



Sarnafil High Wind Roofing Systems

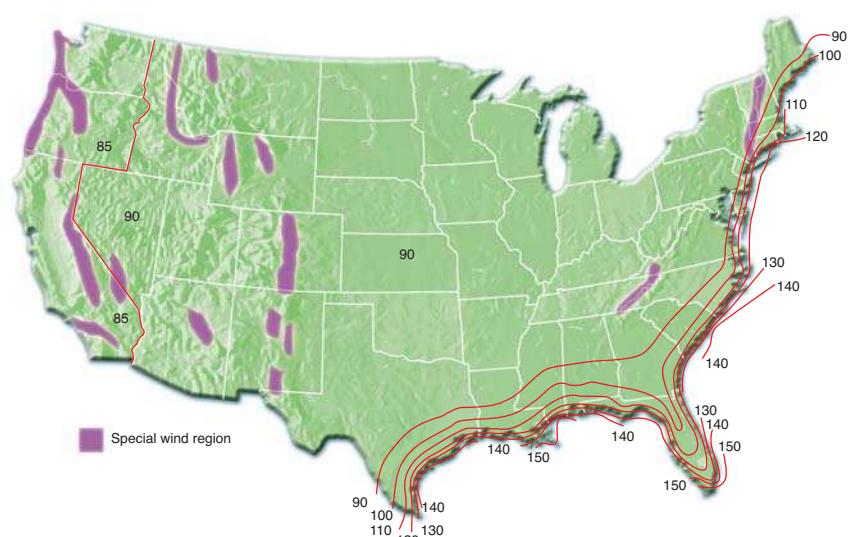


Sarnafil®



What is a high wind event?

All too often roofing decisions are made without sufficient consideration for the wind performance of the roofing system. A roofing system will truly be tested when it experiences multiple wind events over time in the most extreme weather conditions. The National Oceanic and Atmospheric Administration's National Weather Service states that "a high wind event has occurred whenever sustained winds of 40 mph or more, or a peak gust of 58 mph or more, has been reported from reliable observing equipment."



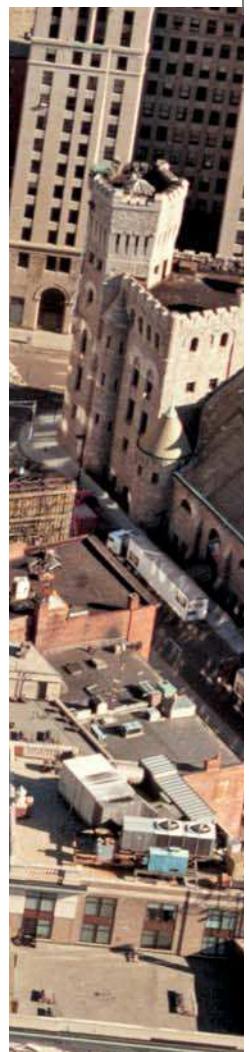
Typical Wind Map — used by roofing designers to identify wind velocity zones.





Situation

The John Hancock Tower, standing 70 stories tall and erected in 1972, had seen years of exposure to high winds, sun, rain, snow and hail and was in desperate need of a new roof by the mid 80's. In choosing a roofing system, Hancock engineers had to consider the track record and warranty of the manufacturer, the weight of the installed system, resistance to sunlight and industrial pollutants, and ease of inspection and repair. But their biggest concern was wind uplift. Sarnafil was the answer, and a Sarnafil Engineered mechanically attached system was installed.



Solution

Wind tunnel testing calculations and real-life experience were the basis for the design of a Sarnafil engineered system for this unique structure. The Sarnabar and fastener spacings were optimized to resist the different wind loadings across the roof, with significantly more fasteners used at the highly angular corners. After more than two decades of exposure to the forces of nature, including a hurricane and numerous "nor'easters", the Sarnafil roof continues to protect the John Hancock building from the elements.

Projects Where a High Wind System Should be Considered:

High wind events are not just limited to those buildings that are located near the coastline or in tornado prone areas. Consider the following criteria when determining if your building should have a roof system designed to resist high wind loads.

- Building height of 70 feet or taller
- Location near any large body of water (coastal or inland)
- Located within hurricane prone areas
- Building codes requiring a roof to withstand winds greater than hurricane velocity (74 mph)
- A desire for long term performance and complete security

Experience You Can Rely On

You want to work with a roofing manufacturer that has the experience to provide a roofing solution that will perform to your high wind performance needs. Sika Sarnafil roofing systems have stood the test of time in the harshest climates all over the world. Our experience with high wind roofing systems in such diverse locations as the Swiss Alps to the Florida coast will provide you with the peace-of-mind that comes from working with an experienced partner.

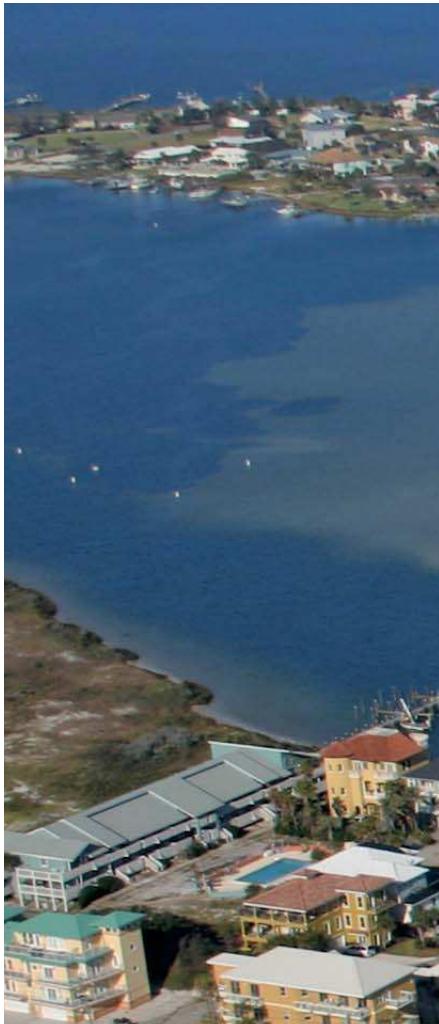
Sika Sarnafil roofing systems are widely recognized for exemplifying the highest standards of quality, reliability and watertight protection. Our record of proven performance is on display on buildings worldwide, in every imaginable climate.

All told, we've manufactured more than 15 billion square feet of thermoplastic roofing and waterproofing systems since 1964.

Hot-air Welded Seams and Flashings

Faulty seams are a common source of leaks in any roofing system. Some roofing membranes use sealants, adhesives or tapes to secure the seams, but because Sika Sarnafil's membranes are thermoplastic, seams and flashings are welded together using Sika Sarnafil's automatic hot-air welder, the Sarnamatic. When welded together, the sheets of membrane become one monolithic layer of material impervious to water and moisture infiltration.

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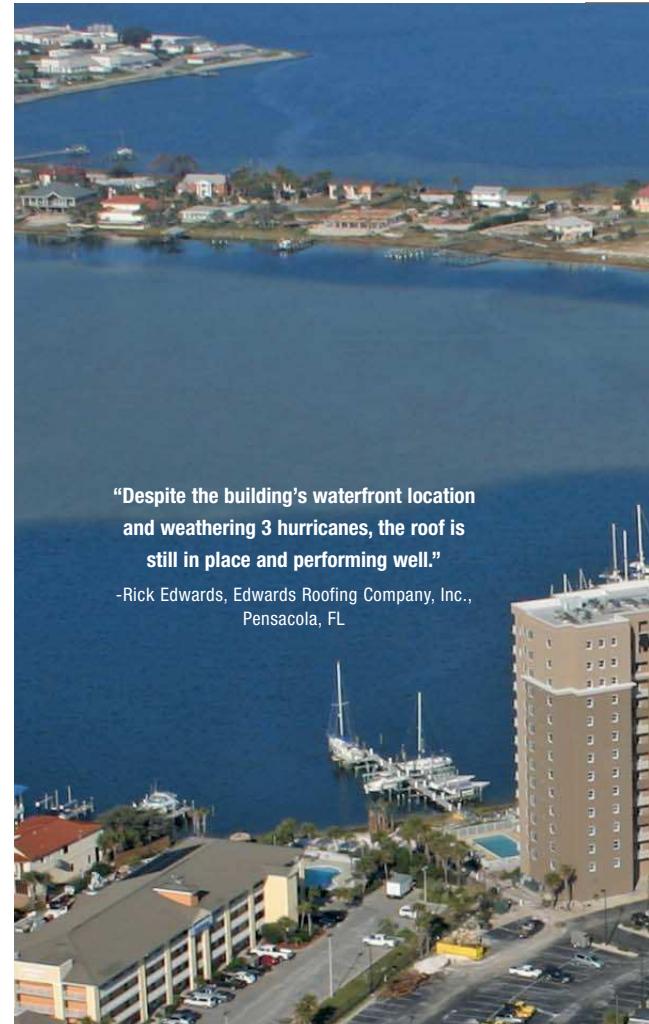


Situation

When the South Harbour Condominiums in Pensacola Beach, Florida were being built in 1997, owners needed a proven roofing system. The picturesque location is in the center of Little Sabine Bay, exposed to the winds coming off of the surrounding water. Since the height of the building (145 feet high) and location create an environment prone to high winds, contractors turned to Sika Sarnafil for a high wind roofing solution.

Solution

A structural concrete deck was poured, followed by 3 inches of cellular lightweight insulated concrete. Sarnafil 60 mil G410 feltback membrane was then adhered to the concrete using Sarnacol adhesive. The condominiums have experienced many high wind events since the roof installation, including hurricanes Georges, Ivan, and Dennis. The building has experienced major structural damage during these storms, but the roof itself has stayed intact and has required minimal repairs.



"Despite the building's waterfront location and weathering 3 hurricanes, the roof is still in place and performing well."

-Rick Edwards, Edwards Roofing Company, Inc., Pensacola, FL

Choosing a high wind roofing system

Building design, location, existing roof condition and building codes all play a role in roofing system design. It's important that you select the roofing system that matches your criteria. Sika Sarnafil offers a variety of high wind roofing systems to meet your specific needs. All three systems have FM, Florida Building and Dade approvals.

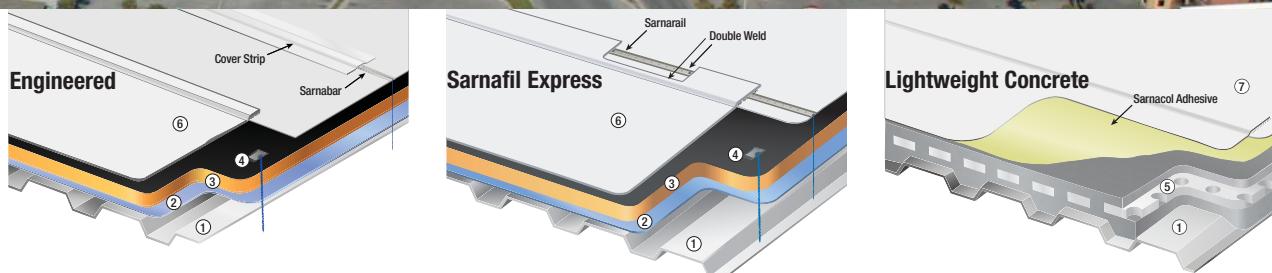
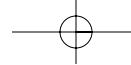
The Sarnafil Engineered Roof System

The Sarnafil Engineered Roof System is a mechanically attached system utilizing Sika Sarnafil's unique Sarnabar to firmly attach Sarnafil S327 polyester scrim reinforced thermoplastic membrane to the deck. The Engineered System provides design flexibility and protection against wind that no other roofing system in the industry is capable of. It is guaranteed to meet and exceed even the toughest of design criteria. The number of Sarnabars and fasteners will vary for each roofing application according to the custom uplift calculation. The design takes into consideration wind uplift forces and fastener pullout values, since wind uplift on a roof can vary considerably depending on the location and height of a building.

The Sarnafil Express Roof System

Sarnafil Express is a unique breakthrough for mechanically attached single-ply systems. Sarnafil Express utilizes Sarnafil S327 thermoplastic membrane fastened with Sarnafasteners and Sarnarail in the membrane overlap. Sarnarail is a continuous polymer batten strip that uses a linear attachment method similar to the Sarnafil Engineered System. Fastener spacing is determined by wind uplift calculations and other requirements. Sika Sarnafil's Sarnamatic hot-air welding machine equipped with a patented double weld kit creates a continuous weld on both sides of the rail and fasteners within the overlap. In a high wind event, the average single weld mechanically attached roofing system may experience plate rocking and fastener





backout, which in turn may cause the sheet to tear. The Sarnamatic, equipped with the double weld kit, creates a "double weld" at the membrane overlap, producing a balanced load across two welds, maximizing fastener performance.

The Sarnafil Lightweight Insulated Concrete Roof System

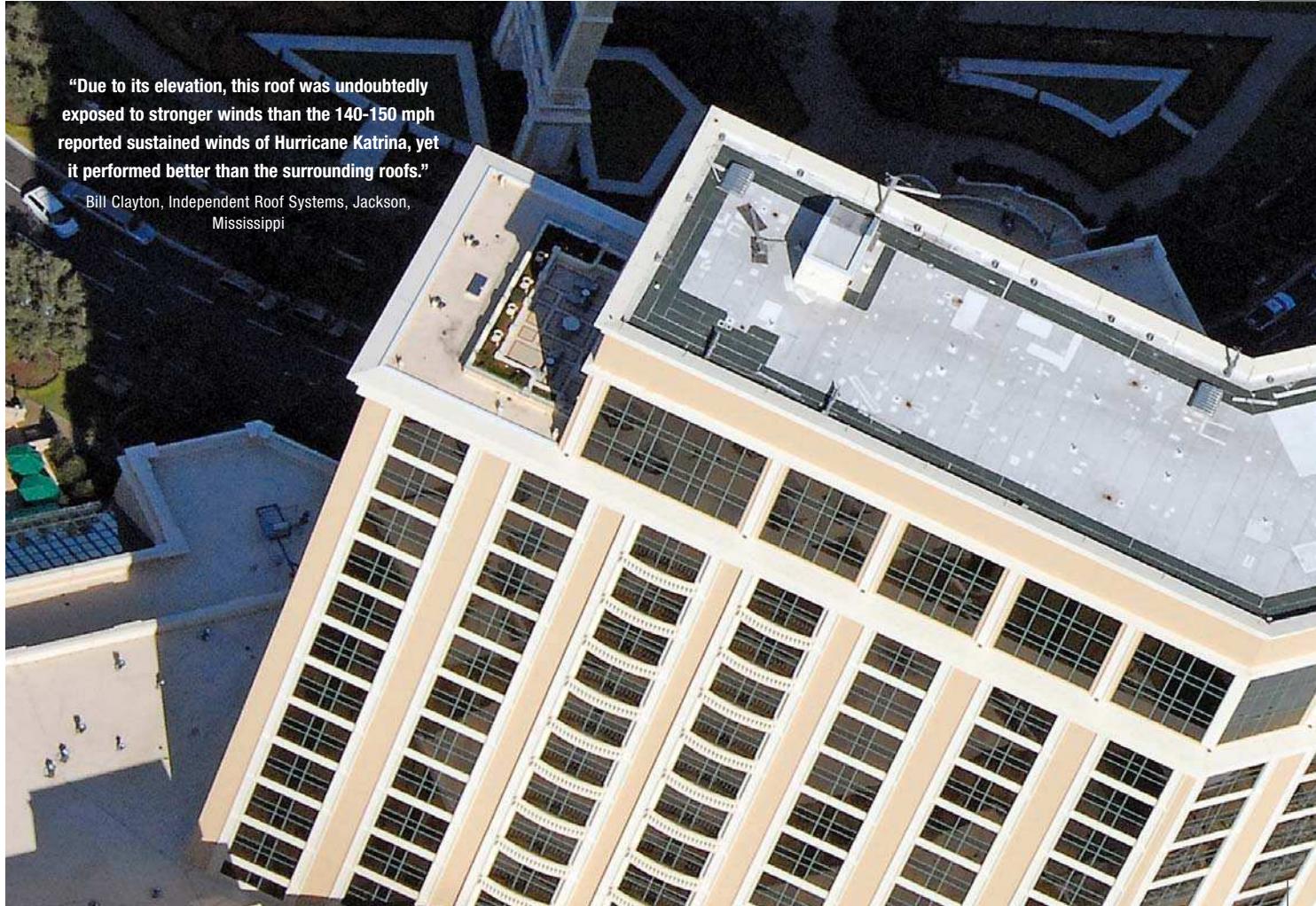
The Sarnafil Lightweight Insulated Concrete Roof System utilizes Sarnafil feltback G410 fiberglass reinforced thermoplastic membrane adhered to lightweight insulated concrete using Sarnacol 2121 water based adhesive. Lightweight insulated concrete (LWIC) is a mixture of Portland cement, water and preformed foam. The LWIC can be applied over various types of substrates and decks.

Expanded polystyrene is encapsulated within the lightweight concrete to add insulation value and enhance slope. The result is a lightweight (air dried weight of 26-38 PCF) substrate with a compressive strength of 120 PSI- 300 PSI. The characteristics of LWIC make it an excellent substrate for adhering Sarnafil feltback G410 membrane, resulting in a roofing system with high wind performance characteristics. LWIC can be utilized on both new construction and reroofing applications.

Key

- ① Structural Deck
- ② Vapor Retarder
- ③ Insulation
- ④ Insulation Fastener
- ⑤ Lightweight Insulated Concrete
- ⑥ Sarnafil S Membrane
- ⑦ Sarnafil Feltback Membrane

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No matter which system you choose, we've got you covered

Perimeter Edge Design

Numerous studies of roof failure due to high winds indicate that the compromise of the roof perimeter edge is the leading cause of failure. Sika Sarnafil offers and warrants three options to further protect the perimeter edge of your roof.

Sarnaclad is a 25 gauge, G90 galvanized metal sheet with a 20 mil Sarnafil membrane film laminated on one side. It is a durable and attractive flashing product capable of being formed into a large variety of shapes and profiles. Sarnafil flashing membrane is welded directly to the Sarnaclad metal for

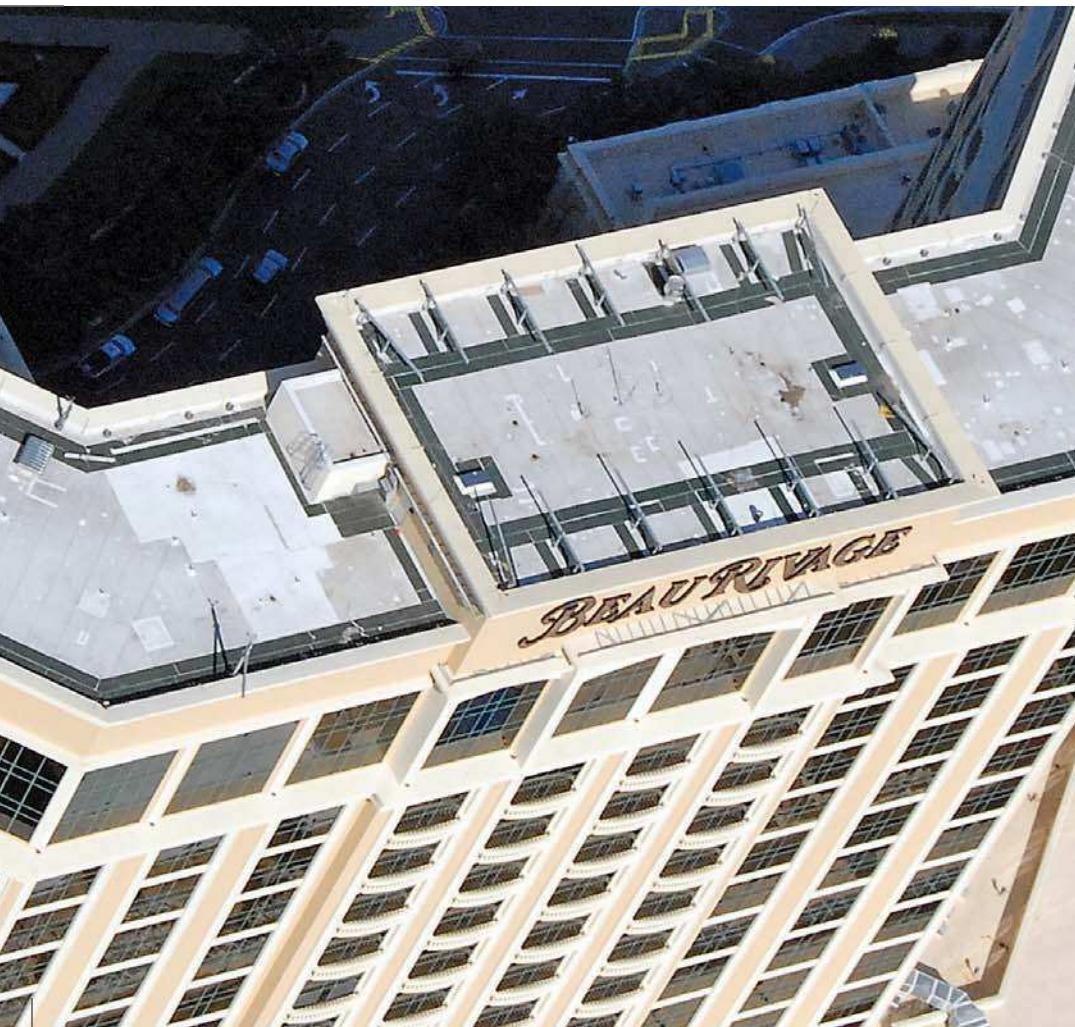
maximum watertight protection at the roof edge. The Sarnaclad is included in the system warranty and properly designed and installed can be warranted for wind speeds up to 120 mph.

Edge-Tite is a prefabricated perimeter edge attachment and fascia assembly comprised of three parts: the (base) rail, spring clips, and a snap-on fascia to provide labor savings during installation. Edge-Tite's unique design also provides aesthetic appeal, high corrosion resistance, and strong wind resistance. The rail is prepunched to ensure consistent and secure fastener placement and prefabricated mitered inside and outside corners are used to ensure that the rail is positioned correctly. The snap-on fascia is held in place securely under tension applied by the spring clips, and is available in a wide range of colors,

finishes and face heights to match specific project requirements. Sika Sarnafil will warrant Edge-Tite for speeds up to 120 mph.

Anchor-Tite fascia system is designed to provide your roof system with maximum perimeter edge protection against wind uplift. The system achieves pull-out resistance in excess of 540 lbs. per linear foot and is approved by FM, ANSI/SPRI and Miami-Dade to comply with the "High Velocity Hurricane Zone" of the Florida Building Code. The prefabricated design provides labor savings during installation, aesthetic appeal with many color choices, and high corrosion resistance. Sika Sarnafil will warrant Anchor-Tite under the system warranty for wind speeds up to and exceeding 120 mph.





Situation

Located on the Gulf of Mexico outside of Biloxi, Mississippi, the Beau Rivage Casino has seen its fair share of hurricanes, but it had been decades since one as ravenous as Hurricane Katrina came through. Blowing sustained winds of 140-150 mph, the Beau Rivage was right in Katrina's way. Due to the fact that the building stands 29 stories high, the roof was undoubtedly exposed to even stronger winds than were reported from the ground.

Solution

The portion of the roof with Sarnafil 60 mil G410 feltback membrane adhered to cellular lightweight concrete had already weathered Hurricane Georges in 1998. Seven years later when Katrina came through, the Beau Rivage roof once again persevered, performing significantly better than surrounding roofs much closer to the ground. In fact, when the time came to replace the modified bitumen portion of the roof that did not stand up to the high winds, a new Sika Sarnafil system was selected due to its proven performance.



Warranty: Sika Sarnafil offers some of the best warranties in the industry.

	Maximum Wind Speed Warranty	Warranty Options
Engineered System	Up to 120 mph and greater	5, 10, 15, and 20 years
Sarnafil Express System	up to 100 mph	5, 10, 15 and 20 years
Lightweight Insulated Concrete Roof System	up to 100 mph	5, 10, 15, and 20 years

The Sarnafil Milestone Management process is the key to a successful installation. From specification assistance to installation, our "hands on approach" is designed to make any project an easier task for you. Here's how we help make the process go smoothly:

Proven Materials

A high quality membrane is the key to any successful roofing or waterproofing project that demands absolute system integrity. With that in mind, Sika Sarnafil's manufacturing process uses only the highest quality materials to produce a monolithic, non-laminated membrane that offers unmatched durability and longevity.

Expert Assistance

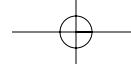
Our skilled technical experts make Sika Sarnafil stand apart from other manufacturers. We're involved at each major milestone – offering design assistance to architects and specifiers as needed, reviewing construction documents, and training authorized applicators in the classroom and at the job site.

Skillful Workmanship

Unlike most other roofing and waterproofing manufacturers, Sika Sarnafil does not sell through distribution. Instead, we sell directly to a select group of trained, authorized applicators – only the best are invited to join our team. Maintaining strict control over the installation process means that quality is carried through from start to finish.



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Sika – Your Local Partner with a Global Presence

Sika is a globally active company in the speciality and construction chemicals business. It has subsidiary manufacturing, sales and technical support facilities in over 70 countries around the world.

Sika is THE global market and technology leader in waterproofing, sealing, bonding, dampening, strengthening and protection of buildings and civil engineering structures.

Sika has more than 10,000 employees worldwide and is therefore ideally positioned to support the success of its customers.



**Put Sika Sarnafil's experience to work for you.
Call 1-800-576-2358 for assistance in selecting
a high wind roofing system for your building.**

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