Asphalt Roofing Manufacturers Association

When a Roof Provides More Than Waterproofing

Today, more than ever, low-slope roofing systems are expected to perform functions well beyond the original intention of waterproofing. Our changing lifestyles, the need for alternative energy sources, expanded living spaces and a greener, healthier planet are pushing roofing systems and the membranes that have kept us dry to "multi-task" and go beyond the traditional function as waterproofing membranes.

When an "overburden" (i.e., additional materials placed over a majority of the roofing membrane) is desired, the choice in waterproofing systems can mean the

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Asphalt Low-Sloped Roofing:

difference between years of maintenance- free use or a constant series of disruptions, hassles and repairs to maintain a safe, leak-free roofing system. No matter what the challenge, the inherent redundancy of an asphaltic roofing system offers durable waterproofing built to stand up to the challenge.

Three *primary* systems appear to be leading the pack in the evolution from weathering waterproofing membrane to substrate for alternative surfacings. Today, solar, garden and recreational systems are transforming the traditional purpose of roofing systems. These systems are rising in popularity, driven by voluntary programs such as LEED® (Leadership in Energy and Environmental Design), regulatory changes like California's Title 24, local government and power company incentives, and a growing desire to gain more livable space. While all these systems require specialized attention to the roofing membrane in order to maintain their primary design role as a waterproofing system, each overburden has unique needs of its own.

Withstanding Mother Nature:

How Asphalt fits with overburdens and other standards:

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Solar

By design, whether a Multi-ply BUR or modified system is selected, an asphaltic system provides back-up protection against leaks in a roofing application that may pose multiple technical challenges. Modifying a roofing system to include solar components requires a great deal of planning. Solar components, whether rigid or rack mounted Photo

Voltaic (PV) systems, or adhered thin film or flexible PV systems, can create stress on the membrane causing an advanced aging effect or the presence of multiple penetration may increase the potential for leaks.. Taking precautions in the planning stage of the original membrane installation can reduce damage to the membrane and assure the roofing system performs as expected.

There is a great deal of discussion within the roofing industry regarding the addition of PV components and the effect on the roofing membrane’s UL fire ratings and the potential for accelerated aging caused by increased thermal cycling. When considering a PV system, be sure to consult the requirements of the membrane manufacturer as they may have specific system recommendations including but not limited to a

requirement for frequent inspections to monitor the effects of the PV system on the membrane or the inclusion of an isolation sheet or surface coating in the conjunction with the PV system to help assure continued performance.

In addition, as with any traditional roofing system, if a rack mounted system is selected; multiple penetrations may be a part of the installation. Where multiple penetrations are present, attention to proper waterproofing details is critical to a leak-free installation.

Industry Standards such as those developed by Underwriters Laboratories and FM Global for wind and fire performance provide guidelines that help insure the placement of the overburden will allow the complete roofing system; both the waterproofing membrane and the overburden will perform as expected.

Garden

Asphalt is also the best logical choice if a garden system is selected. Once again, the historical performance of asphalt, whether BUR, modified bituminous membrane or a hot rubberized liquid, asphalt-applied systems are exceptional. Because there are several different kinds of garden systems, a full understanding of the deck and any existing substrate is imperative before installation. Several factors influence the decision-making process, including if the substrate will hold the added weight and if there is room for the additional components required to protect the waterproofing layer from root intrusion or provide drainage.

Consider the following if one of these three common garden roof types -- Intensive, Extensive and Container (or modular) -- is under consideration:

An intensive system is generally designed for public use, such as park-like settings. Growing medium depth is 6"+ and added weights range from 80 to 150 lbs sq/ft .Plants can be large shrubs, small trees, or grasses. Extensive systems are low-profile systems, lighter weight, generally between 2" to 5" in depth. 10 - 50 lbs sq/ft with low spreading sedum plants. Container (or modular) systems are self-contained trays that have growing medium and sedum planted in them.

In addition to the growing plants, other components such as a drainage layer, root

barrier and perimeter or penetration protection act to prevent damage to the waterproofing membrane that may occur due to the presence of the overburden. Sufficient considerations to overall building design, including, but not limited to: deck /substrate suitability, adequate room for total system components, a mechanism to facilitate drainage, and a leak detection system as part of the roofing membrane assembly. Wherever an overburden is present, a leak detection system can help prevent unnecessary disruption in the event of a leak.

Industry standards, such as those developed by Underwriters Laboratories and FM Global for wind and fire performance, provide guidelines that help insure that the placement of the overburden will allow the complete roofing system, both the waterproofing membrane and the overburden to perform as expected. As always, the Asphalt Roofing Manufacturers Association (ARMA) recommends consulting the roofing membrane manufacturer's application instructions for specific recommendations on garden systems.

Recreational Systems

In urban areas, the inclusion of pavers over a roofing area is a common sight. Building occupants want to expand their living spaces to include everything from patio space to outdoor playgrounds. Just as with the presence of the two overburdens previously discussed, special precautions should be taken to protect the membrane from damage related to the placement of the overburden. Pedestals are commonly used to raise pavers off the membranes to protect the membrane from physical damage that may result from direct placement of concrete pavers on the membrane. In addition, the pedestals raise the pavers off the membrane to facilitate drainage. Assuring adequate drainage and protecting the membrane from physical damage will help assure continued leak-free performance. Once again, the inclusion of a leak detection system as part of the roofing membrane assembly can help prevent disruption to the overburden in the event of a leak. As always, consult the roofing membrane manufacturer's application instructions for specific recommendations on recreational systems.

Determining which overburden is right for your roof can depend on several factors, including location and your plans for how the space will be used. No matter what you are considering, one thing is for sure, modified bitumen systems or inverted asphalt BUR are excellent choices for waterproofing technology. Now more than ever, the dependability and years of proven performance make these asphalt systems logical choices when your plans for a roof go beyond traditional waterproofing with the challenging expectations of solar, garden or recreational systems.

Information courtesy of Asphalt Roofing Manufacturers Association (ARMA)