

May 20th 2025
Syracuse, NY

raising the future



Offsite, Sustainable,
Climate-Resilient
Building Strategies



PRESENTED BY

Habitat
for Humanity®
of New York State

Session 2: Logistics and Quality Assurance

*Practical considerations pulled from
real-world experience*



10:45 – 12:15

Meet the Panelists

Sarah Bruce

Executive Director

Syracuse Habitat

sarah@syracusehabitat.org

Rick Folger

*Director of Strategic
Initiatives*

Habitat Buffalo

rfolger@habitatbuffalo.org

Alex Fox

*Director of Business
Development NY*

**Sustainable
Comfort, Inc.**

alex@greenrater.com



Staffing & Operations



Building code & *minimum* quality assurance

Can these homes meet Habitat's Design Criteria?

Minimum requirements for new Habitat home quality assurance

Accessibility Standards

- **Accessible exterior entrance:** Home must include at least one no-step accessible entrance from an adaptably accessible route.
- **Accessible interior doorways:** All main floor interior passage doorways must have a 34" minimum net clear opening when the door is fully opened.
- **Accessible hallways:** Main floor hallways with doors must be at least 42" wide (finish measurement), and main floor hallways without doors must be at least 40" wide (finish measurement). Staircases between living spaces must be at least 40" wide (finish measurement).
- **Accessible kitchen / bathrooms:** Main floor must include work path access to at minimum a half-bath which includes either a 5' turning circle or 30"x48" clear space access to sink and toilet. Maintain minimum 36" clear travel and work paths in kitchen.

Mission-Aligned Design Standards

- **Maximum home sizes:** The living space provided (excluding stairwells and exterior storage) should not exceed:
 - For a studio / 1-bedroom: no larger than 600 sq ft; no more than 1 full bathroom.
 - For a 2-bedroom: no larger than 1,000 sq ft; no more than 1.5 bathrooms.
 - For a 3-bedroom: no larger than 1,200 sq ft; no more than 2 full bathrooms.
 - For a 4-bedroom: no larger than 1,400 sq ft; no more than 2 full bathrooms.
 - For a 5-bedroom: no larger than 1,700 sq ft; no more than 2.5 bathrooms.
- **Garages / carports:** Affiliates must not include garages or carports with new homes unless required by local ordinance or as will provide tangible improvements to residents' health and safety.

Sustainability Standards

- **ENERGY STAR and Indoor airPLUS:** All new Habitat homes must be certified through the current ENERGY STAR® certified new home and Indoor airPLUS program applicable to the state where each home is constructed. Review the Sustainability Standards for hardship exemptions and equivalent programs.
- **Air handling systems:** Air handling units must be located in conditioned space. Air ducts must either be in conditioned space or be optimized through air-sealing and insulation.
- **Plumbing fixture efficiency:** Provide WaterSense-labelled toilets, showerheads and bathroom faucets.

Durability Standards

- **Applicable building code:** The minimum structural durability standard for all new homes must be one of the two most current IRC code releases. Elements of the structural design which do not meet prescriptive requirements of the applicable IRC must have an alternate design provided and/or approved by a licensed architect or engineer.
- **Code plus programs:** All applicable code-plus measures must be based on industry-recognized program standards.
- **Permanent foundations:** New homes must be constructed on permanent foundations designed for regional and local conditions. Foundations must be designed for site-specific conditions to include waterproofing, insulation, and soil gas barrier (in radon zones 1 and 2).
- **Climate hazard mitigation:** Determine the climatic and seismic hazards for your affiliate's service area and build sites and provide adequate construction solutions to mitigate these risks.
- **Material durability:** Product selection must be based on durability rating, quality of warranty, and affordability. Prioritize impacts on indoor air quality (IAQ) and interior moisture management as part of HVAC system and interior material selections.

Code-plus construction & customization





Performance of IBHS FORTIFIED Home™ Construction in Hurricane Sally



Alabama Department of Insurance &

Center for Risk and Insurance Research



Culverhouse
College of Business
Center for Risk and Insurance Research

Hurricane Sally was the nation's first hurricane to strike an area with a large sample size of FORTIFIED homes, providing an important opportunity to compare construction methods and outcomes in the face of a category 2 storm.

It found FORTIFIED homes suffered significantly less damage and required fewer insurance claims than homes built through standard construction methods when Hurricane Sally made landfall at Gulf Shores, Alabama, as a strong Category 2 storm in September 2020.

The FORTIFIED homes also fared better than homes built to municipal building codes with identical criteria but without the documentation and evaluation FORTIFIED requires for designation. While the study did not examine the cause, it is likely the robust evaluation process required to receive the IBHS FORTIFIED designation plays a factor.

The study estimates that insurers would have saved \$105.6 million in losses if all homes in the storm's path had been built or retrofitted to the FORTIFIED Roof standard. Insurers would have saved \$116.1 million if the homes had been built to the FORTIFIED Home—Gold standard which adds in protection from damage typically caused by more intense storms.

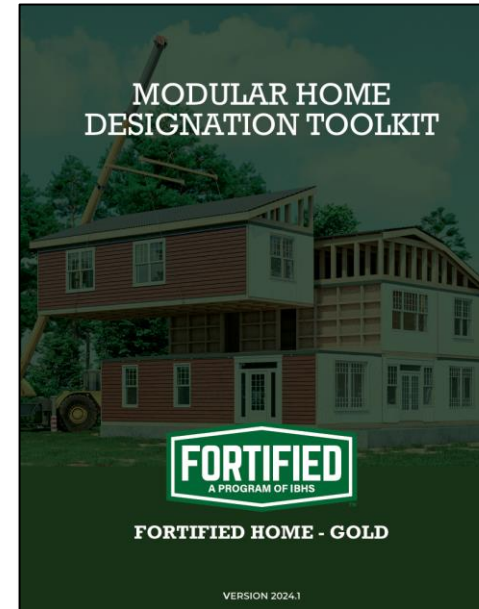
Performance of IBHS FORTIFIED Home™ Construction in
Hurricane Sally

May 5, 2025

IBHS FORTIFIED Modular Home Designation Toolkit

Includes:

- **Designation process** for modular homes
- **Roles & responsibilities** for Certified FORTIFIED Evaluator, installing contractor, and factory
- **Step-by-step requirements** for design, in-plant QA/QC process, and site installation
- **Documentation checklists** for factory and installing contractor
- **Site installation compliance form**



The installing contractor is required to complete and sign the FORTIFIED Home - Site Installation Compliance Form for Modular Construction, confirming that the foundation, modular home installation, and installation of additional applicable components such as roof cover or attached structures have been installed to meet the requirements of the Authority Having Jurisdiction, manufacturer's installation instructions, and any FORTIFIED requirements. This form is not valid if all sections are not filled out, initiated and/or signed by installing contractor.

1. General Information:

a. FORTIFIED ID: _____ (Obtain from homeowner or FORTIFIED Evaluator)

b. Modular Home Manufacturer: _____

c. Site Builder/Retailer: _____

d. Homeowner's Name: _____

e. Site Address: _____

f. City: _____ State: _____ ZIP: _____

g. County: _____

h. Serial Number: _____

i. Building Code and Edition: _____

j. Permit Number: _____

k. Date Installation was completed: _____

2. Foundation Design and Construction:

Note: Units must be sited on a permanent, reinforced foundation. Homes on a foundation constructed of unreinforced stacked masonry or stone (in dry-stack foundation) are not eligible for FORTIFIED. For a FORTIFIED Gold designation, a site-specific foundation plan signed and sealed by a professional engineer is required, and the foundation must be installed in compliance with the engineer's design drawings.

a. ☐ Yes ☐ No ☐ Is unit sited on a permanent, reinforced foundation?

b. ☐ Yes ☐ No ☐ Is the unit connected to the foundation with permanent anchorage?

c. ☐ Yes ☐ No ☐ Site specific foundation design plan signed and sealed by a professional engineer is provided?

• ☐ Yes ☐ No ☐ Foundation design plan includes requirements for the specific anchorage of the modular unit to the foundation?

• ☐ Yes ☐ No ☐ Foundation plan is approved by the Authority Having Jurisdiction (building department)?

d. ☐ Yes ☐ No ☐ Foundation is installed in compliance with signed and sealed foundation plan?

e. ☐ Yes ☐ No ☐ Is the foundation level?

f. ☐ Yes ☐ No ☐ Foundation construction has been inspected and approved by the Authority Having Jurisdiction?

g. Explain any "No" answers or provide additional comments as needed: _____

FORTIFIED Home™ is a program of the Insurance Institute for Business & Home Safety Revised March 2024

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FORTIFIED GOLD - MODULAR HOME DOCUMENTATION CHECKLIST
Manufacturing Plant
For FORTIFIED Home™ - Gold New Roof Designations

Documentation listed in this section will need to be collected by the manufacturing plant and provided to the certified FORTIFIED Evaluator, who will submit a complete designation application to IBHS.

NOTE: All sections in this checklist refer to the 2020 FORTIFIED Home™ Standard.
NOTE: This checklist assumes modular home units will not include garage doors and will have shingle or metal roof covers only.

Design

☐ Signed and sealed building (unit) design plans

☐ For openings, required site design wall wind pressures for all doors and windows must be included in design plans

☐ For metal roof covers, required site design uplift pressures for all roof zones must be included in design plans

☐ For metal roof covers, certified test report for metal panel system (Refer to section 2.8.1)

☐ Signed and sealed foundation design plan

☐ If not available on product labels/stickers, documentation of impact and design pressure rating for all openings (i.e. windows, doors, skylights, etc.)

Plant Production

ALL PLANT PHOTOS MUST IDENTIFY UNIT NUMBER AND BE STAMPED WITH TIME AND DATE

☐ Verify Roof Structural Members (Section 2.5):

- **Documentation:** 1 photo minimum showing at least 3 exposed roof members (i.e. trusses, rafters) with tape measure between roof members to show on center spacing

FORTIFIED GOLD - MODULAR HOME DOCUMENTATION CHECKLIST
Field Installation/Complete Exterior
For FORTIFIED Home™ - Gold New Roof Designations

Documentation listed in this section will need to be collected by the certified FORTIFIED Evaluator, who will submit a complete designation application to IBHS. Coordination with the installation contractor is critical for success.

NOTE: All sections in this checklist refer to the 2020 FORTIFIED Home™ Standard.
NOTE: This checklist assumes modular home units will not include garage doors and will have shingle or metal roof covers only.

ALL PHOTOS MUST BE SITE SPECIFIC
verified by geolocation stamp or home address visible in photo

☐ Verify Sealed Roof Deck (Section 4.4)

- **Documentation for hinged roofs:** Photos of each roof section raised in field with sealed roof deck installed in field

☐ Verify Roof Cover Rating and Attachment (Sections 4.7 and 4.8)

- **Documentation for metal panel roof covers** (if not completed at the manufacturing plant):
 - **For exposed fasteners:** 1 photo of metal panel fastener packaging showing manufacturer, product, type and size. For homes within 3000 ft of a saltwater shoreline, photo must show that fasteners meet [FORTIFIED Corrosion Protection Requirements](#)
 - 4 photos from different locations showing installed metal panel fastener spacing with tape measure in all roof zones

☐ **Hurricane Only:** Verify Attic Vents and Covers (Section 4.9)

- **Documentation:** 1 photo of each gable end vent that is open to the attic space, showing a temporary cover to be used when a storm approaches and that permanent hardware, for attaching the cover is installed

☐ Verify Gable End Wall Framing and Bracing (Section 5.5.2)

- **Documentation** (if not completed at the manufacturing plant): 2 photos per gable end showing bracing at top and at bottom and connection to supporting wall below from within the attic

☐ **Hurricane Only:** Verify Windows, Skylights and Entry Doors Impact Rating (Section 5.2 and 5.3)

- **Documentation** (if applicable): photos showing permanent anchor installation for temporary impact protection systems and that temporary impact protection systems are stored onsite

☐ Verify Chimney Connections (Section 5.7)

- **Documentation** (if applicable): 1 photo per chimney showing location of chimney on exterior of home

☐ Verify Attached Structure Connections (Section 5.8)

- **Documentation** (if not completed at the manufacturing plant): 1 photo showing roof member connection to roof beam with metal connectors
- **Documentation** (if not completed at the manufacturing plant): 1 photo showing connection of roof beam to column with metal connectors or a minimum of (2) bolts

Field Installation Documentation - 1 of 2

Property selection & foundations



Transportation: Can these be delivered to remote rural locations?



13'6" x 56' box being delivered down a one-lane rural road

Foundations: Can these go on full basements?



YES: 9' walk-out basement on steeply graded site

Installation: Do I have to use a crane?



It depends: Some set crews, on some sites, can use a “roll-off” system.



A “turnkey” finish home immediately after delivery, before “button-up” work.



Thank you!

Contact our panelists:

Sarah Bruce

sarah@syracusehabitat.org

Rick Folger

rfolger@habitatbuffalo.org

Alex Fox

alex@greenrater.com

Next up:

Funding and Financing

1:15 – 2:45

