

RETROFIT Improvements

Double Entry Door Reinforcement

Making
Homes
Safer in
Disasters

Retrofit Opportunity

- Double doors can be reinforced against wind and rain at anytime without a concurrent remodeling activity

Purpose

- To prevent the doors from blowing open due to force from high winds
- To keep occupants and contents safe and dry

Benefits

- Strengthens openings against forced movement from high winds
- Damage prevention and peace of mind

Hazards

Wind



Rain



Flood



Seismic



Fire



Snow



Summary

Some homes are equipped with double entry doors, hinged at the sides and latched in the middle, often called french doors. These doors typically consist of two active doors, one of which is held closed with slide or barrel bolts through the top and bottom (i.e., head and sill jambs), while the other swings freely or closes against the temporarily-fixed adjacent door panel. Because double doors span a wide opening and latch against each other, the closure where the doors meet at the middle of the opening is susceptible to being forced open by wind. Several options exist to make this type of opening more secure against force from the outside.

Double doors should be made of a minimum of 2" of solid wood, 1 3/4" steel, or 1 3/4" fiberglass wrapped polyurethane cores to assure adequate strength against wind pressure at bolt holes and hinges. Alternatively, steel reinforcement pieces which wrap around the door at the bolt holes and hinge areas to prevent splintering and shattering under force are available for various door thicknesses.

As with all impact resistant doors, door jambs should be secured to the framing, 6" from each corner and approximately 1' on center all around with 3" screws. Locksets and dead bolts should have a minimum of 2 3/4" backsets (extension length), and barrel bolts should have a minimum of 3" extension and fasteners that secure the hardware to the door.

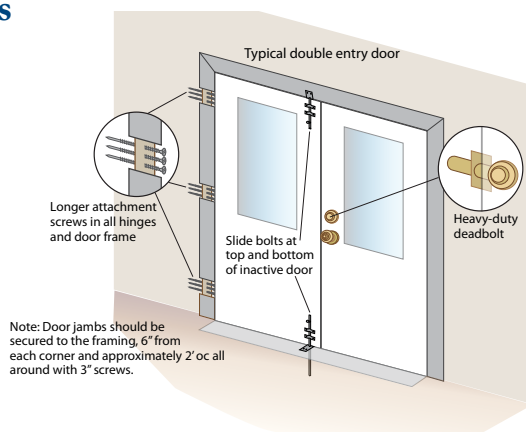
If the doors are in need of replacement, consider changing the opening and door size to 36" wide or installing a wind rated single door with sidelights. Alternatively, converting doors with covered entrances to swing outwardly increase the doors' ability to resist force from high winds. When high winds strike outswing doors, they will close more tightly against the door frame. Permanent shutters may also serve as protection for wide door openings, however, because a door may need to remain in use as an emergency egress, shutters that close from the outside are not practical.

Cost of this retrofit will depend on the option(s) selected and whether or not a homeowner chooses the "Do-It-Yourself" route. The hardware for a retrofit starts at about \$110. Door replacement and shutters will increase the cost. In high wind locations, homeowners are urged to cover all door and window openings with impact rated products.

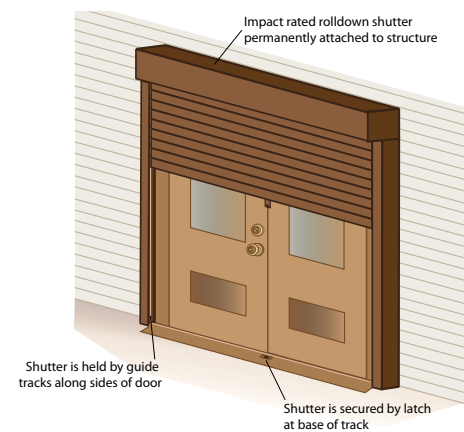
Illustrations

Retrofit

Option 1:



Option 2:



Potential Damage



Photo: www.fema.gov

Key Steps

- Inspect how the fixed door is secured at the top and bottom. Barrel bolts at head and sill jambs should be long enough to penetrate into the frame. When installing larger screws, remember to pre-drill holes. Door mounted barrel bolt screws should be solidly attached to the door.
- Examine the connection of the door jamb to the building frame. Fastener heads should be visible through the jamb at 1' intervals throughout. Back out a screw from the hinge and check for 3" minimum length. Replace or add as needed.
- Verify that lockset and dead bolt backsets have sufficient penetration into bolt holes. With barrel bolts disengaged, push the door in the middle to gauge the play under various forces.
- Your contractor may have additional ideas on how to improve the safety of your home.
- For more details about this retrofit improvement, please refer to the list of Resources in the section below.

Resources

HUD, *Hurricane Retrofit Strategies: Repairing Windows and Doors*
<http://www.pathnet.org/sp.asp?id=16371>

Federal Alliance for Safe Homes, *Thunderstorms: Double Entry Doors – Securing*
http://www.flash.org/peril_inside.php?id=158

