall Company, a Carlisle Authorized Applicator recognized for its outstanding performance and numerous prestigious awards:

PERFECTION 10 AWARD

ESP

CARLISLE HALL OF FAME APPLICATOR CENTURION

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