SIKA AT WORK
ROGERS CENTRE
TORONTO, CANADA

Sarnafil®

BUILDING TRUST

Sika®

SARNAFIL ROOF HITS IT OUT OF THE PARK IN TORONTO - TWICE!

Roofing contractors can help building owners prepare for some of the worst disasters – high winds, snow buildup, excessive rain, fires, everything, that is, but the sky falling. Downtown Toronto's Rogers Centre never expected a massive ice chunk from a neighboring tower to fall and puncture through their roof's steel deck. Luckily, they knew exactly where to turn to restore the architectural marvel to its original glory as a staple of Toronto's skyline.

SIKA SARNAFIL THE FIRST DRAFT CHOICE

Home of Toronto, Canada's professional baseball team, the Rogers Centre was no stranger to Sika Sarnafil when it came time for the roof upgrade.

When the high-quality sports stadium, then known as the Toronto Skydome, was first constructed in 1989 by EllisDon, Sarnafil membrane was chosen to protect the first of its kind, fully retractable motorized roof arena that allowed for games irrespective of inclement weather.

Fast forward 30 years later, the monumental building in downtown Toronto made a name for itself as a skyline staple and the roof maintained its excellent condition, despite unmatched Canadian weather.

"Located downtown by Lake Ontario, the Rogers Centre roof had endured unrivaled natural elements and extreme stress on the roof system due to its height, and still the roof system performed admirably," said Jay Campbell, Vice President of Toronto's Dean-Chandler Roofing Ltd., one of the contractors on both the original and the roof replacement project.

Yet, the legendary Canadian climate was not the only element the Rogers Centre roof was concerned with as even more unforeseen conditions arose. The more unnatural opposition came from Toronto's CN Tower, a famous observation tower settled on the east of the Rogers Centre's roof. One of the modern Seven Wonders of the World and the tallest free-standing structure in the Western Hemisphere, the observation deck provides stunning views for tourists but much less gratification for the Rogers Centre roof.

From the beginning, the massive CN tower's falling ice was an issue. Under certain climate conditions, freezing rain and ice would build up on the vertical surface of the concrete tower. When the weather warmed, the ice would fall to the adjacent area and plaza below, where certain areas of the Rogers Centre's roof took more abuse than others. Ultimately in 2018, a particularly massive ice chunk punched a hole through the entire roofing assembly, including the structural metal deck, and finally called for a new game plan.

A BIG-LEAGUE OPPONENT

When Ping Mu and David Ford of Walter P Moore, the diagnostics group on the roof replacement project, came in to assess the original Sarnafil roof, they knew they were in for a challenge.

"Coming in from an outside view, the roof was in such an extraordinarily unique condition for its environment," said Christopher DeRosa of Walter P Moore. "The amount of snow and where it built up on portions of the roof created certain situations where it was like an avalanche. Large areas had accumulated huge, huge amounts of snow. No other condition existed for that kind of roof where 20 feet of snow built up a huge amount of pressure

PROJECT
Rogers Centre
Toronto, Canada

ROOFING CONTRACTOR
Dean-Chandler Roofing Ltd.
Scarborough, ON, Canada

Flynn Group of Companies
North America & Canada

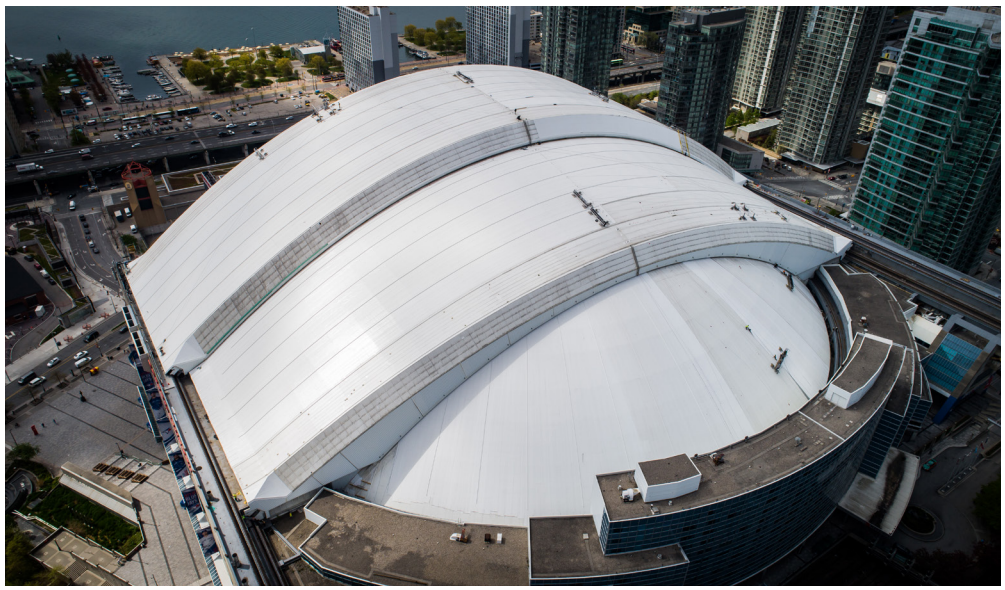
GENERAL CONTRACTOR
EllisDon
Mississauga, Canada

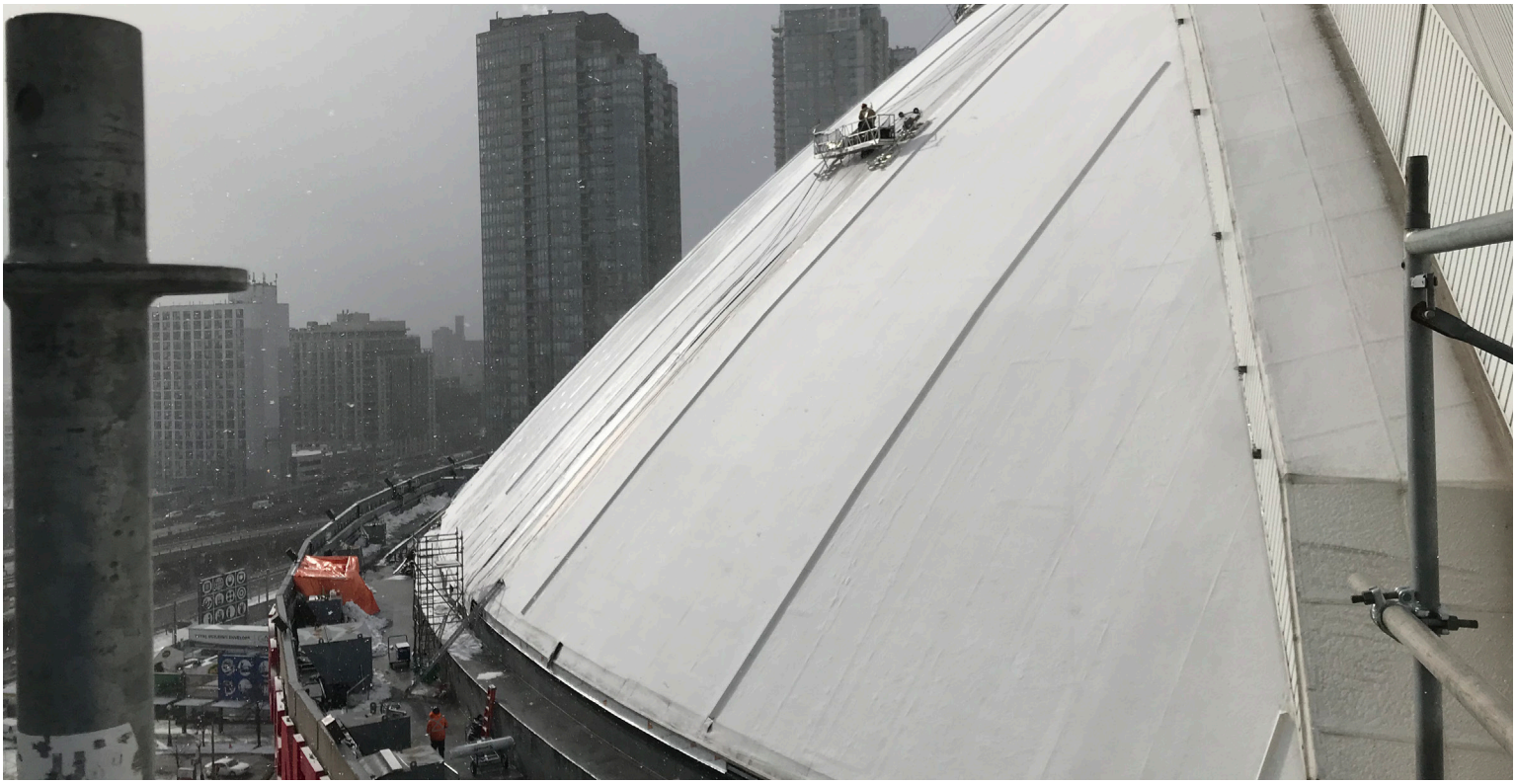
DESIGN TEAM
Walter P Moore
Houston, TX

ROOFING SYSTEM
Sarnafil Engineered,
mechanically-attached system

PROJECT SIZE
460,000 sq. ft.

COMPLETED
Summer 2018





on these roofs."

Besides the damage from the massive ice chunk, the majority of the roof remained in good condition, surprising the contracting teams coming in for the new replacement.

"It's hard to find roofs that last 30 years in the type of extreme climate conditions we experience in Toronto, Canada," said Mark Agius, Vice President of North America's Flynn Group of Companies, the second roofing contractor on the replacement project.

After 30 years of unparalleled performance holding the roof in place against the severe winds off Lake Ontario, the Rogers Centre decided to embrace this opportunity to start anew and turn back to an old favorite with a Sarnafil Roof System.

DEVELOPING A GAME PLAN

Now, what do you get when you have a 460,000 square foot roof, a ten-month timeline, and a Canadian climate? A need for an extremely impressive group of people.

Once the Walter P. Moore diagnostics group developed the design for the Rogers Centre's new roofing system, the rest of the players were called in to take the field.

Due to scheduling constraints and an urgent ten-month timeframe, two contracting companies were needed to take on the massive project. Dean-Chandler Roofing Ltd. and Flynn Group of Companies formed a Joint Venture Partnership to share resources and meet the requirements, each tackling one side of the roof to install the Sarnafil Engineered, mechanically-attached system.

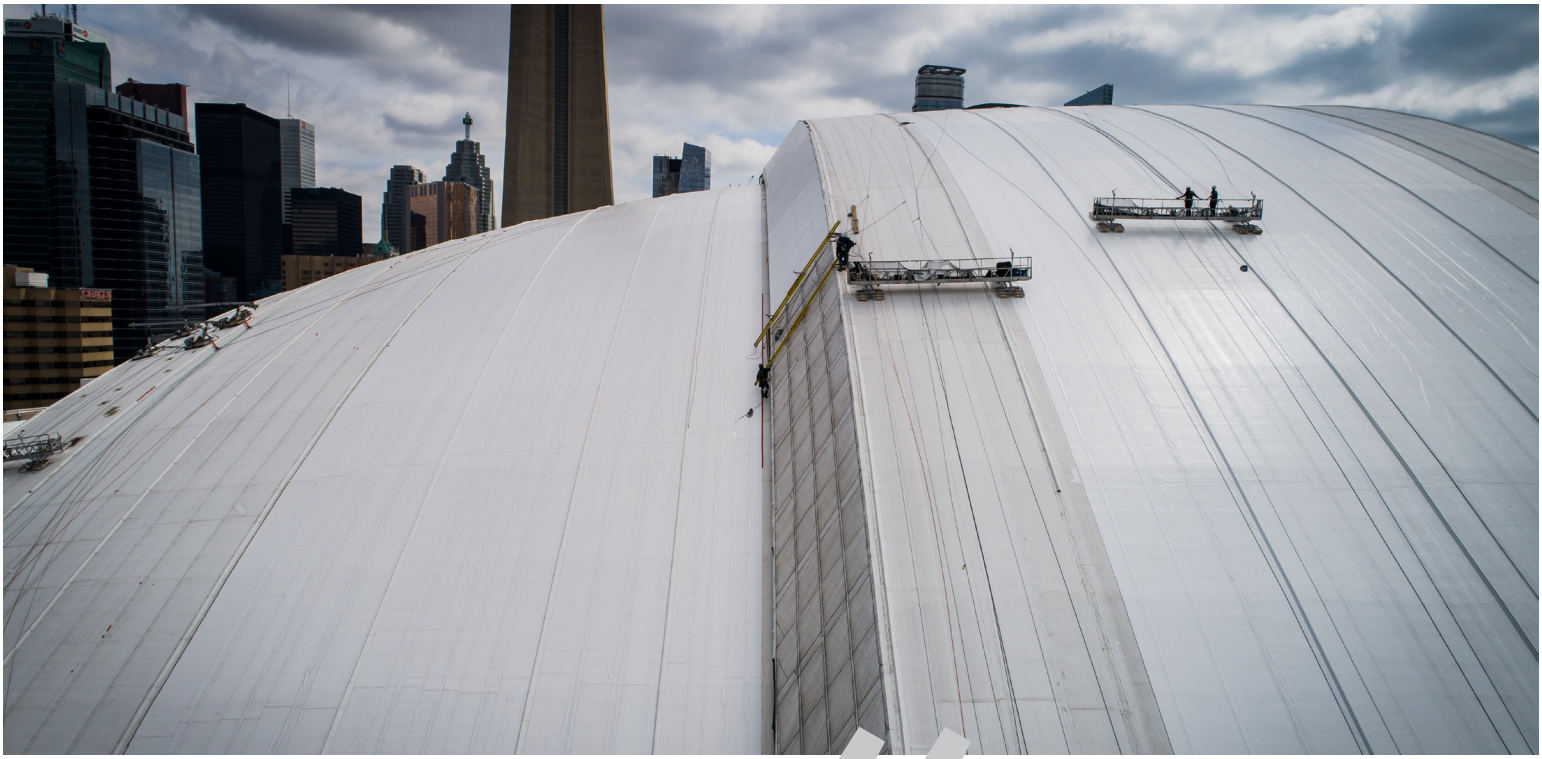
A NEW CAREER FOR A RETIRING PLAYER

At the heart of the project was the Rogers Centre's desire to take advantage of Sika Sarnafil's roof "take back" recycling program, which allowed contractors to take over 460,000 square feet of the removed, old Sarnafil roofing membrane and make it available for Sika Sarnafil to recycle. Through the program, old membrane is ground into flakes, processed, and put back into the backside of new membrane or used for creating roof walkways, saving it from the landfill. Sika Sarnafil's Roof Recycling Program boasts 80,000,000 pounds of processed recycled material and is third-party verified in sustainability.

"This program definitely has a positive impact on the environment. A majority of the old membrane was recycled through Sika Sarnafil's program. This reduced a large amount being wasted, diverting it from landfills," noted Mark Agius of Flynn Group of Companies. The new Sarnafil membrane installed had post-consumer recycled content in the backside.

Beyond the roofing membrane recycling program, the sustainability initiative was an all-around effort on the Rogers Centre project.

"The client was agreeable to replacing the membrane but trying to keep as much of the insulation under the membrane at every place that it was dry," said David Ford of Walter P Moore, allowing for an even more sustainable process and final product.



BATTING OUT THE CURVE-BALLS

The project was no stranger to adversity, however. Reaching a staggering height of 282 feet, the sheer size of the roof and its unique configuration complexities, slopes, panels, site logistics, and access presented an array of difficulties from the start.

"Design wise we had a lot to consider. When we put the package together, we had to do it with the potential for the four retractable roof sections to open and close and remain watertight at the back of our mind. We also made the decision to increase membrane thickness due to the unique condition we were experiencing with falling ice on a regular basis, and as an added layer of durability and protection from snow avalanches. Lastly, we needed to work closely with Sika Sarnafil to make sure the new roof would be properly detailed so that it guaranteed precise and watertight retractable roof sections that kept all the ice, snow, and water out," noted Ping Mu of Walter P Moore in describing her assessment and laying the groundwork for the construction process.

Meanwhile, contractors tackled safety preparations. "A lot of the existing safety features that were installed were no longer meeting the existing code requirements so custom swing stations had to be built for this project. We were immediately delayed getting started because it took longer than anticipated to get the anchors installed and approved and the swing stages built. The wind was being monitored each day and if it exceeded 35 kilometers per hour, we weren't allowed to work off the swing stages," said Campbell.

The necessary safety measures were as immense as the Rogers Centre. "All materials needed to be craned to a gutter around the base of the domed roof. From the gutter we needed to use gantries and customized elevators to lift the 10-foot rolls of S327 membrane up into the swing stages. The second challenge was with the welding machines. Given the extreme slope of the domed roof we needed to rig up a framing system with wheels that would allow us to attach cords to the framing, and then to the welding machine so that it could help hold the welder in place on the vertical slope. As the swing stage moved down the slope, the framing system and the welder moved in sync. The weight of the welder alone was tough for the workers to hold continuously day after day without the help of the framing system," Campbell further noted.

> Sika Sarnafil did everything that we could ask. The team they had involved in this was instrumental in helping make this project possible. Despite the extreme circumstances and time crunch, there were no issues or delays in getting material or in the material that was delivered.
>
> *- Jay Campbell*
> *Vice President of Toronto's Dean-Chandler*

It seemed as though everything was set for the team to strike out, as even the merciless Canadian climate was against them. The project began in early November and Toronto was bombarded with snow in the earliest stages of the process. The inclement weather went so far as to induce city-wide shutdowns, one lasting an entire week for the area around CN Tower where falling ice was still an imminent risk.

"Inclement weather (snow) made it very difficult for our workers to even access some of the stages. If there was high accumulation, the snow would slide down the roof into the gutter, simulating an avalanche effect. This posed a serious safety concern," said Agius.

The task of removing all old material to be recycled and transferring new materials back onto a massive roof in downtown Toronto was another impressive feat, especially with limited storage on site. Sika Sarnafil was involved in coordinating material delivery out of Montreal.

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in this was instrumental in helping make this project possible. Despite the extreme circumstances and time crunch, there were no issues or delays in getting material or in the material that was delivered," Campbell said.

Once April rolled around and baseball season started, the contracting teams were then limited to working around the team's schedule, working until three PM in the case of a night game and forced to remove everything from the roof and offsite on each occasion. On daytime game days, the contracting teams could not work on site at all.

"From the amount of snow on the roof during the winter months to working around the team's game schedule to allow for the opening of the retractable roof with every game, this project was definitely a demanding one, but the final product was more than worth it," summarized Chris Masse of EllisDon Construction, the general contractor on the project.

A REPEAT VICTORY

Despite the numerous complications pitched in their direction, the project team cleared all the bases and accomplished a timely completion by the end of August in 2019.

"Having the right people, with the right focus and right execution plan proved that even the most complex projects can be achieved...Helping through all of this was Sika Canada's entire roofing team to ensure a smooth process. Collaboration between all parties was crucial to ensure that we could complete this monumental project," Agius stated.

The Rogers Centre project received the CRCA 2019 Roofing Project of the Year award for its efforts – an accomplishment which only further proves that all parties involved in the re-roofing of this legendary stadium should feel like winners.

"I cannot overstate how important collaboration between EllisDon, Flynn, Dean-Chandler, and Sika Sarnafil made this a successful project! Although this project presented many unique challenges, the end-result speaks for itself!" noted Agius.

Meanwhile, Doug Flynn, President and CEO of Flynn Group of Companies, shared his entire team's experience on the project.

"We at Flynn Group of Companies across Canada and the U.S. do a lot of work with Sika Sarnafil. The Rogers Centre is a landmark building in downtown Toronto and Sarnafil was clearly the best choice for the project. It weathers well, it was originally a Sarnafil membrane when it was built in 1989, and its right material for that particular building. It looks great aesthetically and it is functional!"

AN EMOTIONAL POST SEASON

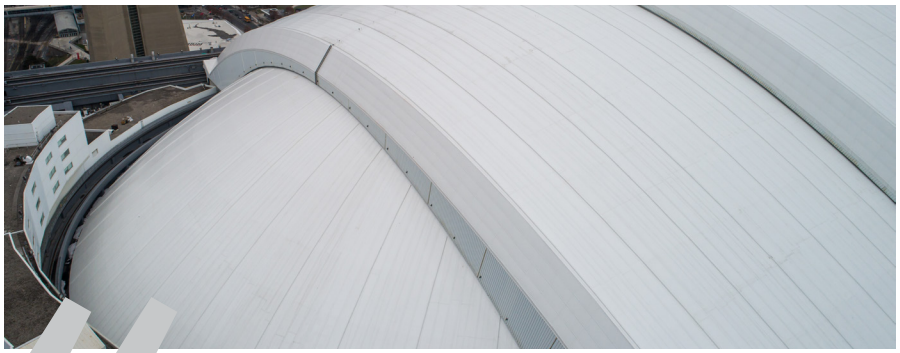
Over 30 years ago, Sarnafil membrane was chosen to protect the Rogers Centre and it had an extremely impressive run, but the story doesn't end there.

Dean-Chandler Roofing Ltd. was just as pleased to have Sika Sarnafil be involved in the initial project 30 years before and in the most recent roof placement. At the time their lead foreman, Joe Carneiro, was part of the team that did the original install and, thirty years later, his son was there with him to take part in the new replacement.

"Joe Carneiro's son, David Carneiro, has worked with us for about 20 years now and both have been the two service guys on the Rogers Centre over the last 20 years. When we did the replacement project last year, they were our two foremen on the project," shared Campbell.

The heart-warming experience of a father working on the original Rogers Centre roof and his son joining him in the replacement project 30 years later relates the same principles of team-work and dedication that Sika Sarnafil prides itself in.

Thirty years later, Sika Sarnafil was pleased to supply a roof that will last another 30+ years and provide generational protection, as well as the opportunity for even more familial experiences in the iconic Toronto sports stadium. Congratulations to the all-star team that made the Rogers Centre a champion project – we think this one's a home run.



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- Doug Flynn
President and CEO of Flynn Group of Companies

ROGERS CENTRE

WHO WE ARE

The commercial roofing industry has relied on thermoplastic single-ply membranes from Sika for more than 50 years to achieve sustainable roofing and waterproofing solutions.

Sika is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus, truck, rail, solar and wind power plants, facades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting load-bearing structures. Sika's product lines feature high-quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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