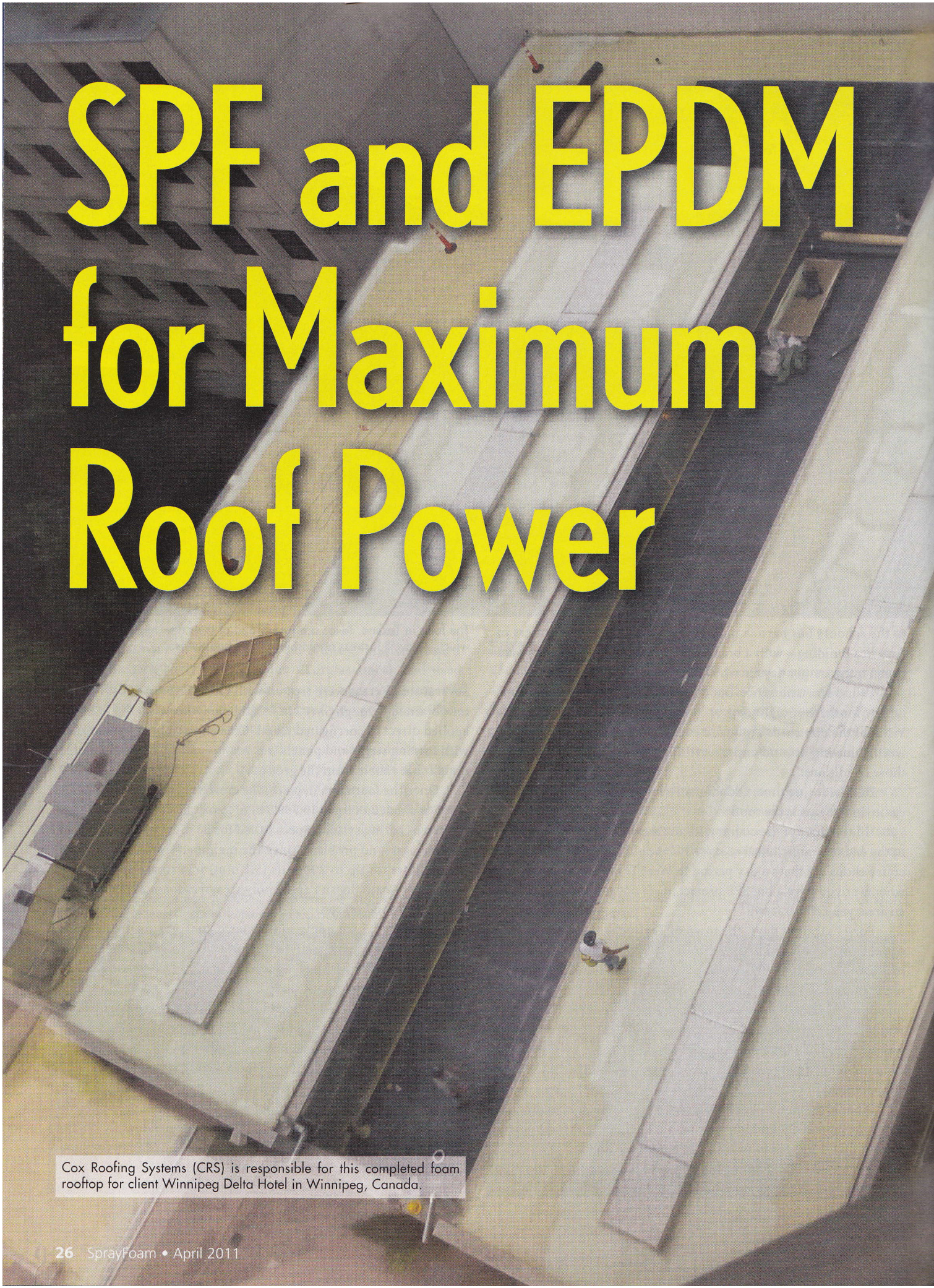
SPF and EPDM for Maximum Roof Power



Cox Roofing Systems (CRS) is responsible for this completed foam rooftop for client Winnipeg Delta Hotel in Winnipeg, Canada.

By Jennifer Frakes

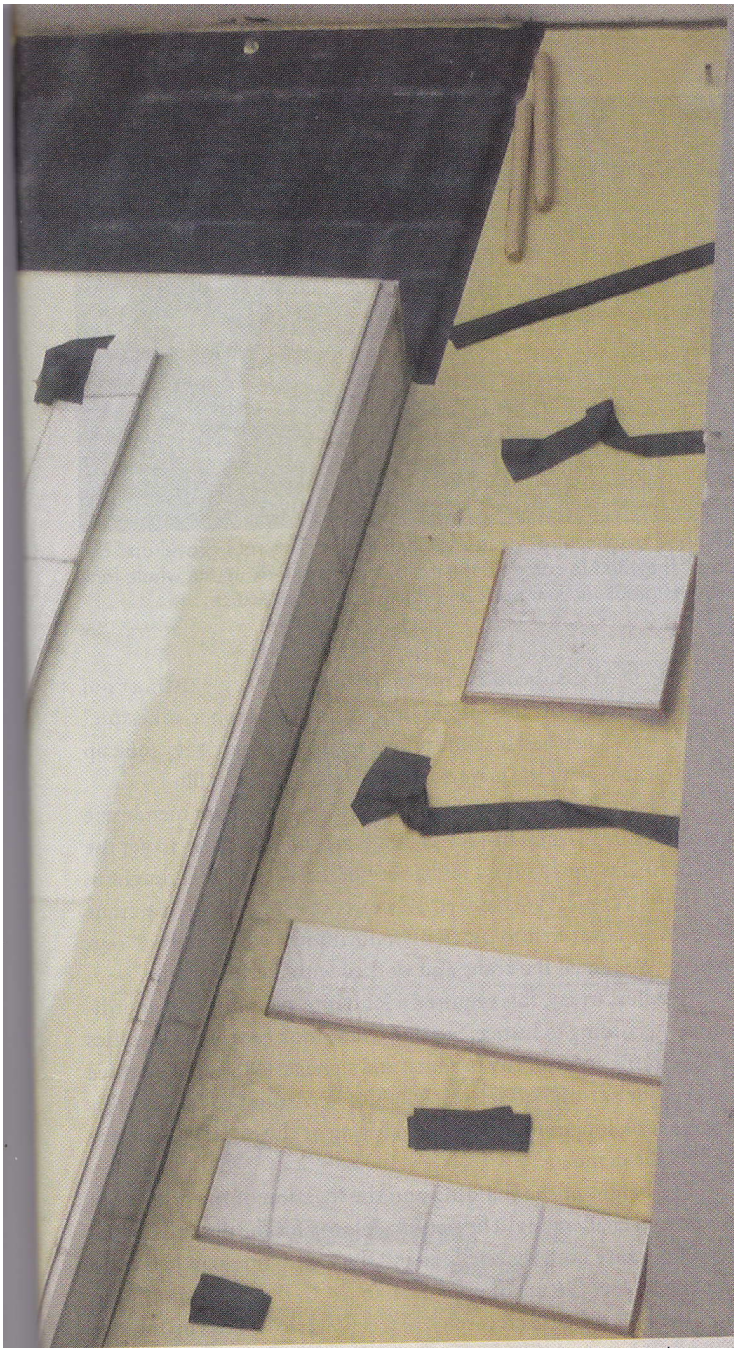
Photos courtesy of Cox Roofing Systems

When the Westmont Hospitality Group in Canada needed a new roofing system for the Winnipeg Delta Hotel, Cox Roofing Systems (CRS), an authorized installer of the Tri Thermal Roofing (TTR) System, welcomed the opportunity to install SPF on such a high profile job in Manitoba's downtown Winnipeg. According to John Justice, sales manager and senior technical representative at CRS, it was the perfect project to showcase their two-component roof system. "Our system is two roofs in one," says Justice. "It is a combination of one of the best insulations on the market with EPDM (ethylene propylene diene monomer) over the top, which gives it durability and longevity." Justice added that the system is superior due to its "seamless monolithic nature."

What exactly is EPDM and how does it work in conjunction with SPF to create a water-tight and aesthetically pleasing roof system? And was the CRS crew able to overcome the windy and rainy conditions to get the job done on time? Read on to find out!

The Lodgings Low-Down

The 18-floor Winnipeg Delta Hotel is not a small bed and breakfast. The 9-man Cox Roofing Systems crew was tasked with covering 17,000 square feet (1,579.4 m^2) of the hotel's roof area. The existing roof system was built-up roof (BUR). According to Justice, BUR is



Justice says that the Tri Thermal Roofing (TTR) System is "a combination of one of the best insulations on the market with EPDM (ethylene propylene diene monomer) over the top [of the foam], which gives it durability and longevity."

Detour! In order to get the rolls of EPDM up 17 floors to the roof of the hotel, CRS brought in a $2 million crane from Sterling Crane.

Where's the spray equipment? The CRS crew had it neatly obscured by this temporary wall. Shielding the equipment protects it from the elements and makes for a more organized spray foam application.

CRS had a subcontractor dry vacuum the existing roof gravel and debris. "They had to come off the main street and took up the whole lane with the giant vacuum truck and dump bin," says Justice.

tar and gravel over the top of the roof deck. Typically, there are two or four plies of felt, tar, and pea gravel, with the tar and pea gravel making up the top layer.

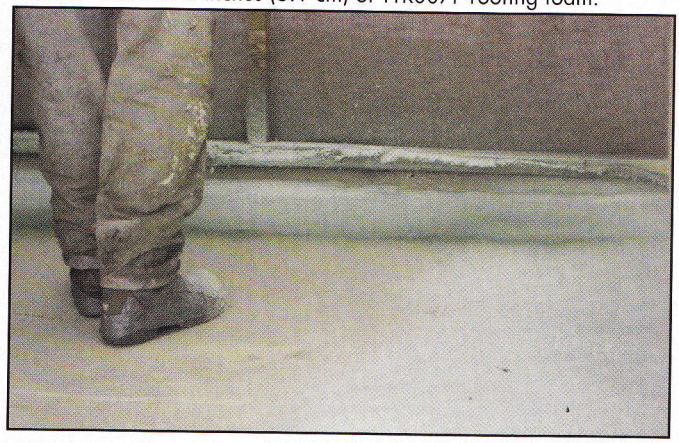
The existing roof system was in fair condition, but it needed some tender loving care. With this in mind, before the crew began preparation of the roof, they wanted to make sure that the existing roof was not compromised by moisture. A thermal camera was used to detect any wet areas or areas where moisture was lurking within the roof system. Luckily for the CRS crew, the SPF and EPDM system could be installed over the existing roof system. "We thermal scanned the roof to look for moisture in order to see if we could apply our system over what was there. It was in an acceptable range," says Justice.

This was great news for the crew because a dry substrate is a requirement for a successful SPF installation. Now the crew could begin the work required to install 45 mils (1.1 mm) of EPDM membrane over 2 inches (5.1 cm) of TTR007F roofing foam.

Equipment Accommodations

Working in an urban locale certainly has its challenges, as the crew soon found out. A high volume of traffic and one-way streets meant tight quarters for large equipment on the Winnipeg Delta job. From the prep work to the installation of the EPDM, maneuvering and accommodating the equipment was a constant consideration.

The roof received 2 inches (5.1 cm) of TTR007F roofing foam.



"We used a subcontractor to dry vacuum the existing roof gravel and debris off the roof in order to ensure proper adhesion," says Justice. "They had to come off the main street, and they took up the whole lane with the giant vacuum truck and dump bin."

And that was just the beginning. EPDM is a rubber membrane that comes in 10- and 20-foot (3 and 6 m) rolls. In order to get the rolls of EPDM up 17 floors to the roof of the hotel, CRS brought in a $2 million crane. "We blocked off a one-way street to get the crane there. We'd never had to block off a downtown street before," says Justice. "We rented the crane and worked with Sterling Crane."

Needless to say, this required a lot of pre-planning and coordination. According to Justice, Sterling Crane took care of the specifics such as traffic control, city permits, and signage. CRS supplied three workers for set-up and tear-down, and according to Justice, this process took longer than the actual lifting of the material onto the roof via the crane.

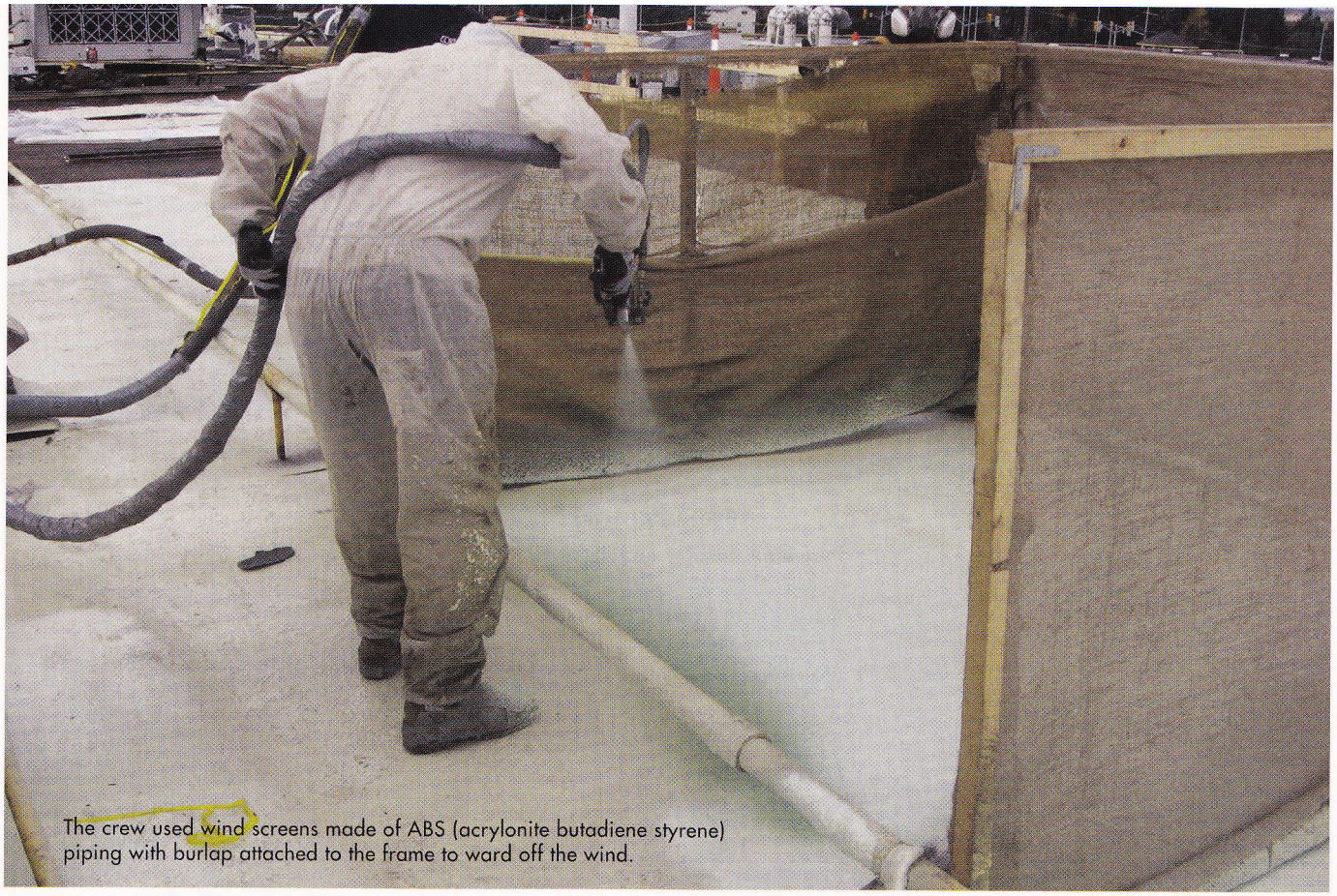
The height of the building and the location of the hotel pool also proved challenging. The pool was closed for the duration of the project because both the vacuum and the SPF equipment had to go over the 85 feet (26 m) of pool deck to get to the roof. In order to spray the SPF, the CRS crew ran 250 feet (76.2 m) of hose up the side of the building and housed the Gusmer F1600 on the ground in a temporary enclosure.

Reservations About the Weather

Once the roof deck was vacuumed and clear of all gravel and debris, it was time to begin taping off the area. "The crew covered all the walls and used a lot of tape and plastic. We taped off the windows and air conditioners," says Justice.

The CRS crew erected temporary windscreens on the roof as well. These screens are 5 feet (1.5 m) tall by 6 to 8 feet (1.8 to 2.4 m) long and are made of ABS (acrylonite butadiene styrene) piping with burlap attached to the frame. ABS is similar to PVC piping, but it tends to be more flexible. Depending on where the crew was spraying, three to four windscreens were set up on the roof deck.

With the wind whipping around the roof of the hotel, the windscreens were essential to get the job done. With 16 days to complete the job from mid-August to September, the crew was

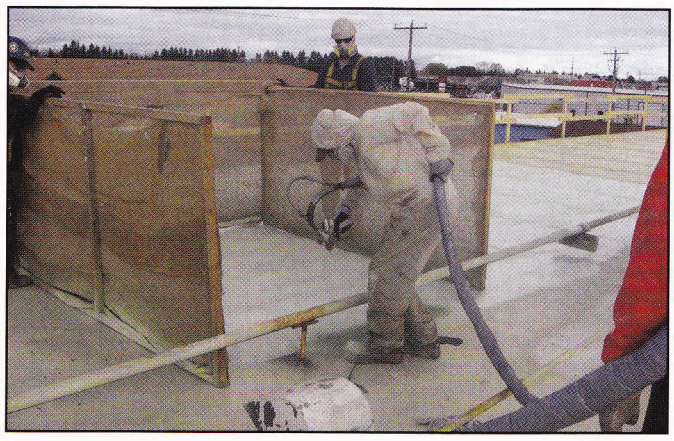


The crew used wind screens made of ABS (acrylonite butadiene styrene) piping with burlap attached to the frame to ward off the wind.

certainly worried about inclement weather pushing back the schedule. "The weather definitely slowed us down. There were one or two days where we couldn't even spray. We sprayed a bit when it was windy, but never when it was raining," says Justice.

Even when it wasn't raining, ambient humidity was a factor in the SPF installation. The crew used an in-line air dryer to take the humidity out of the air that went into the Gusmer F1600 proportioner and Fusion AP spray gun with an 02 chamber. "If you have too much water in the air that's being used in the gun, you are not making proper foam. Our in-line air dryer runs an air hose out of the compressor through the air dryer and then into the spray machine," explains Justice.

Fortunately, even with Mother Nature providing plenty of challenges, the crew was able to complete the job on schedule. In fact, they even took on a side project and applied SPF to a 1,450-square-foot (134.7 m^2) patio area near the pool. The crew removed 400 patio stones, foamed the deck and replaced the patio stones, all within the scheduled timeframe.



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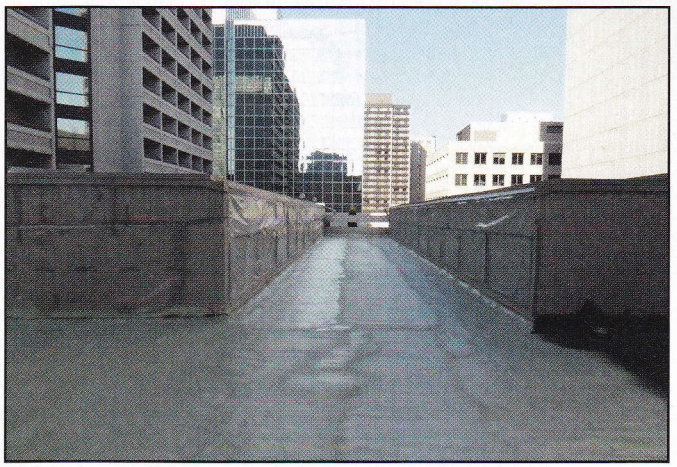
Water-Tight and Leak Proof

After the crew sprayed 2 inches (5.1 cm) of TTR007F spray polyurethane foam onto the roof deck, it was time for the installation of the EPDM. "EPDM is a single-ply rubber membrane. It's like a tire but thinner and has the same purpose as a coating—it protects the foam," says Justice.

In order to adhere the EPDM membrane to the foam, a slow-rise adhesive, in this case, TTR007G, is applied. The EPDM was laid out like carpet and then peeled back in order to spray the glue. The EPDM was then broomed into the adhesive.

Making the roof water-tight is essential for long-term success of the SPF and EPDM systems. The crew performed both foam terminations and EPDM terminations. "When you run into a vent, drain, or wall, you have to make a termination point. We used both foam and EPDM terminations for the details. This is how you make it [the roof system] water-tight at the edges," says Justice.

Using approximately 800-900 screws, the CRS crew installed termination bars on the walls. The termination bar is a thick bar,



"When you run into a vent, drain or wall, you have to make a termination point," says Justice. "We used both foam and EPDM terminations for the details." This technique made the roof water-tight at the edges.

about 10 feet (3 m) in length, which tightly seals the EPDM to the wall. Over the top of the termination bar, the crew placed metal flashing to give it a finished, aesthetically pleasing look. "With the termination bar and the counter flashing, the EPDM is doubly water-tight around the edges," says Justice.

In addition to the vents, drains, and walls, the crew also detailed out five skylights, each measuring either 8 feet by 16 feet (2.4 by 4.9 m) or 7 feet by 20 feet (2.1 by 6.1 m).

During all phases of the work on the rooftop, safety was a top priority. Guard rails and bumper zones were used for fall protection. According to Justice, the barriers had to be set 6 feet (1.8 m) back from the edge and no more than 10 feet (3 m) apart with a rope. Outside of those barriers, personal fall protection was required. The crew used North respirators, Tyvex suits, and nitrile gloves.

SPF and EPDM: A Perfect Match

The crew from CRS overcame both natural and man-made obstacles to install a roofing system that will keep guests at the Winnipeg Delta Hotel comfortable and dry for a long time to come. "Using both spray polyurethane foam and EPDM makes for a water-tight and aesthetically pleasing roof," says Justice. "It was a great project for us." ***SF***

To adhere the EPDM membrane to the foam, the crew laid it out like carpet and then peeled it back to spray the slow-rise adhesive, and then broomed the EPDM into the glue.