From the Outside Looking In

How to Better Protect Flood-Damaged Structures

After disasters strike, the first big chore many survivors face is digging in and cleaning up their damaged houses and businesses.

Next comes the task of repairing, rebuilding or building anew. This stage provides a perfect opportunity to incorporate disaster-resistance measures that can be put in place from the ground up and the outside in to help reduce or prevent possible future damages.

Before beginning exterior work, be sure to have a means to provide temporary protection (i.e. tarps, plywood, etc.) that will keep out weather elements and avoid interior damage if the project lasts several days. Don't forget to check local code and permitting requirements before beginning any work.

Here are a number of ideas to help protect structures from floods, severe storms and high winds:

Roof:

High winds and hail are common causes of roof damage. Failing to properly secure a roof also can mean that water may leak or blow into a structure during severe storms. To better withstand the pressures that high winds can put on a structure, make a strong connection by:

- Ensuring the roof deck is properly fastened to the rafters or trusses that support the deck. A qualified roofer should know the proper nail weight and spacing.

- Attaching roof rafters to the walls with metal connectors to tie the structure together to help resist wind uplift. This is best done when new sheathing and shingles are installed. It's a good idea to go further and tie the structure to the foundation as well to fortify the entire structure.

- Installing a waterproof underlayment beneath shingles.

- Securing shingles on composition roofs with six nails per shingle.

- Ensuring that flashing is made of a corrosion-resistant metal and securely attached to the structure.

- Fortifying gable roofs by bracing the end wall of the gable. This can be added fairly easily, but have a contractor do it to ensure the bracing is properly designed and attached.

- Keeping gutters clean and clear. Consider adding metal screens to help keep leaves, twigs and other debris from landing in the gutter and restricting water flow. Be sure to check the gutter/downspout connection for clogs as well.

Walls & Foundations:

A strong connection is not just important at the top, but all the way to the bottom as well. Make this connection by:

- Tying one floor to another with a continuous strap nailed on the outside of the wall or with a floor-tie anchor nailed to the inside of the wall.

- Securing the structure to the foundation with connectors nailed to the studs and bolted into the concrete – again, to help the structure resist wind uplift.

- Repelling water by adding a waterproofing membrane around the foundation (this will require siding removal).

- Sealing all exterior openings, such as holes where wires, cables and pipes enter or exit a structure (winds of 74 mph can blow water up a wall about 4 feet).

- Installing a French drain at the base of the foundation – either around the full perimeter of the structure or in areas that frequently flood. French drains refer to a trench in which a drain pipe is laid; traditional versions are a trench filled with gravel. Ensure that the drain has a method for diverting water away from the structure (not towards someone else's) to a storm drainage system, retention pond or some other source. Check with local building officials for requirements.

Windows & Doors:

Exterior glass is highly vulnerable in a severe storm, but there are ways to lessen the chances of windows and doors breaking in bad weather.
Do this by:

- Installing shutters to protect windows and doors, OR
- Installing impact-resistant laminated glass windows or doors.

Windstorm protection for glass should include all windows and doors, especially sliding glass doors, because they are more vulnerable to wind damage than most other doors.

Garage Doors:

Garage doors can be especially vulnerable in severe storms because of their size. Strengthen these doors by installing permanent wood or metal stiffeners to an existing door or replacing the door with one that is specifically designed to resist high winds.

Outdoor Appliances:

If floodwaters have damaged an air conditioning unit or heat pump to the point of replacement, take advantage of the situation and install the new one on a raised platform. Be sure to tie the unit down to the platform.

Landscaping:

Proper landscaping and tree care can help protect a structure in floods and in high-wind events. Here's how:

- Don't underestimate the power of a little dirt when it comes to keeping overland water at bay. Add fill dirt around the foundation and angle it away from the structure. Cover with low-growing vegetation or ornamental materials such as shredded bark or light-weight lava rock. Avoid heavier rock or landscaping gravel, unless required for drainage, to keep it from flying around in a high-wind event.

- Keep trees trimmed so that branches are at least 7 inches away from the exterior of the structure.

- Keep vines off exterior walls because they can break mortar or help open cracks in the siding, which allow in moisture or insects.

Fuel tanks:

Floodwaters can easily tip an unanchored fuel tank causing it to spill fuel and/or float away. Avoid this by:

- Anchoring the tank to a large concrete slab or by running straps that are attached to ground anchors over the tank to keep it in place. Use non-corrosive metal structural supports and fasteners. Check with the fuel tank manufacturer for recommendations on anchoring.

- Keeping the fuel tank topped off to increase its weight and reduce buoyancy.