

# THE ARCHITECT'S ANGLE

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## Do You Know That...?

- “Green Roofs” offer distinct benefits to your facility and the environment. A green roof is essentially two roofs. The first roof is a conventional roof. The second “green roof” includes a drainage system set beneath a thin layer of soil and vegetation. Green roofs absorb less heat which reduces heat gain and HVAC costs. Green roofs also reduce the rate of storm water runoff and can be a source of treated water recycling.

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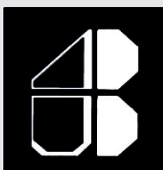
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## Keeping A Roof Over Your Head

Replacing a facility's roof system is a decision that is quite often put off for a “rainy day”. This is usually the case because a complete roof replacement is disruptive and has a collateral effect on other building systems, equipment and assemblies. Cost is usually another factor, especially when you consider what the escalating price of crude oil has done to petroleum based building products such as roofing materials.

Most roof systems are warranted by their manufacturers for 10, 15 or 20 year periods. When properly pitched and maintained, most roofs will have a useful life that reaches and sometimes exceeds their warranty period. However, even a properly maintained roof may fail due to excessive degradation from ultraviolet radiation (UV) or damage to adjacent systems such as flashings, parapets and copings which allows water to get beneath the roof system.

On roofs installed prior to 1982, the presence of asbestos in the roof membrane mastic and flashing is also a strong possibility. In New York City, the Department of Buildings requires any area of a building which is being altered to be tested for asbestos containing materials. The removal of ACM can add \$4 to \$5 per square foot to the cost of a roof replacement.

When undertaking a reroofing project, the first question we are usually asked revolves around which type of new roof system to install. There are three basic system options, each having a number of sub-options. The three major categories are: built-up, membrane and modified bitumen.

A built-up roof is an older, time tested technology where alternating layers of asphalt felts (plys) and asphalt pitch are hot-mopped onto roofing decks. Highly skilled labor is not required and if the roof should leak years down the road, the tight bond between the membrane and roof deck makes it easy to find and repair. The leak will usually be right below where water has entered the outer ply. This is not the case with certain loose laid membrane systems where water can run a considerable distance across the deck (beneath the membrane) before it leaks into the ceiling. A disadvantage of built-up roofing is the odors associated with its installation. Fresh air intakes on rooftop air conditioning systems can spread asphalt odors throughout a building. This situation can be managed somewhat by installing additional temporary filters at the fresh air inlets.

Membrane roofs can be loose laid and secured with ballast stones or can be fully adhered (glued down or mechanically fastened). A membrane system uses more hi-tech materials and requires more skilled installers. It also relies on a thick single ply of rubberoid material to do its job. Membrane systems are less suitable for use on high traffic roofs and usually require a greater flashing height and steeper pitches to achieve longer warranty periods. This is the case because you only have a single ply, or single line of defense against the weather as opposed to a built-up system with 3 or 4 plys.

Modified bituminous systems provide a balance between the durability of built-up systems and the cleaner installation and technological material advantages of membrane systems. Modified systems are applied in multiple layers and have the option of being hot or cold applied.

## **John W Baumgarten Architect, P.C.: Recent Roofing Projects:**

