PREVENT MOISTURE; MINIMIZE EXPOSURE
BUILD WITH MOLD IN MIND

BY BRUCE KEETON

Toxic mold has made news headlines in unprecedented numbers over the last few years, with dozens of stories reported about mold growth in buildings ruining homes and making people sick. Subsequently, mold exclusions are appearing in a growing number of insurance policies for building owners and tenants, as well as building industry professionals. State departments of insurance have received hundreds of filings from insurance companies seeking to limit or exclude mold claims.

A major concern for design and building firms is that mold-related problems often involve construction defect claims that grow into class-action lawsuits alleging personal injury due to long-term exposure to hidden mold. Frequently, statutes of limitation do not apply to bodily injury claims. Moreover, these claims can be accompanied by other claims from project owners and tenants for breach of contract, property damage, delays, business interruption and profit losses.

The bottom line is: virtually everyone in the building industry—architects, engineers, contractors, owners and developers— faces exposure to mold-related claims.

The good news is that such exposure can be minimized through design and construction practices that address the source of most mold problems: water intrusion. Water that penetrates walls and roofs can lead to serious problems, such as corrosion of concealed metal components and wood rot. Saturated insulation can lead to excessive heat loss in winter. Concealed mold and mildew growth can occur, and prolonged leakage can lead to costly structural problems and infrastructure damage that are not easily remedied.

Start with Mold in Mind

Although it is virtually impossible to design and build a completely mold-proof structure, steps can be taken to avoid extensive water intrusion, thereby reducing the chances of mold-related claims. Following are some helpful preliminary steps to take when approaching the design and construction of a particular building:

Know your locale. Thoroughly investigate the history of mold problems in a project site's locale, as well as any standards that may come into play. California has recently passed the Toxic Mold Protection Act with directives to set indoor mold exposure limits and establish standards for detection and removal.

Discuss the potential for mold problems with the owner. Also discuss the need to design remedies into the structure rather than deal with the problem somewhere down the road. Point out that the owner will be liable for such problems should tenants, clients, customers or other third parties allege that they have suffered bodily injury due to mold.

Make sure that your contract contains protective language. A clear and accurate scope of services specifying who is responsible for mold is essential. Press for indemnity language that allocates liability for mold-related claims to those in the best position to control the

building environment. Avoid guarantees, warranties and other such language concerning the absence of mold.

Hold regular meetings during construction. In the working agreement, call for regular inspection, testing and disclosure for existing mold as well as conditions that could lead to mold. When necessary, retain qualified industrial hygienists or other expert engineers to provide inspection and remediation services. Document all findings, changes in project scope, project upsets and other information that could be used in defense of a claim.

Seal the building envelope. Protecting a structure's interior begins with sealing the building envelope to keep water from penetrating it. This can be accomplished by focusing on the building's trouble spots: flashings, joints, and coatings.

Scrutinize all flashings. Flashing failures typically are related to improper design, detailing, materials selection or installation. Flashing materials must be selected to be compatible with adjacent construction and to be durable, puncture resistant and flexible. Wall flashing should extend beyond the exterior face of walls, so water does not drain back under the flashing into the wall or wall cavity. Flashing should also be properly sloped and positioned to let water drain. Any penetrations should be sealed to prevent water leaks.

Joints. Joints in the building facades and paving are usually protected against water penetration and air infiltration by sealant or mortar. Many types of sealants are used, including silicones, polyurethane and polysulfides; as well as acrylic, latex, and butyl-based sealants. Common sealant failures involve loss of bond to the substrate, separations within the sealant, loss of flexibility and aging and weathering. Sealant should only be installed and cured during appropriate weather conditions. Joint surfaces should be dry and frost-free, and installation during excessive heat or cold should be avoided.

Coatings. Commonly used coating systems include clear or pigmented film-forming coatings, and clear penetrating sealers. Clear, penetrating sealers—most commonly used with concrete—reduce water penetration into the substrate. The most effective penetrating sealers are based on silanes and siloxanes. These products react chemically with surfaces of pores and line cracks in the concrete to make them water repellent; while allowing moisture that does enter the concrete to escape.

These products will make the surfaces of a fine, hairline crack water-repellent, but they do not fill or bridge cracks. Once applied, most sealers cannot be readily removed, so careful selection and testing are required before application.

In addition to addressing these trouble spots, remember to scrutinize construction materials. All construction materials have limitations with respect to moisture, and sometimes too much is expected of these materials. Poor choice of construction materials, often based on cost considerations, may affect a building's integrity. Materials should be compatible with the environment and installed by knowledgeable workers. Contractors must take the initiative to refuse materials that are delivered damaged, dirty, or moldy (in the case of timber and sheeting).

Finally, make sure HVAC and humidity control systems are installed properly. Ensure proper ventilation, including adequate crawl spaces, exhaust fans and dehumidifiers.

Specify leak-proof window and door installations and mold-resistant materials. Ensure proper drainage and runoff controls, so water doesn't collect underneath structures.

Maintenance is key. Once construction is complete, it is important to encourage building owners and/or property managers to implement scheduled maintenance programs. The first step in achieving timely and appropriate maintenance is to make sure inspections are conducted regularly and properly.

When inspecting roofing, for example, water leakage is evident from water stains, efflorescence, or even active leaks. Signs of deterioration on the exterior of a flat roof include splits, cracks or blisters in the roofing membrane; ponding water on the roof surface; sponginess or trapped water within the roofing; debris in drains and gutters; or blocked drains. On sloped roofs, signs of problems include missing or displaced tiles or shingles, and curled, cracked or aging shingles.

Remember, the key to solving problems created by mold is to control the amount of moisture that intrudes into buildings. For design professionals and contractors, moisture can be best controlled through preventative measures during the design and construction stages of a project; along with a well-planned and scheduled maintenance program after its completion.

Taking an aggressive, proactive approach to controlling water intrusion could spare your next multifamily or single-family residential project from becoming another mold headline.

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