

**How-To
CLINICS**

HURRICANE READINESS



**Prepare your home.
Protect your family.**

How To Board Windows

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As a hurricane approaches, protecting your home becomes a priority. One of the most vulnerable areas for damage are the windows, so it is essential to consider installing boards.

Often the task of boarding windows takes quite a bit of time. And when a hurricane is approaching, time is of the essence. There are 2 options when boarding windows: attaching directly to the structure or attaching using clips.

Design Considerations

Most building codes don't include provisions for storm shutters. Those few that do have design requirements only if shutters are provided. According to these codes, shutters should deflect less than the shutter span (in inches) divided by 30 (for instance, a 40-inch span should not bend more than $40/30 = 1.33$ inches when the wind blows). They also should bend less than 2 inches maximum and should remain at least one inch away from the window when under full wind force.

The easiest designs are those that simply cover the opening with a structural panel. In wood-frame construction, panels can be nailed over the openings when a hurricane approaches. Buildings made with concrete blocks require advance preparation.

In some cases, stiffeners may be necessary to limit deflection of the shutter against the glass. Stiffeners function best if the 2 x 4s are on the outside of the shutter and oriented with the narrow edge against the shutter.

Note: The shutter design shown here will provide significant protection from hurricane-force winds. This serves as a guide only. It does not include all possible shutter, anchor and fastening systems and the installer must adjust all dimensions to compensate for particular installations and hardware used. These shutter designs by no means represent all possible workable designs and can always be upgraded to provide even greater margins of safety and protection. All shutter designs herein are intended to be temporary, and mounted and removed from outside the building. All designs are based on wind pressure capacities only.

This APA hurricane shutter design is based on pressures associated with a design wind speed of 120 mph. Building codes are currently being reviewed for possible changes. Before constructing shutters, therefore, it is important to check with your local building department for an update on current code requirements.

Using Window Clips

To help ease the process and to cut time, there is a product available that can make boarding easier and more effective: PLYLOX™ window clips.

Some facts about window clips:

- Available in a variety of economical package sizes and quantities.
- Clips securely attach to 1/2" plywood which fits into exterior window casings. No special tools, caulking, adhesives or glue required. Install and remove with one person.
- Clips create rigid, safe, temporary attachment of plywood to brick, wood, or stucco window casings. No nails, screws, bolts or brackets will permanently damage your property.
- Clips require no drilling into your home or window casings
- Clips hold plywood sheets in window casings as well or better than any hardware available today.
- Clips are rugged and will last year after year. If you move, take them with you.

Measuring Plywood for Clips

Work left-to-right, floor-by-floor. Measure each window casing and record each measurement. When using clips, EXACT measurements are essential to the plywood and the clips fitting firmly into the spaces. Small errors can lead to recutting the plywood.

When using clips, the true height should be the measured height from top to bottom of the casing minus one quarter inch. The true width should be the measured width from side to side of the casing minus one quarter inch. This will give the needed eighth inch clearance all the way around the entire window for a snug fit.

Installing the Clips

- Place the clips on each plywood cover (if the window is 24"x24" or smaller, only two clips are needed).
 - Each clip should be placed on the edge of the plywood cover no more than 24 inches apart.
 - Make sure the tension legs are facing towards you.
- Push the plywood covers with the clip tension legs to the outside firmly into the casing.
- Clips work as well in round windows as they do in rectangular windows. You can adjust the number of clips used to account for different shapes and sizes of windows.

Removal of Boards with Clips

- Press in on the plywood.
- Put your finger behind the tension leg and pull the tension leg towards you. Work with the clips on one side of the plywood sheet. (A screwdriver can help)
- As the tension legs are pulled away from the brick the plywood sheet comes right out. Carefully remove the plywood sheet from the window. For large sheets of plywood you may need a helper.
- Remove clips from plywood and store in a dry place.
- Store the plywood for re-use.

Anchoring the boards to Tapcons

- Work left-to-right, floor-by-floor. Measure each window casing and record each measurement.
- When attaching with Tapcons, 5 inches needs to be added to BOTH the height and width so there is sufficient coverage around the window frame.
- Now that your plywood is measured and cut, you'll need screws, masonry anchors and large washers.
- Drill holes 2 1/2 inches from the outside edge of the plywood at each corner and at 12-inch intervals.
- Place the plywood over the opening and mark each hole position on the outside wall.
- Drill holes with the appropriate size and type of bit for the anchors. Install the anchors, the plywood, and the bolts to make sure they fit properly.
- On wood-frame houses, make sure that the anchors are secured into the solid wood that frames the door or window and not into the siding or trim.
- Mark each board so you will know where it is to be installed and store them and the bolts in an accessible place.

Installing Polycarbonate Panels

Now, there is an alternative to plywood that is not only 60% lighter but also provides natural light into your home when power is out and indoor lighting is unavailable.

You'll need to first make sure your window coverings are strong enough to keep your windows intact. Because most home building codes don't cover this issue, the proper standards of covering strength are not common knowledge.

Polycarbonate panels are 200 times stronger than glass and they have been approved by the Florida Building Code and the Texas Department of Insurance. They also come with a 10 year limited warranty. These panels are significantly stronger than plywood and they are less likely to allow projectiles to break through your windows and into your home.

Installing Polycarbonate Panels

- To help ease the process and to cut time, there is an installation kit containing all of the parts you need to install a panel. Also, each polycarbonate sheet has large scale instructions attached to the board.
- Work left-to-right, floor-by-floor. Measure each window casing and record each measurement.
- When attaching panels, 8 inches needs to be added to BOTH the height and width so there is sufficient coverage around the window frame.
- Using your measurements, mark off the panel and cut using a circular saw. Since the edges may be rough, sand them using 100 or 120 grit sandpaper.
- Mark holes 6 inches from the end of the panel for each corner. Equally space the remaining holes from the center of each side with a maximum of 14 inches between each hole.
- Drill holes at each of those marks.
- Place the board over the opening and mark each hole position on the outside wall.
- Using a hammer drill, drill holes in the structure using a masonry drill bit.
- Insert the tapcons into the holes and place a washer over each Tapcon.
- Place the polycarbonate over the washers. Secure the polycarbonate using washered wingnuts.

Don't forget to mark each piece of polycarbonate that you have cut so you will know where it is to be installed and so you can use it again.

Your windows are now protected against the damaging winds of hurricanes. Remember to save and store all materials you have used in case you would like to use them again in a future storm.

Materials/Products:

Recommended Items	Item Number
1/2 inch plywood	12192
2 x 4 inch wood strips	
Bertha Polycarbonate Storm Panel	62215, 64135
Bertha/EMS Clear Wall Panel 81 Piece Hardware Kit	64024
Plylox Clips	136077
Circular Saw	136556
Large Washers	68882
Black & Decker 24 V Hammer Drill	136533
5/32 Tapcon Drill Bit or 3/16 Tapcon Drill Bit	
2 inch Coarse Thread Drywall Screws	60038
3/16 or 1/4 Inch Width by 2 1/4 or 2 3/4 Length Tapcons	74247, 79367, 55086
Tape Measure	
Screwdriver/Nutdriver	
Permanent Marker and Paper	