



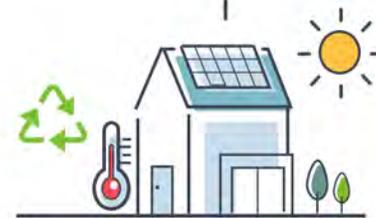
Building Stronger in Jacksonville: Best-Practices for Residential & Commercial Construction

City Council Special Committee on Resiliency

Julie Shiyou-Woodard, President and CEO



SMART HOME





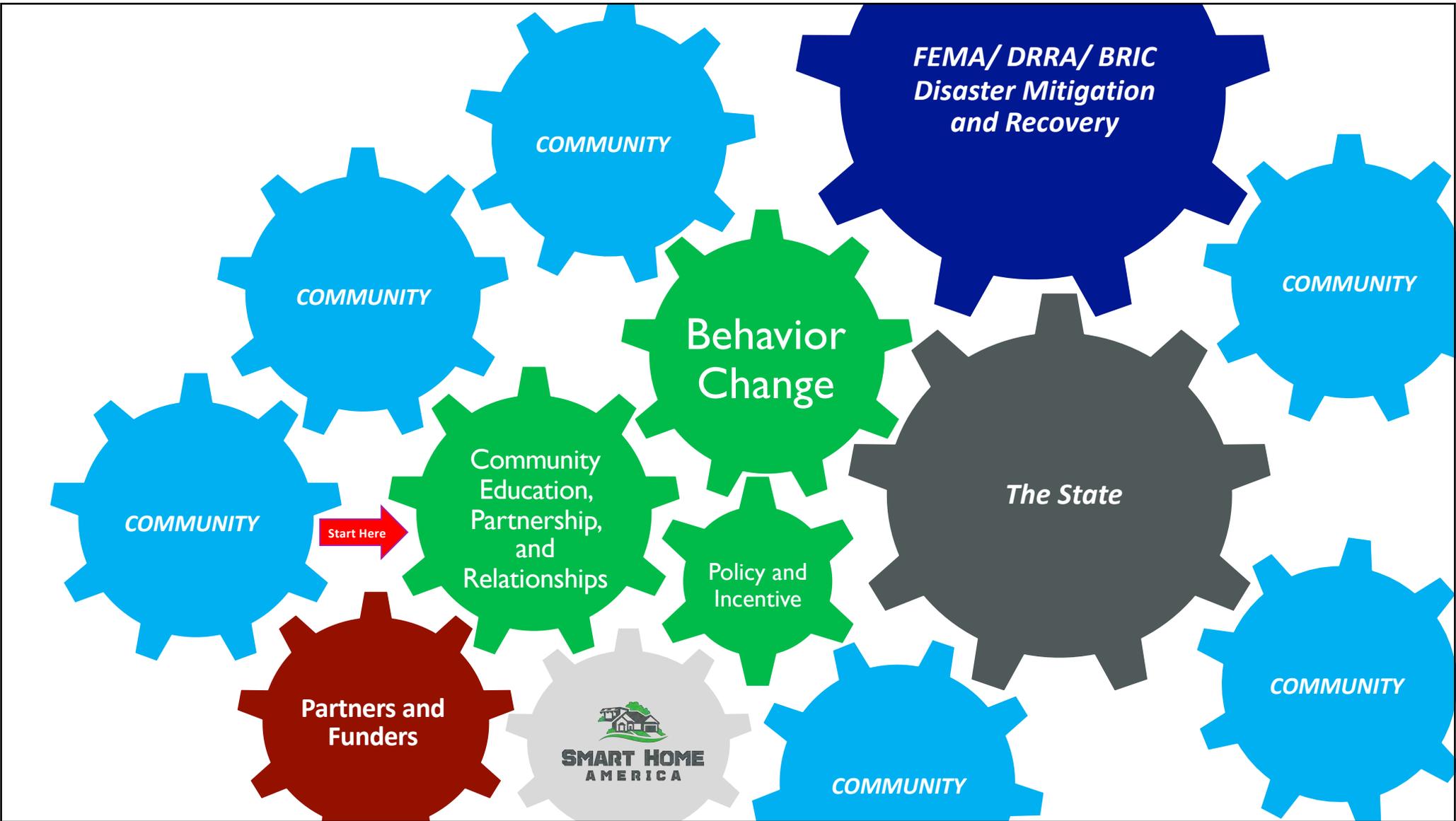
Why We Exist

To educate leaders, residents, and industry about smarter, safer buildings and tested policies, products, and techniques that build resilient and sustainable communities.

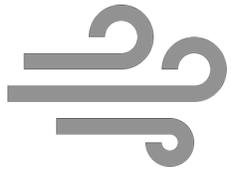


Consumers
Building Officials
Real Estate
Insurers
Elected Officials
NGO's

Contractors
Appraisers
Manufacturers
Suppliers
Architects & Engineers
Academics



Multi Hazard Resilience



Wind + Water + Insurance + Contingency





<https://vimeo.com/316175383>



The IBHS mission is to conduct objective, scientific research to identify and promote effective actions that strengthen homes, businesses and communities against natural disasters and other causes of loss

Wind

Wind-Driven Rain

Hail

Wildfire



Initial Performance
(test standards)



Aging Effects



Repair vs.
Replacement

2/3
of homes
are
underinsured

By an
average of
17%

\$200,000
Home =
\$34,000
underinsured

75%
of businesses
are not insured
or are
underinsured

Average
Underinsured
Amount is
40%

40%
of Small Businesses
don't reopen after
a disaster

FEMA.gov

We know what to do

...and home is more valued than ever

Building Codes

The background of the slide is a grayscale image of architectural blueprints. A ruler is placed diagonally across the center, and a pen is visible in the lower-left corner. The blueprints contain various technical drawings, lines, and annotations such as '123', '125', '18L-4"', 'A2.4', 'A3.1', and 'F.D.'. The overall scene suggests a professional engineering or construction environment.

The MINIMUM Standard



Source: Google Earth



FEMA

Water Intrusion







fortifiedcommercial.org



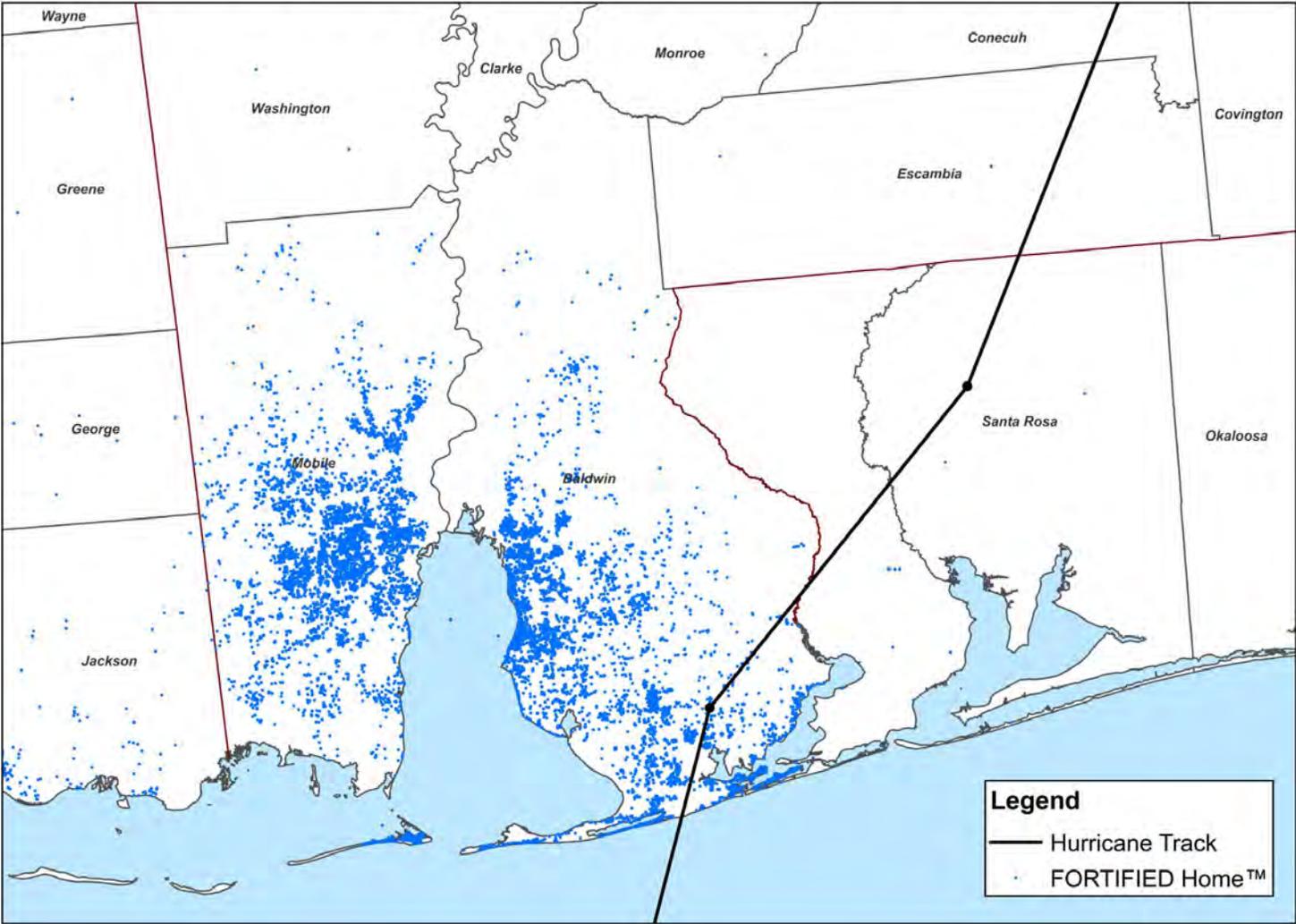
fortifiedhome.org

**WHAT IS
FORTIFIED?**



© Insurance Institute for Business & Home Safety

Hurricane Sally and IBHS FORTIFIED Home™





ORES, AL

<https://vimeo.com/461104502>



<https://vimeo.com/463077571>



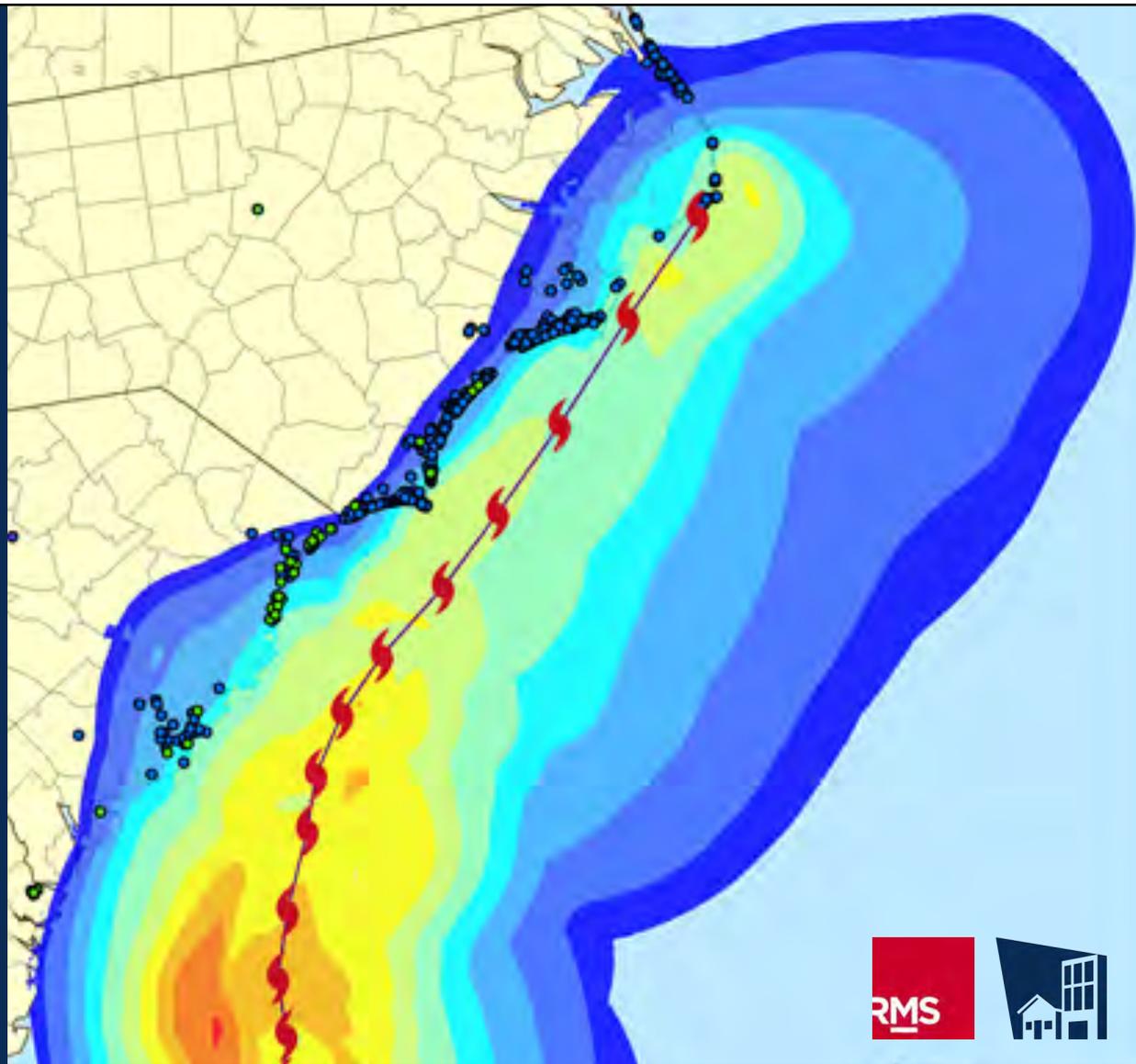
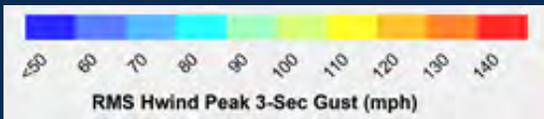
<https://vimeo.com/463078217>



<https://vimeo.com/463080048>

DORIAN (2019) V. FORTIFIED (~1,000 FH)

-  Dorian Preliminary Track
-  FORTIFIED Home™
-  FORTIFIED for Safer Living®



FORTIFIED WORKS



1,000

**FORTIFIED homes
threatened during
Dorian**



FORTIFIED WORKS

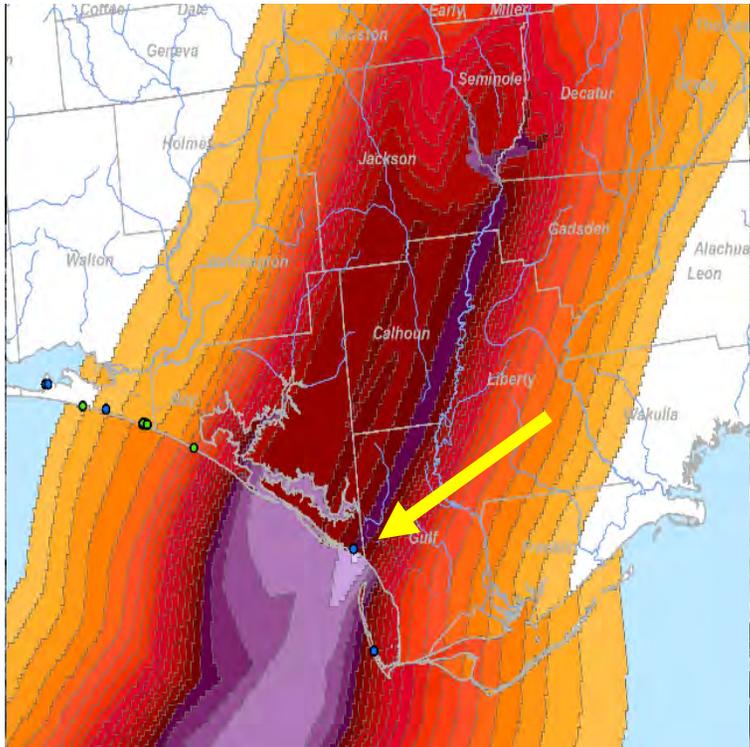
99.5%

Kept the water
out.





<https://vimeo.com/365287556>



“We didn’t even file a claim.” “I didn’t have enough damage to file a claim to cover the deductible. That’s a pretty big statement!”

-Paul, FORTIFIED Homeowner, Mexico Beach, FL – Hurricane Michael

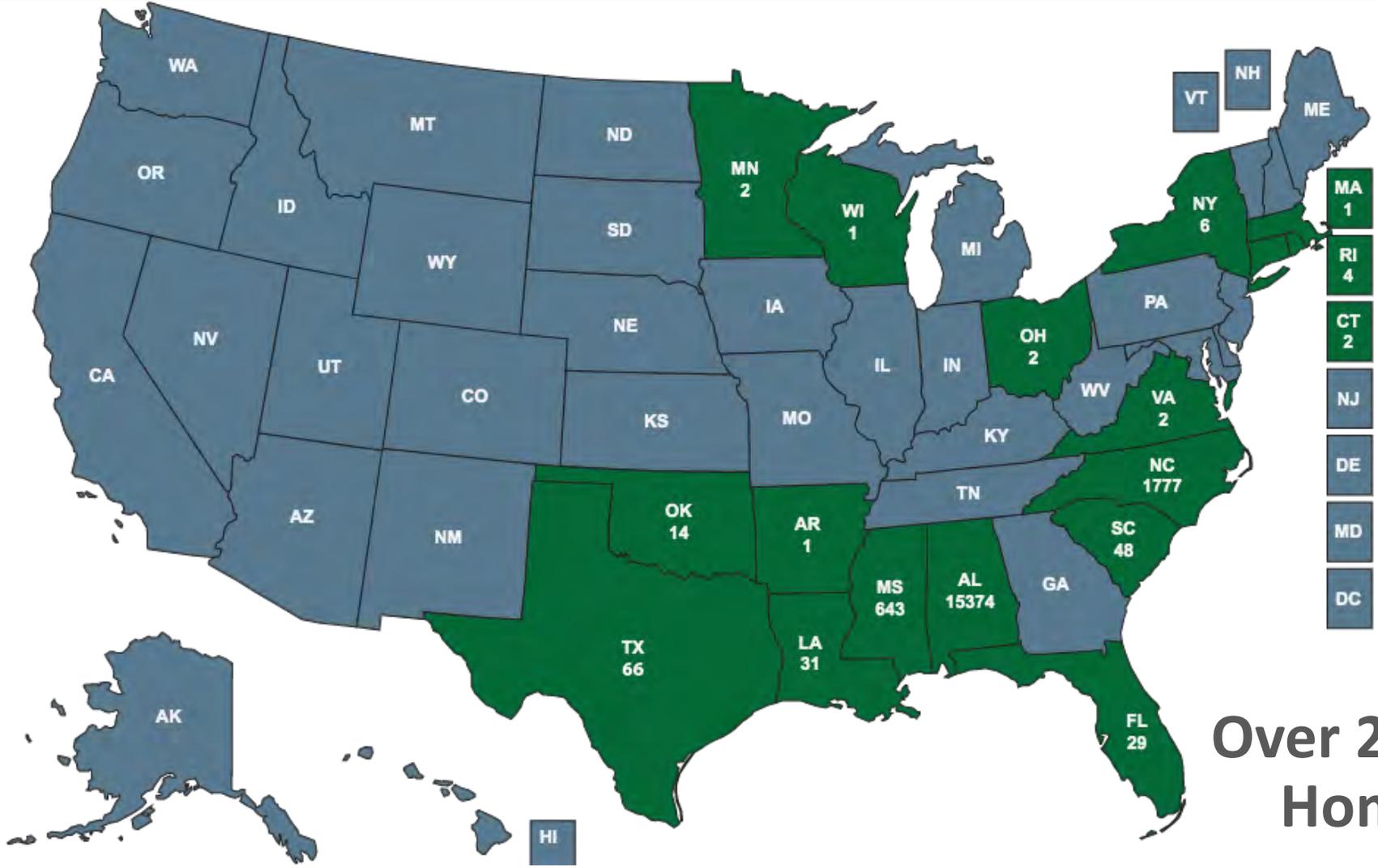


Hurricane Michael: Research



Post Michael – Habitat Strong





Over 20,000
Homes

IBHS



Water Intrusion Demo at the IBHS Research Center



<https://vimeo.com/122671817>



Comparison shows estimates in 2011 dollars adjusted for 2020 inflation



Keep the roof on and water out.
 Enhanced by a sealed roof deck
 and a high performing wind
 rated roof cover.

Keep the roof on, water out.
 Reduce damage amplifiers:
 Strengthen gable walls & porches.
 Strengthen garage door openings.
 Protect openings against debris impact



Keep the roof on, water out
 Reduce damage amplifiers
 Keep the entire building intact with a
 continuous load path & protect against
 debris impact

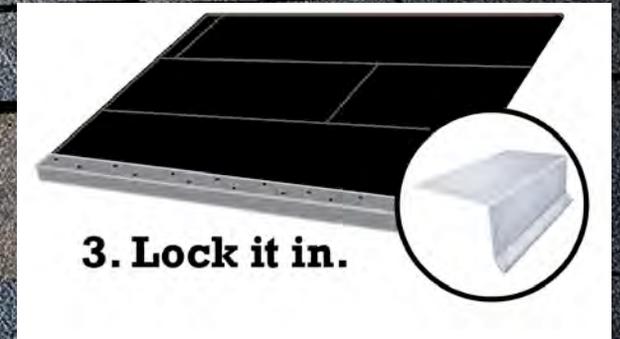
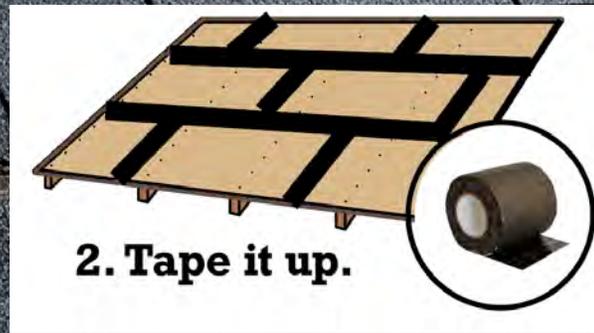
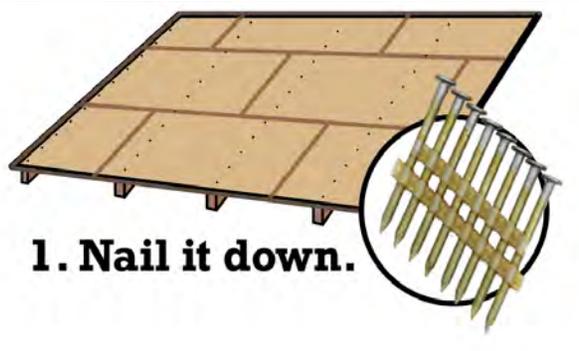
FORTIFIED HOME™ HURRICANE



BECAUSE LITTLE THINGS MATTER



You need a new roof.



Make it FORTIFIED.

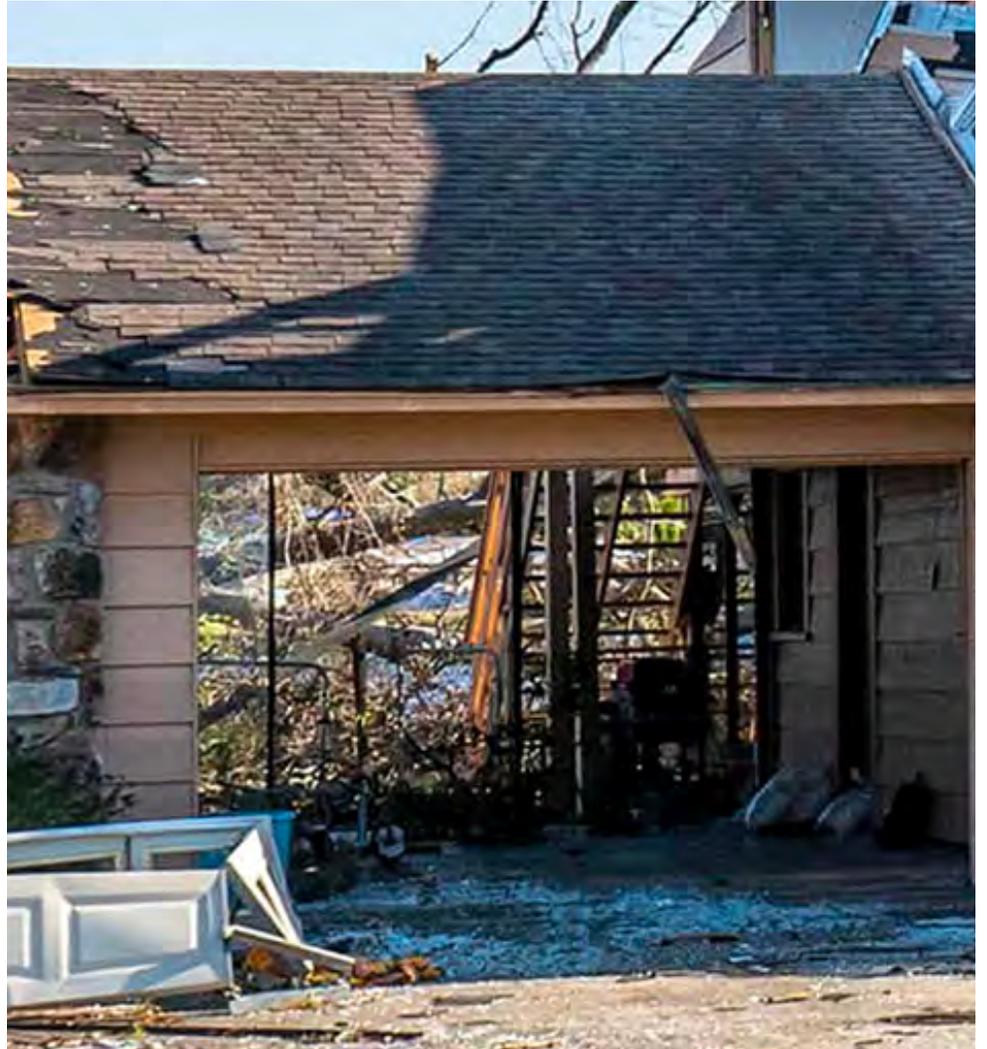




PROTECT YOUR HOME

WHY YOUR GARAGE DOOR MATTERS

[DISASTERSAFETY.ORG/GARAGEDOOR](https://disastersafety.org/garagedoor)



IBHS damage investigations showed if the garage door survived the storm, 90% of homes had no structural damage to the roof.



<https://vimeo.com/411451000>



FEMA



USDA



U.S. Small Business
Administration

Debris Removal Costs



How Much Construction and Demolition Debris (C&D) could your community expect?



*City of Central, LA
C&D Costs - 2017*



One 2,000 Sq.Ft. house =
600 CY Debris* &
\$7,200 to Remove

**FEMA 325*

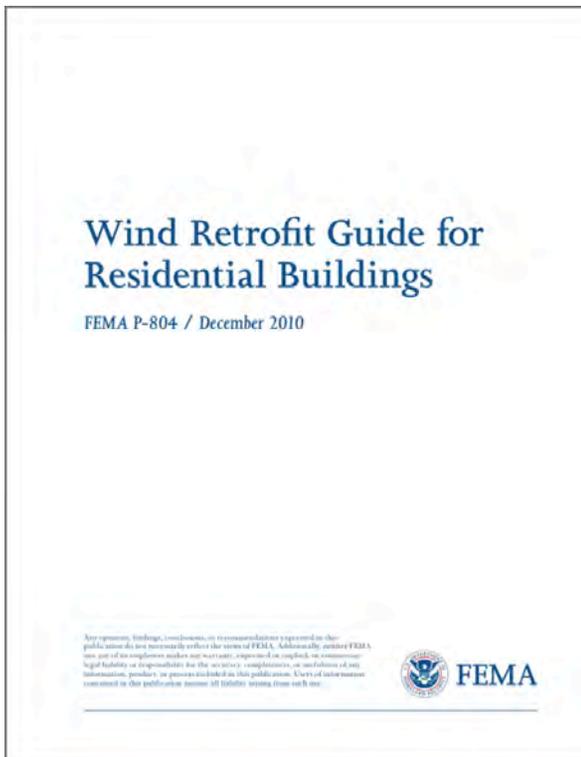


FEMA BRIC

Is your state or community prepared?

- Enforce modern codes, last 3 cycles
- Enforce higher, or beyond code requirements
- Pre-plan projects
- Develop and include partners

FEMA P-804

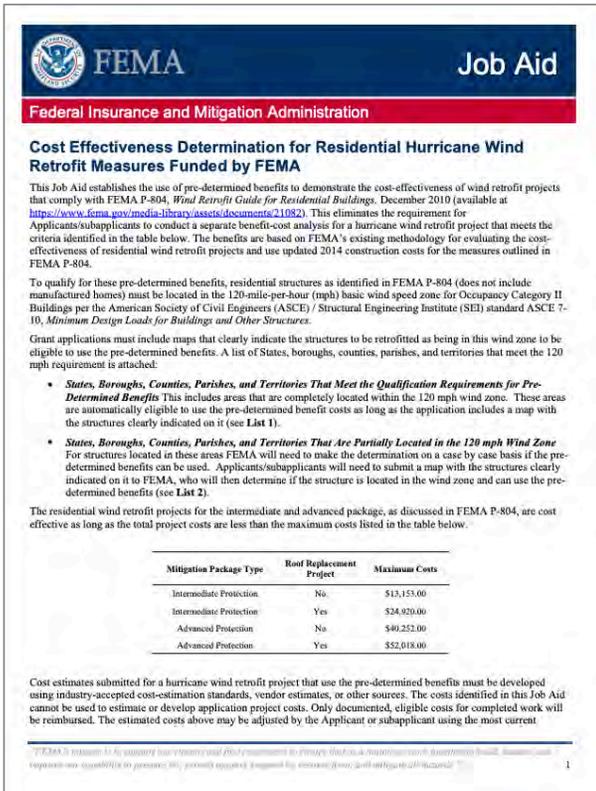


- P-804 incorporates the technical knowledge in FORTIFIED Home™– Hurricane.
- P-804 takes a systems-based approach, which corresponds to FORTIFIED Home:

Basic*	➡	Roof
Intermediate	➡	Silver
Advanced	➡	Gold
- P-804 **does not** include inspection requirements or a designation process.

**There are slight differences between the standards. Contact IBHS for info.*

Job Aid - FEMA P-804



FEMA Job Aid
Federal Insurance and Mitigation Administration

Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA

This Job Aid establishes the use of pre-determined benefits to demonstrate the cost-effectiveness of wind retrofit projects that comply with FEMA P-804, *Wind Retrofit Guide for Residential Buildings*, December 2010 (available at <https://www.fema.gov/media-library/assets/documents/21082>). This eliminates the requirement for Applicants/subapplicants to conduct a separate benefit-cost analysis for a hurricane wind retrofit project that meets the criteria identified in the table below. The benefits are based on FEMA's existing methodology for evaluating the cost-effectiveness of residential wind retrofit projects and use updated 2014 construction costs for the measures outlined in FEMA P-804.

To qualify for these pre-determined benefits, residential structures as identified in FEMA P-804 (does not include manufactured homes) must be located in the 120-mile-per-hour (mph) basic wind speed zone for Occupancy Category II Buildings per the American Society of Civil Engineers (ASCE) / Structural Engineering Institute (SEI) standard ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures*.

Grant applications must include maps that clearly indicate the structures to be retrofitted as being in this wind zone to be eligible to use the pre-determined benefits. A list of States, boroughs, counties, parishes, and territories that meet the 120 mph requirement is attached:

- **States, Boroughs, Counties, Parishes, and Territories That Meet the Qualification Requirements for Pre-Determined Benefits** This includes areas that are completely located within the 120 mph wind zone. These areas are automatically eligible to use the pre-determined benefit costs as long as the application includes a map with the structures clearly indicated on it (see [List 1](#)).
- **States, Boroughs, Counties, Parishes, and Territories That Are Partially Located in the 120 mph Wind Zone** For structures located in these areas FEMA will need to make the determination on a case by case basis if the pre-determined benefits can be used. Applicants/subapplicants will need to submit a map with the structures clearly indicated on it to FEMA, who will then determine if the structure is located in the wind zone and can use the pre-determined benefits (see [List 2](#)).

The residential wind retrofit projects for the intermediate and advanced package, as discussed in FEMA P-804, are cost effective as long as the total project costs are less than the maximum costs listed in the table below.

Mitigation Package Type	Roof Replacement Project	Maximum Costs
Intermediate Protection	No	\$13,153.00
Intermediate Protection	Yes	\$24,820.00
Advanced Protection	No	\$40,252.00
Advanced Protection	Yes	\$52,018.00

Cost estimates submitted for a hurricane wind retrofit project that use the pre-determined benefits must be developed using industry-accepted cost-estimation standards, vendor estimates, or other sources. The costs identified in this Job Aid cannot be used to estimate or develop application project costs. Only documented, eligible costs for completed work will be reimbursed. The estimated costs above may be adjusted by the Applicant or subapplicant using the most current

FEMA's mission is to reduce the loss of life and property by helping to prevent, protect against, reduce, and recover from disasters. FEMA's primary focus is on providing disaster relief and recovery assistance to victims of natural and man-made disasters.

- Establishes the use of pre-determined benefits to demonstrate the cost-effectiveness of wind retrofit projects that comply with FEMA P-804
- Eliminates the requirement for Applicants/sub applicants to conduct a separate benefit-cost analysis for a hurricane wind retrofit project
- Include 27 Texas Counties

COASTAL CONSTRUCTION CODE SUPPLEMENT

For Adoption by Communities Affected By Hurricanes

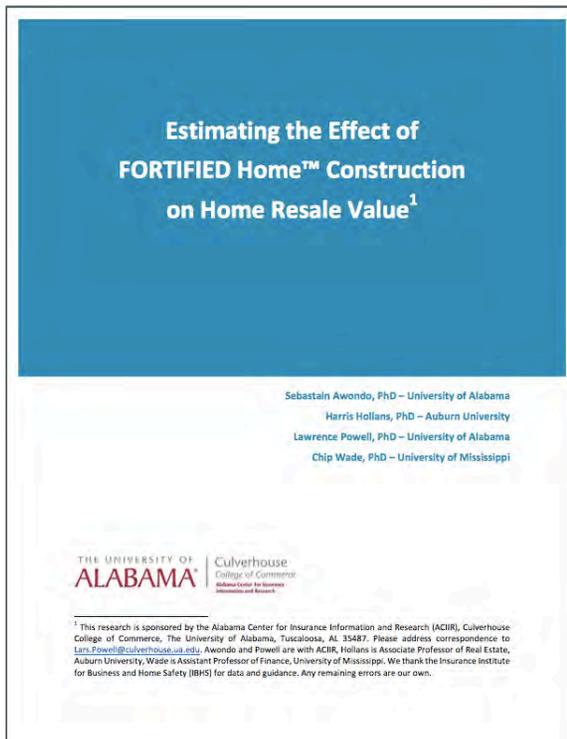


A supplemental code to the International Residential Codes (IRC) 2009, 2012 or 2015 and later editions that will be created.

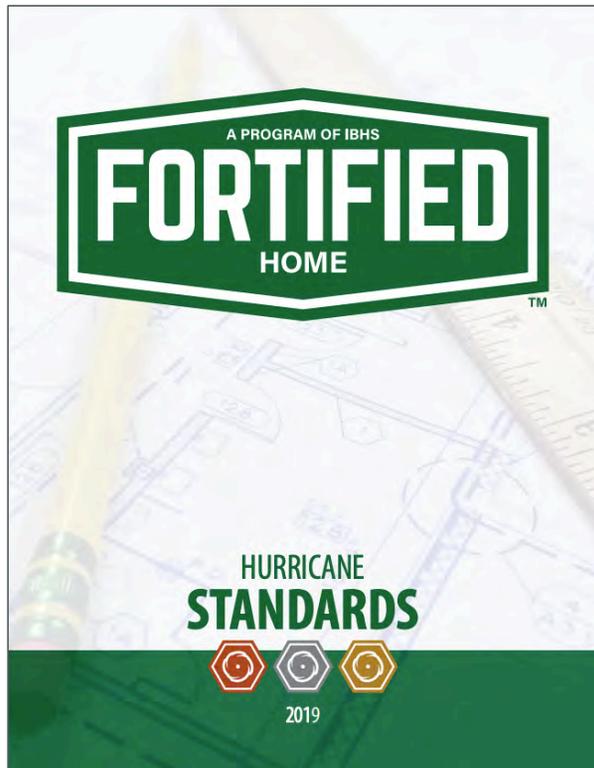


FORTIFIED Increases Home Values Nearly 7%

According to a study conducted by:



Technical Resources



fortifiedhome.org/standards/

FORTIFIED HOMETM RE-ROOFING CHECKLIST

1. Pre-Qualifications

- 1.1 **FORTIFIED Hurricane Standard** - 7/16 in. minimum roof deck sheathing and 24 in. o.c. maximum rafter framing required. Roof decks with less than 7/16 in. sheathing can be re-decked with 7/16 in. sheathing¹⁵. Retrofit solutions provided by a professional engineer may be considered.
-OR-
 1.1 **FORTIFIED High Wind Standard** - Roof deck must be a minimum of 3/8-in. OSB or plywood for FORTIFIED Roof or FORTIFIED Silver designation. Please note that 3/8-in. OSB or plywood qualifies for a designation only if the spacing of the roof framing is 16 in. o.c. or less.

2. Roofing Scope

- 2.1 Is the home within 3,000 ft of salt or brackish water? If **yes**, hot-dip galvanized and/or stainless steel fasteners are required. See [Technical Bulletin FH-2018-01](#) for more information.
- 2.2 Remove all existing roofing material. Replace any damaged wood.
- 2.3 Re-nail the roof deck with 8d ring-shank nails¹⁶.
-OR-
 FORTIFIED Hurricane Standard - [Re-nail at 6 in. o.c. 4 in. o.c. at stable ends.](#)
-OR-
 FORTIFIED High Wind Standard - [Re-nail at 6 in. o.c.](#)
 Documentation: Photograph the fastener package and the spacing of the installed new fasteners in four locations, including at least one gable.
- 2.4 Seal the roof deck (choose one of the following three options).
 - Option 1** - Install a self-adhered (peel-and-stick) membrane^{17,18} over the entire roof deck. Recommend #15 felt as bond break between membrane and shingles. Note: Manufacturers emphasize the need for adequate attic ventilation when this type of membrane is applied over the entire roof. **Documentation:** Photograph the installed self-adhered underlayment.
-OR-
 Option 2 - Install a 4-in.-wide (nominal) roof deck flashing tape^{19,20} over all roof sheathing panel seams and cover the deck with a #30 felt or an equivalent synthetic underlayment^{21,22}. **Note:** Attach underlayment with button cap nails at 6 in. o.c. along the laps and 12 in. o.c. spacing vertically and horizontally between the laps. **Documentation:** Photograph (a) the tape installation and (b) the underlayment installation over the tape showing the button cap nail spacing (a) (nails, not staples).
-OR-
 Option 3 - Install a two-layer #30 felt underlayment system^{1,7}. Installation instructions for a two-layer #30 felt underlayment system: Cut 17 in. off one side of the roll and install the remaining 19-in.-wide strip of underlayment. Tack in place. Install a 36-in.-wide roll of underlayment over the 19-in.-wide course of underlayment along the eave. Continue overlapping the sheets 19 in. (leaving a 17-in. exposure). Attach underlayment with button cap nails at 6 in. o.c. along the laps and 12 in. o.c. spacing vertically and horizontally between the laps. **IMPORTANT NOTE: Synthetic underlayments do not qualify for this method. Documentation:** Photograph (a) laps and fasteners and (b) packaging label indicating ASTM designation of the underlayment.
- 2.5 **Install proper flashing** at all penetrations and roof/wall intersections, at valleys and at eaves.

FORTIFIED Home™ Re-Roofing Checklist | Download at [FORTIFIEDhome.org](https://fortifiedhome.org)



smarthomeamerica.org/resources





Strength and Savings with a FORTIFIED Roof

FORTIFIED is proven to provide you with a stronger roof and can save you money.

[Learn How](#)

Benefits of a FORTIFIED Roof

[Read the Top 5](#)





Floods Happen

You can be ready

Flooding 101

Learn the basics of flooding - How do floods happen, what types of floods are there, and how do they affect communities?

[Learn About Floods](#)

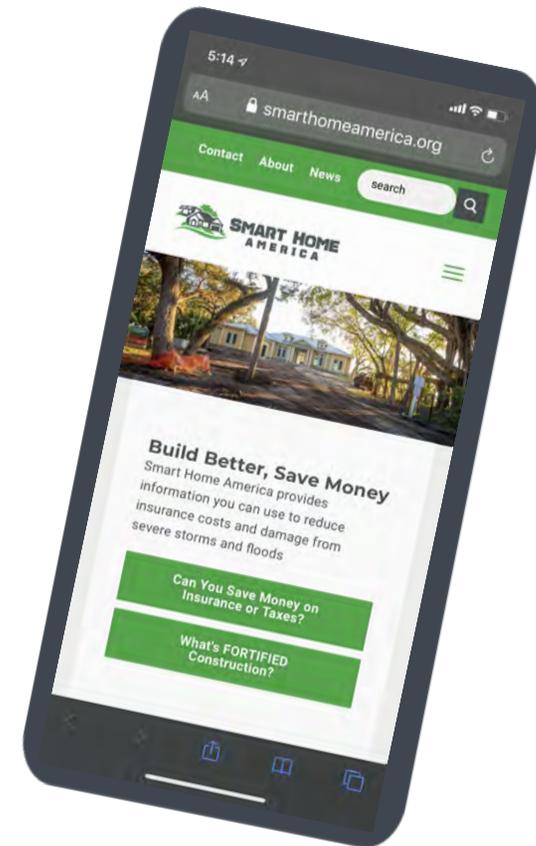


SmartHomeAmerica.org

DontGoof.org

FORTIFIEDhome.org

FORTIFIEDcommercial.org



Register for
online training.

fortifiedhome.org/training



Questions?

Contact Information



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AMERICA**

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