

Green Construction and Roof Maintenance

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The concept of “Green Construction” has quickly taken center stage among commercial building design professionals. The LEED program (Leadership in Energy and Environmental Design) established by the USGBC (United States Green Building Council) has created a framework for the design and construction of buildings that are more “environmentally friendly” and have a lower impact on energy.

Some Things Never Change

While the LEED program specifies a roof/roof covering that has high solar reflectance and emittance, many of the materials and designs that were used prior to LEED have not changed. Moreover, building owners/facility managers are often lulled into a false sense of security when presented with a 10/15/20 year warranty by the installing roofing contractor. The warranty document implies that any leaks will be repaired for the length of the period, so why worry? Even though a roof may contribute to the building’s gold or silver LEED rating, this does not change some of the basic and fundamental obligations of the building owner. Nor does it change how the roof deteriorates or how it can be maintained.

A basic LEED premise is that the construction materials used will have a limited impact on the environment; this includes the use of recycled materials. While this is an admirable goal, it is counter to the current status of roofing industry in the United States. While roofing accounts for only 0.1% of the GDP (all the goods and services), it is estimated to account for over 6% of the landfill. This disparity is still left unresolved by the good intentions of the LEED program. Legislation and implementation of the LEED program alone cannot supplant the fundamental responsibility of the building owner/facility manager for prudent preventative maintenance.

Building Owner/Facility Manager Responsibility

All equipment requires maintenance. HVAC, elevators, escalators are routinely serviced by trained maintenance personnel. Their actions can be as simplistic as oiling motors, lubricating bearings, and vacuuming enclosed compartments. However, these actions still qualify as **PREVENTIVE MAINTENANCE**. The basic idea here is to conduct these maintenance activities as an alternative to the more costly repairs that may be required if the preventive maintenance is not performed. It is well understood and

generally accepted that these maintenance activities, if not performed, will contribute to unwanted and unneeded downtime, and costly and time consuming repairs.

Consider the simple analogy of the crankcase oil in the family car: Periodically the oil level is checked to insure there is sufficient oil in the crankcase. If it is low, additional oil is added, and if the color or odor looks improper, further immediate repairs are warranted. Then, at regularly scheduled intervals, the oil and filter are changed. All these actions are designed to insure the longest service life and least operational interruption for the car's engine. If these activities are not performed, more serious and much more costly consequences await the building owner. It is much easier, more convenient and less costly to change the crankcase oil than to replace the entire engine, when the engine begins to smoke and seize up. The overarching general premise here is that maintenance costs are inversely related to and much lower than repair costs.

Using this analogy, consider a roof. While it has no moving parts, it still qualifies as an asset or piece of equipment. Its service life (not to be confused with the length of the warranty) will be dramatically improved by the amount of preventive maintenance that is conducted on it. Warranties do not cover blocked drains, plant life growing on the roof, damage caused by foot traffic, or actions of other construction and maintenance trades, or natural causes, such as tree limbs or hail. Thus, at the very least, the roof should be inspected at least twice each year, preferably in the spring and fall. Drains, flashings, curbs, downspouts, can be inspected to insure they are free flowing and not clogged. The field of the roof can be "walked" and checked for splits, fish mouths, holidays, and punctures. The general condition of the field of the roof can be noted to see if it is exhibiting signs of premature wear or deterioration. If the roof has smooth stone ballast, the stone should not accumulate in large piles, leaving other sections uncovered and exposed. These piles can be easily respread over the roof in order to protect the membrane. If the roof has gravel surfacing, the degree of erosion from the membrane should be noted. It is these granules that protect the underlying roof membrane. This may be an appropriate time to apply a protective roof coating to the roof to extend its life. If the roof is already coated, the coating should be inspected to determine if the roof may need recoating. The coating and the stone/granules described above protect the roof from the harmful effects of the sun's ultra violet light. Providing this "sunscreen" will greatly prolong the roof life. The roof/wall transitions can be inspected for loose base flashings, detached counter flashings, and other "suspect" areas that appear to be potential sources for water intrusion. While some of these descriptions border on the more technical aspects of roofing, the fundamental concept here is that if the roof doesn't look like it did when it was installed; something adverse is happening to the roof.

Professional Help is Available

These activities do not require the expertise of a trained roofing professional. However, periodic inspections every few years by a qualified roofing professional such as a Registered Roof Consultant, RRC, are recommended to insure nothing has been missed by the cursory semi annual overview field inspection. At that time, the consultant may recommend a maintenance coating or some modest repairs to areas of the roof that are weathering excessively. In spite of the cost to have the roof professionally inspected, this

expense can be easily offset by the savings of not having to effect major repairs or suffer the consequences of interior damage to the building equipment or employee downtime and lost productivity.

Conclusion

Building owners and facility managers who embrace the concepts of LEED and “green” building should also feel responsible to insure their roofs are adequately maintained. This begins with routine inspections and preventive maintenance. All this will assure the longest possible service life and reduce the need for premature roof replacement.