



FROM THE TOP

Four steps to a virtually maintenance-free roof.

Gary Whittemore



Gary Whittemore,
Manager of Retail
and National
Accounts,
Sarnafil, Inc.

Most building owners think about their roof only when there's a problem — usually a leak. And by that time, it's often too late. The leaking roof has already caused damage to valuable mer-

chandise, slowed production or a caused a slip-and-fall accident. Once the damage is done, all the building owner can do is call a roofing contractor and get the roof repaired, which is an unavoidable and usually costly endeavor.

In an effort to avoid these costly and often emergency situations, some building owners invest in preventative roof maintenance programs, intended to catch minor problems before they lead to serious roof damage. But these likewise seem expensive, given that most building owners have already purchased a 10-, 15- or 20-year warranty on the roof system. What many building owners don't understand is that warranties often contain exclusions and require the owner to "properly maintain" the

roof in order to validate the warranty.

THE SOLUTION

Is there such thing as a maintenance-free roof? The answer is almost. Every roof system needs to be maintained in some way — for example, leaves and debris need to be cleaned from drains so water doesn't pool on a flat roof. However, by following these four steps (1. getting involved in the roofing process; 2.

selecting a reliable roof system from a proven manufacturer; 3. making sure the roof is properly designed; and 4. choosing an applicator who is trained and approved as one of the manufacturer's finest installers), you can virtually eliminate the need for and cost of roof maintenance.

STEP 1: GET INVOLVED AND STAY INVOLVED

All too often, building owners



A bird's eye view of a Saks Fifth Avenue rooftop.

Photo courtesy of Sarnafil, Inc.



Almaden Plaza, San Jose, California.

don't do their homework before selecting a roofing solution. They may rely on others, such as a contractor, architect, consultant or purchasing department, to make the decisions. It is always better for the building owner to become educated so he or she can help make the purchasing decisions throughout the project — because the building owner is the one who will have to live with the end result.

STEP 2: SELECT A QUALITY ROOF SYSTEM FROM A RELIABLE MANUFACTURER

With a multitude of roof membranes to choose from, it may seem difficult to select one that will provide you with years — or even decades — of maintenance-free performance. The key is to look for a roof system that has a proven track record, has been producing roof membranes using the same formula for years, and can provide you with a list of completed projects of a similar size, system, location and scope as your own. Make sure the manufacturer is well known in the

industry and respected by top roofing contractors. The best contractors gravitate toward the best products, because they know that they'll perform for decades. The manufacturer should also have local direct field technicians available to assist with the job start and conduct final inspections.

A quality roof system is also one that:

- Is easy to inspect and repair if needed. Exposed roof systems, such as those that are adhered or mechanically attached, are best.
- Doesn't require re-coating or re-surfacing. In order to perform well over the long run, some roof systems need to be rejuvenated periodically.
- Has hot air welded seams. Seams sealed with adhesives or tapes are known to become maintenance issues later on. Hot air welded seams, on the other hand, are stronger than the membrane itself, and can withstand wind, weather and time.

The Downside of "Value Engineering"

In order to win the job, general contractors or roofing contractors

may practice what's called "value engineering," a process in which they present a less expensive and often inferior product to the one specified. Although the up-front cost savings may seem appealing, in the long run the less expensive alternative may also have a shorter life cycle or rely on inferior details which will result in more maintenance.

STEP 3: MAKE SURE YOUR ROOF IS PROPERLY DESIGNED

A roof can be designed to code, but still cause problems in the future. To help eliminate the need for maintenance on your roof and maximize life expectancy, there are a few things you should consider:

- *The slope of the roof.* Build a minimum slope of one-quarter of an inch per horizontal foot into your roof. Water that ponds on a roof can lead to problems and premature deterioration of some roofing materials. A small hole in the roof membrane on a dead-flat roof could result in severe leakage and damage to the roof system.
- *Drainage.* Drains should be located at low points of the roof to allow water to run off effectively. Secure the roof membrane and collar flashing with a clamping ring and cover with a basket to prevent debris from clogging the drain.
- *Penetrations on the roof.* The fewer penetrations you have on the roof, the better. Locate HVAC units on the ground, if possible, and eliminate any odd-shaped penetrations such as I-beams. That will keep mechanics off the roof and reduce the risk of careless damage.
- *How the roof will be flashed and sealed.* To ensure a durable, watertight roof system, vertical flashings should be extended at least 18 inches from the roof, up and over curbs (for fans, skylights and roof hatches), and up and over parapet walls. Care should be taken to seal perimeter edges properly



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as well. Develop details to minimize the reliance on sealant, which is a common quick-fix source of maintenance.

- *Install walkways from roof access points to rooftop equipment.* Roofing manufacturers offer compatible walkway systems to protect the roof system from damage by other trades who traffic the roof to service HVAC units, plumbing, communications equipment, etc.

- *Roof membrane thickness.* Heavily trafficked roofs or roofs in areas that are prone to damage require thicker roof membranes to provide additional protection.

STEP 4: CHOOSE AN APPLICATOR THAT IS TRAINED AND CERTIFIED AS ONE OF THE MANUFACTURER'S BEST

Today's roofing systems are becoming more and more complex. To help ensure a quality installation — which translates

into years of maintenance-free performance — building owners will want to hire a roofing contractor who is trained and certified by the manufacturer. The best contractors compete for the top spots in the manufacturer's applicator hierarchy because it helps to set them apart from their competition, and manufacturers often give incentives to contractors once they reach a certain level.

For a building owner, working with a manufacturer's elite roofing contractor can help eliminate the cost and hassle of emergency roof repairs because these contractors are trained in the best ways to install that particular roofing system. They often work with the manufacturer's technical representatives to review and modify the plans before the product is installed. Some manufacturers also send their technical staff out to the job to monitor and inspect the installation itself. This can cut down on problems caused by roofing systems that are improperly installed.

LOW-SLOPE ROOF MEMBRANE	AVERAGE ANNUAL MAINT. COST
Foamed in place urethane	\$ 0.15/sq. ft.
Coal-tar organic felt & pitch BUR	\$ 0.14/sq. ft.
APP multiply modified bitumen	\$ 0.12/sq. ft.
Asphalt-glass felt & asphalt BUR	\$ 0.12/sq. ft.
Asphalt-organic felt & asphalt BUR	\$ 0.12/sq. ft.
Prefabricated sheet metal	\$ 0.11/sq. ft.
Reinforced Hypalon and CPE	\$ 0.11/sq. ft.
Reinforced poly vinyl chloride and other thermoplastic single plies	\$ 0.11/sq. ft.
SBS multiply modified bitumen	\$ 0.11/sq. ft.
Coal-tar-glass felt & pitch BUR	\$ 0.10/sq. ft.
EPDM (ethylene-propylene-diamine)	\$ 0.10/sq. ft.
Asphalt-glass felt & pitch BUR	\$ 0.09/sq. ft.
Polyisobutylene	\$ 0.09/sq. ft.

Source: 1996 nationwide study conducted by Simpson, Gumpertz & Heger.

Conduct a Pre-Bid Meeting

One way to make sure everything will be done to minimize future maintenance is to conduct a pre-bid meeting with the roofing contractors and the roof membrane manufacturer. This helps to ensure that everyone, including the building owner, is aware of the process, and that the bidders are using acceptable installation procedures and details.

MAINTENANCE COSTS DO VARY

As you can see from the table on page 70, maintenance costs vary from product to product. Maintenance costs range from \$0.09 to \$0.15 per square foot per year.

DRIVING MAINTENANCE COSTS LOWER

Selecting a higher quality roofing membrane from a reputable manufacturer can bring your cost of maintenance even lower. For example, a customer survey of maintenance costs by one manufacturer of reinforced PVC (poly vinyl chloride) membrane found that annual maintenance costs averaged only \$0.025 per square foot, well below industry averages for low slope roofing installations. The age of the roofs from the survey ranged from 15 to 25 years.

THE DIFFERENCE IS IN THE PROCESS

How can one manufacturer's roofing membrane require so much less maintenance than other roofing materials? The answer is in the process. Roofing should not be treated as a commodity. It is a management process that includes three key components: proven materials, expert assistance and skillful workmanship.

Proven Materials

It all starts with quality materials and a proven manufacturing process. Higher quality ingredients produce a superior product but the manufacturing process is also critical. This can be hard for the consumer to measure, so the best indication is the history of proven performance. Ask the manufacturer to provide a reference list of projects in your area and building type. This is the best and most unbiased indication of product quality.

Expert Assistance

No one knows a product better than the manufacturer. Manufacturers with skilled technical experts must be involved at each major milestone of the roofing process — offering design assistance to architects and specifiers, training authorized applicators in the classroom and at the job site, and

inspecting the work during and after completion. This ensures that the building owner receives the highest quality installation possible.

Skilled Workmanship

A manufacturer needs to team with the best applicators in the industry. In addition, the manufacturer needs to establish quality controls so building owners can be assured of a high quality installation from start to finish. Skilled applicators can be hard to find. And, their skills need to be refreshed and best practices need to be shared on an ongoing basis.

Believe it or not, roofs really *can* be virtually maintenance free. A team approach is critical to deliver long lasting, headache-free roof systems. The owner needs to be involved throughout the process and partner with proven manufacturers and established roofing contractors. Although upfront costs are important, it is just as important to analyze life cycle costs to make sure you are getting the best return on your investment. **PRSM**

GARY WHITTEMORE IS MANAGER OF
RETAIL AND NATIONAL ACCOUNTS
FOR CANTON, MASSACHUSETTS-
BASED SARNAFIL INC.

Sarnafil Inc.

100 Dan Road
Canton, MA 02021
Telephone 800-451-2504
Telefax 781-828-5365
E-mail webmaster@sarnafilus.com
Internet <http://www.sarnafilus.com>


Sarnafil Division