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The Building Envelope
a SYSTEM to be maintained

By Dennis Brooks
Design Build Associates, Inc.
Construction Managers / Consultants

Three days of straight rain and the property manager can't answer the phone fast enough. She thinks to herself, "How can this be, we just had the roofs replaced last year." The roofs might be in perfect condition, but still the leaks persist.
Or how about the association that for years has not raised the dues, only to now find themselves faced with massive costs to rehabilitate their dilapidated buildings. They may have thought it was only the roofs or the decks, but when they started to make repairs they find to their utter horror a different story. Under the roofs or decks, walls are rotting away, and there are more termites living in just one wall than all the residences of their city.

I have found in my 30 + years in the construction industry and my dealings with property managers, boards of directors and homeowners, that they face these problems and many others of a similar nature on a daily basis. The core of so many of these problems lies in a poor understanding of, and/or the lack of proper maintenance of the building envelope "system."

You may be asking, what is the "Building Envelope" or what does this mean, "maintenance of the system?" First, let's define the building envelope; I believe that the easiest way to define the building envelope is to understand that it is any barrier that separates the exterior environment from the interior environment. So what are the elements that physically separate us from the exterior environment when we are inside our homes? Depending on the type of building we live in, the exterior elements of the building could be marble and glass (such as a hi-rise building,) or it could be stucco, siding, paint, roofing materials and even the foundation would be considered part of the building envelope. All of these elements physically separate us from the adjacent environment.

What then do we mean when we talk about the building envelope as a "system?" We must first consider the meaning of the word "system." A system is something (in this case the building envelope) created from several parts or members. It is a set of interacting or interdependent components forming an integrated whole. Therefore, the building envelope is made up of these various exterior elements (materials) that together work as one to form an 'interdependent, integrated whole'.

Our focus as we look at a leaky building is to consider all of the exterior elements and understand which of the elements are failing by themselves, or in combination with other elements, and allowing water into the interior environment. The common connection between these various exterior elements, some of which can be seen, others which cannot be seen, are commonly referred to as flashings. The type of flashing and design of these flashings are far too numerous to elaborate on here. However, flashings come in all sizes, shapes, and even different materials depending on their application.

The danger of replacing a roof but ignoring the intersecting flashings can be an expensive mistake. Likewise, expensive problems can arise from applying a new coat of decking material on a deck but ignoring the deck to wall, or the deck to threshold conditions. Even if these locations are addressed during a repair, if they are not addressed in such a way to properly tie them back into the "system," it is very likely the system will fail prematurely.

The liabilities that arise when these exterior building

systems fail can be extremely costly to the HOA whose duty (according to the CC&R's) it is to maintain them. We have all read or heard the stories of the multi-million dollar mold claims, the damage to personal property and expensive litigation when building systems fail. In many common interest developments this duty lies with the homeowners association. Regardless of who or what is found to be ultimately responsible for the damage, it is the damage itself that we should all be looking to avoid in the first place. When a Board knows that they have deteriorating exterior elements that need attention, they should immediately seek the advice of an expert as to what is necessary to properly address the issue/condition. They should also be asking, how repairing or replacing a specific element of the building affects all other materials. Again, a common unfortunate mistake is to replace the obvious failing component without any consideration given to how that component ties into the building envelope system.

One association that we are familiar with had replaced all of the roofs within their association only to find that their new roofs leaked just as bad as the old roofs. To solve their leaking issues, they had to replace the flashings, which meant replacing all of the roofs for a second time. The cost of two roofs on all of the association's buildings, the litigation, disappointment and heart ache could all have been avoided if the board (and *even* their contractor) had understood the problem before attempting the repair. This is a prime and costly example of individual board members, a property manager, and even a roofing contractor that either did not understand the importance of the "system," or chose, at great peril to the association, to ignore the interdependence of multiple components of the building envelope system.

Sound advice to boards of directors and property managers when it comes to evaluating the condition of a building exterior is to seek the advice of an expert. Not the board member's brother-in-law who is some type of contractor, not the property manager who will likely admit that they are not the right person to be offering the solution and identifying the scope of work, or even the likeable contractor that offers his services to fix the problem, but an expert, construction manager, or construction consultant with years of experience at identifying the problem and who understands the interdependence of the building envelope system.

Maintaining the exterior of a building before it fails is always less expensive than waiting until the failure is systemic, causing problems for the structure behind the envelope and the materials below the point of failure. It is also less expensive to fix it right the first time, even at a potentially greater immediate cost, than to allow a substandard repair that does not take into consideration the building envelope as a whole integrated system. As the saying goes "If you fail to plan, you plan to fail." With the building envelope, failing to understand, is planning to fail. Failures of this magnitude can be very expensive. ■