

WATER, WATER, EVERYWHERE

By Michael S. Greene, Esq.

Perhaps it is most apparent to those of us who live and work in South Florida, where humidity and rain are everyday events, that weather can have a severe impact on the construction process. While severe weather events, such as last year's train of hurricanes, are clearly seen to cause widespread water damage, ordinary weather events can also cause real damage to building components, particularly those susceptible to mold and microbial growth.

In South Florida you can generally set your watch by the 3:00 p.m. afternoon thunderstorms. Over the most recent two months, the amount of rain has been significant, well beyond that anticipated for this time of the year. In addition, the humidity reaches levels at which, as one pundit suggested, you could "pass a glass through the air and come back with it full." Many other Southern or Gulf Coast states also enjoy wild and wet seasons. What does this have to do with construction?

One of the causes of mold is construction materials and products which are installed wet, are already moldy, or which can provide a source for future "building bloom" if humidity should increase or water intrude.

The lack of insurance coverage for mold and the damage that mold may inflict on the economic viability of a building, whether commercial, residential, or industrial, has caused developers' and contractors' focus to shift from a reactive approach to prevention. If building components can be assured to be appropriately clean, and if the potential for water intrusion can be reduced, the likelihood of mold damage will also be reduced. The measures for protection during construction require several levels of care:

- (1) maintaining dry materials and components;
- (2) insuring that during construction, the building remains dry; and
- (3) taking appropriate steps to reduce the likelihood of later water intrusion.

Let's first tackle wet building components, such as drywall. Following the "life-cycle" of drywall in the construction process, the drywall may have also started its journey to becoming a full-grown wall by sitting in a distributor's or local supplier's yard. Most such yards are not climate-controlled, enclosed buildings, and, in fact, the drywall may be lucky to have a roof over its young head.

Next, our intrepid sheet of gypsum must find its way to the jobsite, I cannot count the times that I have been driving on one of our clogged South Florida highways to pass a lo-boy or other trailer truck loaded with pallets of drywall, a thin sheet of plastic wildly flapping in the wind (at least on better traffic days), with a soaking rain coming down. The condition of the drywall upon arrival will not look much different than installed drywall after a building flood. Drywall being the "key lime pie" of the *Stachybotrys* world, mold will be growing before the drywall is even installed.

After its potentially wet and wild ride to the job site, the drywall may be stacked out in the open or in a portion of the building which is yet to be dried in. The drywall can be exposed to weather even if the building is not dried in, particularly with our frequent "sideways" rainstorms. What is the likelihood of the wet drywall being inspected for mold before installation? Generally, pretty slim.

In looking at building components, the first step in prevention is to ensure that, throughout the chain of storage, delivery and on-site storage, the materials are maintained in an adequately dry condition. Often, the material are of such a nature that they really would not harbor mold even if wet. The problem with ignoring the water-impact on such materials, is that in a dispute over the source of mold in a constructed building, often judges and juries, with no experience in the construction process, are asked to decide the facts surrounding the cause of the mold. In one real-world lawsuit, a mechanical contractor was being sued for its air conditioning equipment being the source of mold growth in a retail center. While, after expert analysis, the likelihood of such being the case was insignificant, the developer of the shopping center had several "thousand word" photographs showing the status of the construction at the time the air conditioning components were delivered to the project site. Several of these photographs showed the building half dried-in, and half still open to the elements. You can guess in which section the photographs showed the stored air conditioning equipment. Yes, that's right, under a lovely moon-roof, open to the stars and, of course, sitting in a puddle of water. The photographs evidenced a lack of concern on the part of the mechanical contractor for the proper storage and protection of the building components. Not even one of those previously mentioned thin plastic sheets was protecting the equipment. A plan for control of storage and weather protection for the project site could have easily eliminated a significantly harmful argument against the mechanical contractor. As you can see, control of materials and prevention of exposure to water and humidity on a job site can eliminate significant issues and claims for later mold contamination.

As noted above, protection of materials is not the sole step to be taken to reduce the likelihood of mold and microbial growth in a building. Often, the design elements themselves, such as wall details, window selection and air conditioning design, can significantly impact the likelihood of later water intrusion and excess humidity. While it is impossible in an article of this length to review the appropriate design choices for typical buildings, suffice it to say that design professionals have often not focused on the weather-tightness of the designs. Often, components that are successful in one climate do not work well in wet, rainy climates. Before materials are even delivered, choices and selections must consider the appropriateness or design details of those building components to avoid the water intrusion.

The last general category of prophylactic measures deals not with the protection of the materials themselves or even the design elements, but ultimately, with workmanship. Despite having a Bachelor of Building Construction, I had always thought my carpentry skills to be somewhat lacking. That is, until visiting some recent job sites, where it seemed my skills were far better than those of the hired carpenters. I know of several homebuilders who elect to counter this workmanship issue by the use of "pre-emptive" air sampling to identify whether there is mold growth. I am not a proponent of pre-emptive air testing, as I do not believe such guarantees a genuine baseline for future reference. The real issue is whether dry conditions have been maintained and water has been banned from entry to the building envelope. A far better approach would be to make a visual inspection for water damage and mold growth (preserving the clean condition with photographs) and to determine whether windows,

flashing, roof penetrations and other typical sources of water leaks are indeed water tight. Water spray and similar tests, properly performed, are far more effective.

I find it interesting to note that on many projects with leak problems, the windows are often the primary culprit. I cannot tell you how many times I have heard the comment from the builder that the window subcontractor is out of business after a severe installation problem has been discovered. Despite the roaring residential construction market, it seems that window contractors are either suffering from many claims or periodically change entities to provide lawsuit protection. Therefore, providing appropriate testing before the particular subcontractor is off the job site and out of business is far more effective at preventing mold than air testing.

So, what steps should be taken in the construction process to reduce the likelihood of mold being generated? Here are my recommendations:

1. Engage an appropriate water intrusion professional to assist with the development of design and construction protocols and to provide monitoring during the construction process.
2. The water prevention plan must be agreed-upon in contracts throughout the chain of parties involved, with all agreeing to abide by the decision of the water intrusion professional with respect to rejection of wet materials.
3. Design elements should be reviewed to reduce the likelihood of intrusion through the riskiest building components.
4. All materials coming to the job site should be first inspected and stored in a designated "dry" storage area.
5. Documentation of the job site and water sources should be made both photographically and by written record-keeping.
6. Post-completion testing of windows and other potential water sources should be implemented.
7. A post-completion monitoring period to be established to review and identify potential leaks and humidity issues.

These protocols, while not inexpensive, can reduce the chance of costly, uninsured, repairs and replacements after the fact.