

# Practice

## After the Flood

### *Give your clients some guidelines on how to clean up*

**N**ow that flood season is upon us, AIArchitect has received requests for information to offer to the public about cleaning up after a flood. The following tips are excerpted from AIA North Carolina's "Recommendations and Procedures for Cleaning out a House or Business Following a Flood" report, which the chapter offers as a public service. For the full report, visit [www.aia.org](http://www.aia.org), and search for "flood procedures."

#### General

- After a flood, time determines the extent of damage to structural elements. If water has been in the building more than a few hours, the damage and amount of material that will need to be removed will be extensive. Gypsum board on walls and ceilings, and insulation under floors, within walls, and above ceilings become damaged beyond repair and must be removed to minimize further damage to the overall structure.
- It is absolutely necessary to initiate the drying process throughout the structure as quickly as possible. Cross ventilation is the most effective way to promote drying out of the interior. To get maximum ventilation, open all doors—exterior, interior, and closet. Supplement air movement with fans and air-conditioning systems, but do not use heaters, which can increase humidity.
- Keep the structure well ventilated until the interior materials are completely dry. If extensive soaking has occurred, test for dryness with a moisture meter (sold in paint stores).

#### Before clean-up proceeds

- Get a tetanus shot if your vaccination is not current. (Check with the local health department for more information.)
- Before entering the building, be certain that the electricity has been turned off. (If power is still on immediately switch the main breaker in the electrical panel to OFF.) Verify that gas-burning appliances are off and that no gas is leaking out of appliances or heaters.
- Do a thorough walk-through of the structure, carefully checking in all closets, corners, cabinets, drawers, and attic spaces for animals, insects, and snakes.
- Do not allow small children to play in the affected areas or with materials that have been exposed to flood water.
- Take photographs or make a video recording—and make written notes—describing the damage prior to removal and as the removal process proceeds. This documentation will be useful if you need to file claims later.

#### Basic clean-up procedures

- After removing wet and soaked materials, wash down all surfaces with disinfectant. One part of common household bleach (such as Clorox) to five parts water will help you rid the structure of mildew and mold and prevent their growth. Concrete and masonry wall surfaces can be hosed down and then scrubbed using a standard garden-type sprayer to apply the bleach mixture. Wash down all surfaces; wear appropriate gear such as rubber gloves, face masks, and goggles (and afterward, wash your hands with disinfectant before eating).
- Mattresses and most upholstered items that are completely saturated with contaminated water are not salvageable; follow local regulations for disposal.

#### Foundations

- Verify that the floodwaters have not deteriorated mortar joints and weakened concrete block and masonry pier foundations.
- Visually inspect the foundations both around the perimeter and under the house. (Again, watch for displaced critters.) Check footings to be sure mortar has not been washed out of joints between the bricks and block.
- If you find that mortar has been washed out, have a professional check the damage. If a foundation still has adequate structural integrity, the missing mortar can be replaced without dismantling the foundation.

#### Floors

- Immediately remove the carpet and padding throughout the structure; they harbor bacteria and hinder the drying process.
- Vinyl, vinyl asbestos, and vinyl-composition tile may curl at the edges and the adhesive may not keep secured to the floor, necessitating likely removal. (All materials containing 1 percent or more asbestos fibers are required by law to be removed and disposed of in accordance with EPA, OSHA, and some state laws. Employ qualified personnel—failure to do so may cost you a large fine!)
- Other types of floor covering, such as clay or ceramic tile, generally will weather flooding well. Be sure to check the subflooring, however; if it doesn't dry satisfactorily, these types of flooring may need to be removed as well.
- Wood flooring and wood subflooring most likely will be dam-

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aged, because absorbed water causes wood to swell. If not dried out rapidly or adequately, the flooring will swell and buckle. To control costs, try to dry out this flooring after removal of covering material; but be ready to accept that it may need replacement.

#### **Interior walls**

- Gypsum board (sheetrock) on walls that have been in contact with water for longer than two hours most likely will require replacement, not only to remove the damaged board but to expose wall structure so that it can dry out. Water-logged gypsum board left in place ultimately will powder and mildew, causing unpleasant odors and providing an unacceptable base for paint.
- Remove gypsum board by cutting it horizontally at least 12 inches above the high waterline and completely removing down to the floor.
- Insulation in exterior and interior walls that has been immersed in water must be removed. Saturation renders most insulation permanently ineffective, and, if left in place, it can perpetuate high moisture conditions destructive to wood, masonry, and metals.
- Allow adequate time for complete drying out of your structure, typically between one and six weeks, depending on the extent of the flood and the ventilation and weather conditions during the drying-out period. Do not install new materials until all existing surfaces are completely dry. For instance, after removing the gypsum board and insulation from the affected walls, it is absolutely vital to allow the framing and wall cavities to dry thoroughly before installing new insulation or gypsum wallboard.

#### **Ceilings**

- Even though the water may not have reached the ceiling, the flood's extreme humidity may trigger gypsum board to swell and pull loose from the ceiling framing. Check the ceiling by pressing upward on it; if nailheads appear on the surface, there most likely is damage. If so, at least re-nailing and refinishing will be required, and total replacement may be necessary. Check attic insulation; if it is moist, it may keep the ceiling from drying out, and result in mildew. If the insulation is wet, it must be replaced.

#### **Doors and cabinets**

- Delamination of plywood and doors will not appear for several days, but will be obvious when the plywood or door begins to peel away from the substrate. Solid wood or wood-panel doors have a better survival rate. However, watch these, too, for swelling and subsequent shrinkage that might cause them to crack.

#### **Exterior walls**

- Brick veneer backed with water-resistant sheathing generally will not be damaged if the weep holes (the slots near the bottom of the brick) are open to allow for the water within the wall to drain out and the air to enter and assist in drying the cavity. If weep holes are blocked with debris or silt, clean them out. (Removal of single bricks at the base of the wall every four feet will aid drying. If done properly, the mortar can be cut around a brick and the brick saved for replacement. In some extreme cases, brick(s) at the top of the wall may need to be removed—check with a qualified professional.)
- Open all perimeter vents in houses with elevated floors to maximize cross-ventilation and air movement in the crawl space to help dry floor joist and sheathing.

#### **Ductwork systems**

- Ductwork systems need to be flushed thoroughly and disinfected against bacteria and germs carried by floodwater.

#### **Gas system**

- Water can collect in gas lines, causing the pilot light for appliances, heaters, and water heaters to burn improperly and, in some cases, go out. Gas can escape if there is a faulty valve or thermal couple. The gas system within the structure should be checked, and appliances checked for proper operation.

#### **Electrical systems**

- Electrical systems should be thoroughly checked, especially if the water rose above the wall outlets. Silt can collect in these and cause short circuits. Also, check all light switches and light fixtures for water if the floodwaters were high enough to reach them. A professional should be called in if there is any question about the condition of the electrical system.

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### **Appliances**

- Do not attempt to use any motorized appliances that were below flood level until they have been checked by qualified personnel.

### **Repainting**

- Stains will bleed through new paint unless covered with white shellac or some other paint-type cover-up, such as *KILZ*. To avoid blistering and peeling, be sure all surfaces are thoroughly dry before painting.

*This information was compiled on behalf of the AIA North Carolina, 115 West Morgan Street, Raleigh, NC, 27601, 919-833-6656, with assistance from the AIA national component. For specific advice on professional liability, consult with your legal counsel and insurer. [■](#)*