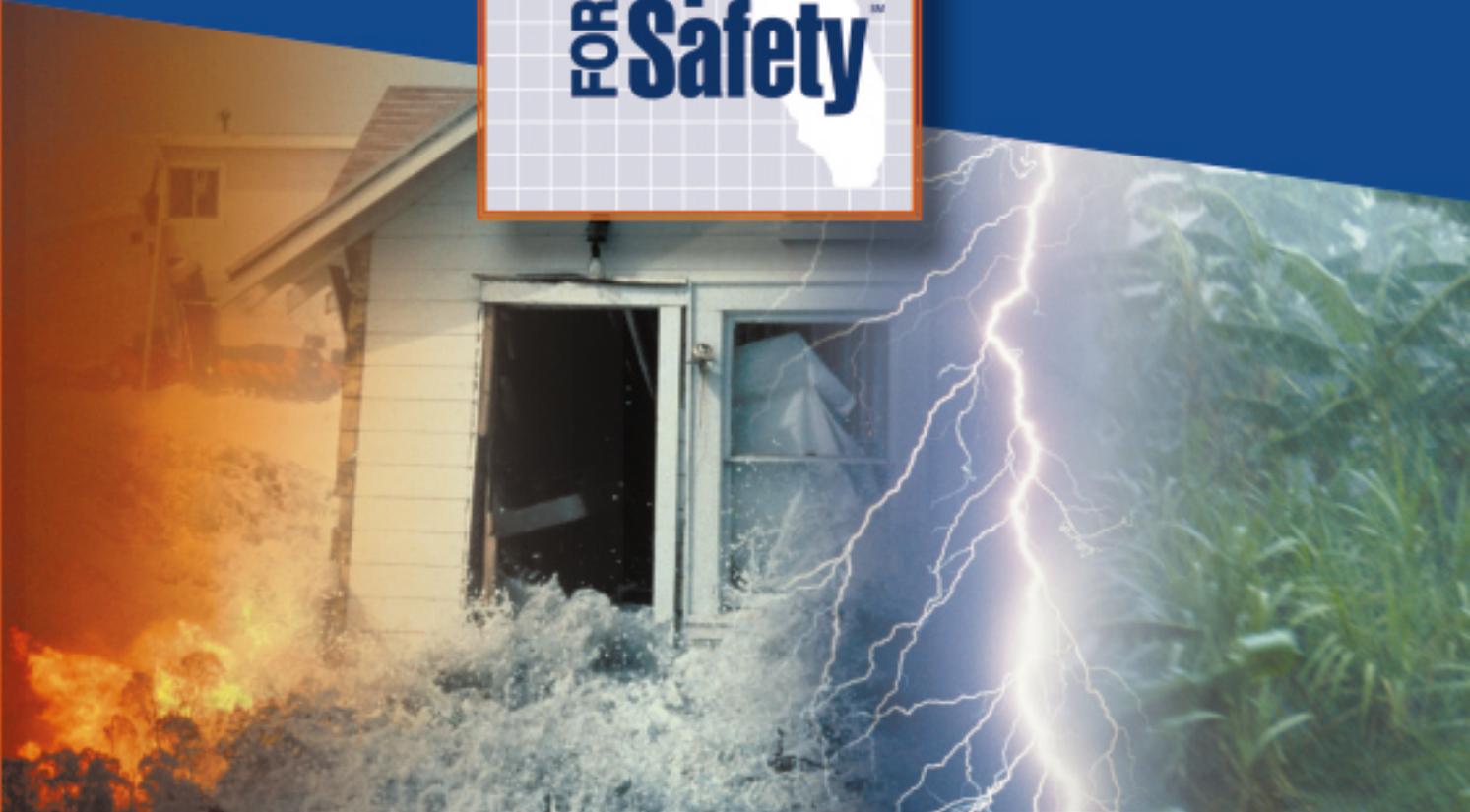


Consumer Guide



Florida Alliance for Safe
Homes — FLASH, Inc.



Florida Department of
Community Affairs —
Division of
Emergency Management



Florida Home
Builders Association

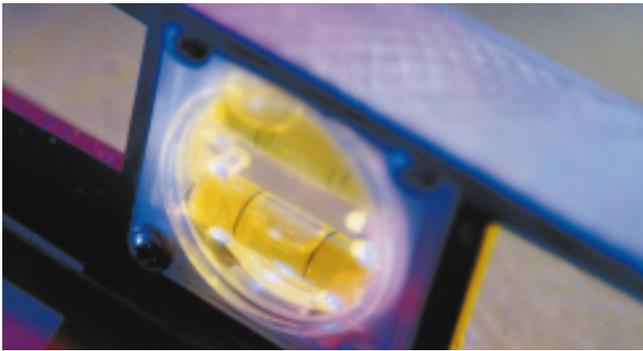


INTRODUCTION

The Blueprint for SafetySM educational program mission is to provide Florida's citizens and residential builders with accurate, current and reliable information about how to make homes more disaster-resistant. *The Blueprint for Safety Consumer Guide* supports this mission by offering an overview of the Blueprint for Safety recommendations.

The Guide offers disaster-resistant building recommendations for flood, wildfire and wind-storm with a special feature on tornado safe room construction. Companion text includes the *Blueprint for Safety Field Manual for Contractors*, www.blueprintforsafety.org online learning site and *The Windstorm Mitigation Manual for Light Frame Construction* written by the University of Illinois/Urbana-Champaign and offered by the Illinois Emergency Management Agency.





If we have learned anything through the process of creating Blueprint, it is that the quest for knowledge in the building and design field is a continuous learning process as building codes and regulations, products and emerging techniques continue to evolve and improve. However, without consumer demand the process will work too slowly to meet the onslaught of disasters striking Florida.

We encourage you to follow the Blueprint for Safety recommendations as you build, remodel or rebuild your Florida home. Making these techniques part of your personal home safety plan will help protect your family and property from the floods, wildfires and windstorms so common in our state.

**Blueprint
of Safety**

CONSUMER GUIDE

ACKNOWLEDGEMENTS

The Blueprint for Safety program is the product of a collaboration of private and public interests working under the direction of the Florida Alliance for Safe Homes — FLASH, Inc., a non-profit, 501(c)3 charitable education organization dedicated to promoting home safety. FLASH partners include: Allstate, the American Red Cross, FEMA, FEPA, First Floridian, Florida Farm Bureau, Florida Department of Community Affairs, Florida Department of Insurance, Florida Insurance Council, Florida Select, FMO, Institute for Business & Home Safety, Nationwide, NOAA/National Weather Service, State Farm Insurance Companies and USAA.

We wish to express our gratitude and thanks to the individuals and organizations that made Blueprint possible, especially Florida Department of Community Affairs Division of Emergency Management Director Joe Myers. This manual would not be possible without the efforts of the Blueprint Technical Advisory Committee comprised of partners from the Florida Home Builders Association and architects and engineers from Arup, Simpson Strong Tie and State Farm Insurance Companies.





Wind

Hurricanes and windstorms cause damage to homes and property, destroying family keepsakes and disrupting families. The wind affects different homes in profoundly different ways depending on design, location and neighboring structures.

Wind can collapse windows and doors, rip off plywood roof decking and destroy gable ends. Wind-borne debris can break windows and damage roof coverings and walls. With or without the help of wind blown objects, the wind can break through a garage door, windows, or door on the windward side of the house and move inside, causing uplift forces to more than double.

The most important precaution you can take to reduce damage to your home and property is to protect the areas where wind can enter or wind-borne debris can penetrate. Protecting and reinforcing four critical areas — windows, doors, garage doors and the roof — is the key.



BLUEPRINT FOR SAFETY RECOMMENDATIONS: WIND

Whenever structural components (foundations, roof framing, nailing patterns, connectors) are added or modified, they should be designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but no less than 120 mph.

PROTECTING THE OPENINGS

Windows, entry doors, sliding glass doors, gable end vents and skylights must comply with the most recent version of ASTM E1996 or Miami-Dade protocol PA 201 or be protected by shutters that comply with one of those standards. Exception: two entry doors must use units that meet impact-resistance and wind load standards to allow for ingress and egress (escape) in the event of a fire. All products must be installed per manufacturers' specifications.

Garage doors and track systems must be hurricane-resistant and comply with the most recent version of ASTM E1996 or Miami-Dade County protocol PA 201. Using one of these testing protocols, the product must be certified with a design pressure rating equal to or greater than the wind pressure calculated to be exerted on the product as calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98, but not less than 120 mph.

PROTECTING THE OPENINGS

Floor system anchoring and connections must be installed per manufacturers' recommendations and be designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

Foundation piles must be braced to provide lateral stability in all directions. Methods and materials used to brace piles shall be designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

Connectors must be installed from the foundation girder to piles, piers or stem walls. Connectors used in anchoring the girder must be designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph and installed according to manufacturers' specifications.



WIND-RESISTANT HOME BUILDING

LINKS

BLUEPRINT FOR SAFETY
www.blueprintforsafety.org

FLORIDA ALLIANCE FOR SAFE HOMES —
FLASH, INC
www.flash.org

DEPARTMENT OF COMMUNITY AFFAIRS
www.floridadisaster.org

FEDERAL EMERGENCY
MANAGEMENT AGENCY
www.fema.gov

NOAA/NATIONAL WEATHER SERVICE
www.noaa.gov



BLUEPRINT FOR SAFETY RECOMMENDATIONS: WIND

FLOOR & WALL FRAMING SYSTEMS

All exterior walls shall be constructed as shear walls and designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

SECURING THE ROOF

All existing roof covering and underlayment shall be removed and all rotted roof deck material replaced before installing the new roof membrane system. Roof membrane systems must comply with the most recent version of ASTM D3161, modified to reflect 110 mph fan-induced wind speeds or Miami-Dade protocol PA 107, be certified to meet minimum wind speeds of 110 mph and must be installed per manufacturers' specifications.

Roof systems may have only one layer of covering.

Hurricane straps or other hardware that connect the roof to the walls must be installed with the proper number and type of nails per manufacturers' specifications and be designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

All gable end walls must be tied back to the roof or ceiling structure with bracing designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

Roof sheathing material shall be plywood, not oriented strand board, rated for Exposure 1, have a minimum nominal thickness of 5/8" (or 19/32") and shall be continuous over two or more spans with face grain perpendicular to supports. Roof sheathing panels shall be provided with a minimum of 2" x 4" edgewise blocking at all panel edges for a distance at least six feet from each gable end.

Roof sheathing should be nailed in a pattern using 10d nails every 4" at edges of the panel and 6" in the field of panel over supports.

A secondary water resistance system of self-adhering polymer modified bitumen strips with a 6" minimum width shall be installed below the roof membrane system at all roof deck joints. The system shall be used in addition to the roof system underlayment material.

EXTERIOR STRUCTURES

Exterior structures must be attached to the main structure of the house with an anchoring system designed using rational analysis based on wind loads calculated according to ASCE 7-98 using a Basic Wind Speed defined by ASCE 7-98 but not less than 120 mph.

Safe Rooms: THE ULTIMATE HIGH WIND PROTECTION FOR FAMILIES

Building codes do not require homes to be designed or built for extreme high wind events, so having a home built "to code" means that the home may not withstand severe wind events like extreme hurricanes or tornadoes.

One solution to this problem is to install a tornado safe room or shelter that has the capability to withstand extreme wind events. Safe rooms built to the FEMA/Texas Tech standards are engineered to withstand winds up to 250 mph and offer the most effective life protection technique available for high wind events. In today's market, a safe room will prevent loss of life, but is not considered a property damage prevention technique. The ultimate life/property protection plan includes a home built to the Blueprint for Safety recommendations with a tornado safe room included.



For more information on safe room construction, refer to *Taking Shelter from the Storm: Building a Safe Room Inside Your Home*, published by the Federal Emergency Management Agency (FEMA). Contact FEMA at (888) 565-3896 or online at www.fema.gov.

Wildfire

Homes in a wildland/urban interface area where woods and forest coexist with residential development can be designed and maintained to increase the chances of wildfire survival. The optimal way to reduce wildfire damage is to use fire-resistant landscaping, thin out the underbrush and establish a defensible zone. Homes in the interface area are often more combustible than the surrounding vegetation so keeping wildfire away from the home is essential.

The building materials, design and location and the fuels within the area all contribute to the ability of a home to survive a wildfire. Blueprint for Safety joins the National Fire Protection Association and FIREWISE and recommends that homes and/or subdivisions be designed and constructed with the following features:



FIREWISE

LINKS

FLORIDA ALLIANCE FOR SAFE HOMES
— FLASH, INC.

www.flash.org

FIREWISE

www.firewise.org

NATIONAL FIRE PROTECTION ASSOC.

www.nfpa.org

DEPARTMENT OF AGRICULTURE

www.flame.daocs.fl.us



BLUEPRINT FOR SAFETY RECOMMENDATIONS: WILDFIRE

- ▶ Determine wildfire risk profile using the NFPA 299 checklist. If risk profile is “low” to “moderate”, a minimum of 30 feet of “defensible space” should surround the home. If risk is “high” or “extreme”, defensible space should be increased up to as high as 100 feet and the use of more fire-resistive building materials should be considered.
- ▶ Homes must feature a non-combustible street number at least four inches high, on a contrasting background, visible from the road.
- ▶ Driveways must be at least 12 feet wide with at least 15 feet of vertical clearance.
- ▶ Drives longer than 150 feet must have turnarounds.
- ▶ Drives longer than 200 feet must have both turnarounds and turnouts.
- ▶ Gated driveways must open inward and have an entrance at least 2 feet wider than the driveway and be at least 30 feet from the road.
- ▶ If secured, the gate must have a key box approved by the local fire department.
- ▶ Fire-resistant plant species should be considered for use in the defensible space. Examples include dogwood, viburnum, redbud, sycamore, magnolia, beautyberry, oak, red maple, wild azalea, sweet gum and fern.
- ▶ Firewood must be stored at least 50 feet away from the home and other structures.
- ▶ Noncombustible screening with a mesh size no greater than 1/4 inch must cover the fireplace chimney and the attic and sub-floor vents.
- ▶ Eaves must be made of noncombustible material.
- ▶ Undersides of aboveground decks and balconies must be enclosed with noncombustible material.
- ▶ Roof assembly must have a Class A fire-resistive rating — wood shakes and wood shingles are not recommended.
- ▶ Glazed panels in exterior windows, glass doors and skylights must be multi-layered or include solid exterior shutters.
- ▶ Gutters and downspouts must be of noncombustible materials.
- ▶ LP gas containers must be located at least 30 feet away from any structure and surrounded with 10 feet of clearance.





Flood

Flooding is the costliest natural disaster in the United States. In the 1990's, floods caused more than \$4 billion in damages each year. Florida remains especially vulnerable to flood disasters with its 1,350 miles of coastline, countless rivers and abundant floodplain areas. Residents and businesses in Florida hold more than 40 percent of all flood insurance policies in the United States.



BLUEPRINT FOR SAFETY RECOMMENDATIONS: FLOOD

- ▶ Determine flood zone by checking the Flood Insurance Rate Map (FIRM). The Special Flood Hazard Areas include flood zones A, AE, A1-A30, AH, AO, AR, V, VE and V1-V30.
- ▶ Contact local floodplain management or building official to determine the base flood elevation (BFE) for the property. For Zone AO, use the depth of flooding shown on the FIRM.
- ▶ Consult the community records or property survey for the elevation of your home's lowest floor. If these information sources do not indicate the elevation of the lowest floor, hire a licensed surveyor to determine it.

IF YOUR HOME IS IN AN A ZONE, INCLUDES AE, A1-A30, AH, AO, AR, ADHERE TO THE FOLLOWING RECOMMENDATIONS:

- ▶ The lowest floor elevation must be at or above the Base Flood Elevation (BFE).
- ▶ Enclosed areas below the lowest floor cannot be used for living space.
- ▶ Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities must be elevated to or above the BFE.

IF YOUR HOME IS IN A V ZONE, INCLUDES VE AND V1-V30, ADHERE TO THE FOLLOWING RECOMMENDATIONS:

- ▶ The bottom of the lowest horizontal structural member of the lowest floor elevation must be at or above the Base Flood Elevation (BFE).
- ▶ Enclosed areas below the lowest floor cannot be used for living space.
- ▶ The building must be elevated on piles, piers, posts or column foundation.
- ▶ Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities must be elevated to or above the BFE.



FLOOD-RESISTANT HOME BUILDING

LINKS

FLORIDA ALLIANCE FOR SAFE HOMES —
FLASH, INC.
www.flash.org

FEDERAL EMERGENCY MANAGEMENT AGENCY
(FEMA) NATIONAL FLOOD INSURANCE PROGRAM
www.fema.gov/nfip/

HOMEOWNERS GUIDE TO RETROFITTING
www.fema.gov/mit/rfit

DEPARTMENT OF COMMUNITY AFFAIRS,
DIVISION OF EMERGENCY MANAGEMENT
www.floridadisaster.org



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