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Illustration by Bruxov/dreamstime.com



The days of black tar and asphalt roofing materials may be coming to an end. White polyvinyl membrane roofing material is growing in popularity because of its durability and energy efficiency. Because this material reflects the heat of the sun and provides decades of performance, it meets Energy Star sustainability standards and can qualify a property for Leadership in Energy and Environmental Design (better known as LEED) certification by the U.S. Green Building Council.

The “green” benefits from installation of a cool roof system, along with other sustainable initiatives for these buildings, can prove very valuable to asset managers. These facilities will have measurably lower operating costs, resulting in increased asset values. These cool roofing systems are designed to conserve energy and water, provide a healthier and safer working environment for both employees and residents, qualify for energy efficiency incentives and demonstrate commitment to overall environmental stewardship and social responsibility.

CASE STUDY

The high reflectivity and emissivity, or ability to release absorbed heat, of white PVC roofing materials translate into energy savings for owners and occupants. Lacey Liner, Monument Roofing marketing director, shared some facts with ABODE about how cool roofs can benefit a property's owner and residents, as well as some specific energy savings figures from a recent project to refit seven apartment properties owned and maintained by the Housing Authority for the City of El Paso with Energy Star-rated white cool roofing material.

What information do you give to potential customers considering this kind of sustainable roofing system?

To be considered “sustainable,” a roofing system must meet long-term environmental demands with regard to design, construction, maintenance, reuse and recycling. Standards are defined by the five Es of high-performance roofing: energy, environment, endurance, economics and engineering.

Besides energy savings, what other benefits will the cool roof provide?

It will provide years, perhaps 30-40, of maintenance-free protection for the building occupants and contents. There will be no negative environmental impacts due to chemicals being released into the air or leached out into the rain water runoff, as can occur with

Compiled by **RACHEL ZOCH**, HAA Staff

new Green

White vinyl membrane roofs can improve energy efficiency, reducing costs for property owners and residents alike.

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Cost savings for installing a premium sustainable/single-ply/PVC membrane system vs. traditional asphalt-based systems is **two-fold**: Because the premium PVC membrane systems actually encapsulate the roof, **they can be installed directly over the existing structure**, eliminating tear-off/removal, landfill waste costs and labor costs. Tear-off/removal of the existing roof can sometimes cost up to one and a half times the cost of the roof itself.

asphalt-based roofing. At the end of its useful life, the membrane, depending on construction codes and regulations in effect at that time, can be covered with a new membrane, or it can be recycled into other post-consumer vinyl products, avoiding disposal in a sanitary landfill or by other more environmentally sensitive or energy consuming processes.

How does a sustainable roofing system compare to a traditional tar or shingle roof in terms of up-front costs and lifetime performance?

Cost savings for installing a premium sustainable/single-ply/PVC membrane system vs. traditional asphalt-based systems is two-fold: Because the premium PVC membrane systems actually encapsulate the roof, they can be installed directly over the existing structure, eliminating tear-off/removal, landfill waste costs and labor costs. Tear-off/removal of the existing roof can sometimes cost up to one and a half times the cost of the roof itself.

The PVC systems could cost up to 60 percent less than traditional asphalt- or rubber-based roof systems. The expected shelf-life of a traditional system is 50 percent less than a premium PVC membrane roof system, which can perform up to 20 years and beyond in some cases. There have been documented cases of systems that are still in place and still performing after 27 years, one of them in Houston.

Other advantages of PVC sustainable membrane systems include reduced energy consumption and costs. The high reflectivity and emissivity ratings of premium PVC systems mean that excessive heat is not absorbed into the rooftop itself but is deflected back into the atmosphere. Most "cool" rooftops will actually remain within 5 degrees of the ambient temperature, which reduces the workload on rooftop HVAC units as well, further reducing energy costs and virtually eliminating heat transfer to the roof deck and into chase areas which, in turn, maintains cooling of the return air process.

Additionally, toxins released from traditional asphalt or rubber roofing systems do not exist with the PVC membrane system. The pre-engineered sheets are heat welded together and (typically) mechanically fastened to the roof deck. Labor costs for installing premium pre-engineered PVC membrane systems are typically less because of the greatly reduced amount of field welds (seams). This,

See COOL ROOFS, Page 72

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COOL ROOFS, continued from Page 54
in turn, reduces the potential for leaks. In many cases, the system can be installed directly over the existing roof, eliminating excessive landfill waste and cost as a result of a tear-off, and the material itself is often recycled into other products, like flooring tiles.

Specifically, why did the El Paso housing authority want to use this kind of roof, and how do they think it will benefit their residents?

Due to deterioration of traditional asphalt systems and extreme weather conditions, HACEP was experiencing leaks and ponding water on at least seven of its properties, which was creating increased maintenance/repair costs. When researching different types of systems, they found a premium PVC white membrane system to be the best solution offering several benefits:

- The system is virtually maintenance-free, because it carries with it a 15-year (no dollar limit) warranty that also covers consequential damages (contents). Premium systems can also offer warranties up to 20 years.
- The reflectivity and emissivity of a premium PVC membrane itself helps reduce energy consumption and energy costs (to taxpayers/residents) and helps preserve the life of the HVAC system by reducing its workload.
- Residents can enjoy a comfortable and affordable living environment. The threat of extreme heat within the dwelling itself and transfer of potentially harmful toxins from asphalt-based roofing systems into their living spaces is virtually eliminated.
- Energy/utility cost reduction is a benefit as well. Duro-Last roofing will provide significant (perhaps as much as 30 percent) reduction in the energy usage required to cool the buildings on which it is installed, because approximately 85-87 percent of the solar energy that impinges on the roof will be reflected back into the atmosphere rather than being absorbed and transferred into the air conditioned spaces – compared to 20-30 percent for conventional asphalt based roofing systems). ★

Monument Roofing Systems, a division of Monument Constructors Inc., specializes in the installation of environmentally friendly, single-ply membrane roofing systems for commercial and industrial facilities.

For more information, call 1-800-580-9343 or visit www.MonumentGreenRoof.com.