

2020 STANDARD



# SUMMARY OF CHANGES



Hurricane



High Wind



Hail

Changes from the 2019 FORTIFIED Home™–Hurricane  
and 2015 FORTIFIED Home™–High Wind Standard

# FORMAT AND APPEARANCE

- Merged Hurricane, High Wind, and Hail designation requirements into one standard
  - Where requirements vary, color-coding is used to clearly specify High Wind vs. Hurricane vs. Hail requirements
  - These changes will facilitate program use by consolidating all program requirements in one location

**Hurricane** designation requirements

**High Wind** designation requirements

**Hail supplement** designation requirements

- Changed technical requirements from paragraph format to checklist format and, where applicable, consolidated content of technical explanations
  - These changes improve clarity, provide conciseness, and will help users more easily locate and understand program requirements
- Added “FORTIFIED Program Overview” and “Eligibility and Minimum Requirements” sections to centralize the location of important information relevant to all FORTIFIED designations
  - These additions are not changes to program requirements—they are a collection and organization of important overall program information, readily and clearly available with easy section references
- Added new sections:
  - “Qualifying Roof Structural Members” (2.5)
  - “Qualifying Ring-Shank Nails” (2.6)
  - “Acceptable Debris Impact Ratings for Openings and Opening Covers” (2.7)
  - “Acceptable Design Pressure (DP) Ratings” (2.8)
    - *Added subsection “Acceptable Design Pressure (DP) Ratings for Roof Covers” (2.8.1)*
    - *Added subsection “Acceptable Design Pressure (DP) Ratings for Openings” (2.8.2)*
  - “Referenced Codes and Standards” (2.9)
  - “Ultimate vs. Nominal Windspeed” (2.10)
  - “Corrosion Protection Requirements” (2.11)
  - “Documentation Requirements” (2.12)
  - “Recommendations for Flood Mitigation” (2.13)
  - “Appropriate Use of FORTIFIED” (2.14)
- Incorporated FORTIFIED Home Standard Details into the body of FORTIFIED Home Standard and included full set of Details in the Appendix
  - The FORTIFIED Home Standard Roof Details were introduced in November 2019 and serve as 1-page visual guides for designation requirements that are easily distributable to contractors and installation crews
  - Roof Details have been updated to reflect the 2020 FORTIFIED Home Standard
  - New details were added for FORTIFIED Roof:
    - **F-SRD-6** “Steep Slope Sealed Roof Deck – Self-Adhered Membrane – Concrete and Clay Tile Roof Covers”

- **F-RR-5** “Fastening Wood Structural Panel Roof Sheathing Over Existing 1x Roof Deck Boards with Gaps”
- New details added for FORTIFIED Silver:
  - **F-GE-1** “Prescriptive Gable End Outlooker Framing and Anchorage”
  - **F-S-1** “Soffit Retrofit Detail”
  - **F-CTD-1** “Prescriptive Chimney Tie-Down Detail for Chimneys up to 5 ft”
- Removed Technical Bulletins
  - Technical Bulletin content that belongs in the FORTIFIED Home Standard has been included
  - Technical Bulletins will be updated or retired as applicable

## TECHNICAL UPDATES

### All Designations

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- Minimum design requirements for the following have been updated to correspond to no less than pressures resulting from **ultimate windspeed of 130 mph with Exposure C**:
  - Components including (but not limited to) doors, windows, skylights, garage doors, soffits, roof covers, and sheathing
  - Prescriptive continuous load path design options (sections 6.4.2 and 6.4.3)
  - Retrofit of Existing Homes continuous load path design option (section 6.5)
  - EXCEPTION: For custom engineered continuous load path design by professional engineer option (section 6.4.1), main wind force resisting system of home may be designed for site-specific conditions if they are below 130 mph and/or Exposure C
- Requirements have been updated to include ASCE 7-16 (referenced in 2018 and 2021 IRC)

### FORTIFIED Roof™ Designation Requirements

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#### *General*

- Updated and reformatted Compliance Forms for relevance and ease of use
- Removed tree-trimming requirement previously in High Wind Standard
- Provided clarification on Existing Roof vs. New Roof designation
- Updated Low-Slope and Flat Roof Zone Guidance for ASCE 7-16 (refer to new F-G-2)

#### *Roof Sheathing and Attachment*

- Changed minimum required sheathing thickness for ASCE 7-16 to 15/32 in.
- Updated New Construction nailing patterns to include provisions for roofs built per ASCE 7-16 (no changes to ASCE 7-10 requirements)
  - For ASCE 7-16 (for both Hurricane and High Wind): 8d ring-shank nails @ 4 in. O.C. over entire roof deck are required
    - 8d common nails no longer accepted for High Wind for roofs built per ASCE 7-16
- Simplified requirements for when re-nailing the roof deck is required
  - Hurricane: additional nails to be 8d ring-shank spaced @ 4 in. O.C.
  - High Wind: additional nails to be 8d ring-shank spaced @ 6 in. O.C.

### **Sealed Roof Deck**

- Added ASTM D6757 as an acceptable alternate to 30# felt underlayment
  - Originally introduced with Technical Bulletin FH-2019-02 in December 2019, and has now been incorporated into the standard
- For tile roof covers, drip edge attachment spacing shall be 4 in. O.C. maximum

### **Roof Coverings**

- Included clarification on design pressure reports and testing documentation requirements for roof coverings in section 2.8.1
- Included reference to Design Uplift Pressure Calculator for steep-slope roof coverings
  - Originally introduced with Technical Bulletin FH 2020-01 in May 2020, and has now been incorporated into the standard
- Updated design uplift pressure guidance for flat roofs (refer to new Appendix B2, Table B2.1)

## **FORTIFIED Silver™ Designation Requirements**

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### **General**

- Updated and reformatted compliance forms for relevance and ease of use
  - SC1 – Silver Compliance Form for Engineer
  - SC2 – Silver Compliance Form for Contractor
- All pressure-rated components for both Hurricane and High Wind designations must meet **minimum** design pressure requirements per Appendix B2
  - These minimum requirements correspond to the new 130 mph Exposure C benchmarks

### **Garage Doors, Windows, Doors**

- For High Wind and Hurricane, garage doors must be design pressure rated
  - Level Change: For High Wind, this requirement was moved to FORTIFIED Silver (previously in FORTIFIED Gold)
- Included clarification on impact and design pressure reports and testing documentation requirements for openings and opening protection systems in sections 2.7 and 2.8

### **Gables Ends**

- Changed minimum height of gable ends requiring retrofit bracing to 3 ft (previously 4 ft)
- Removed prescriptive retrofit gable end bracing details (formerly Appendix A) from standard
  - Refer to IRC and FBC prescriptive gable end bracing retrofit guidance instead
- For Hurricane, updated gable end rake overhang outlooker guidance
  - For ASCE 7-16, gable end overhangs over 9 in. require outlookers or engineered retrofit design
  - Added new FORTIFIED Home Standard Detail F-GE-1 “Prescriptive Gable End Outlooker Framing and Anchorage”

### **Soffits**

- Updated design pressure guidance for soffit panels (refer to Appendix B2, Table B2.2)
- For Hurricane, added new FORTIFIED Home Standard Detail F-S-1 “Soffit Retrofit Detail”
  - No changes to retrofit framing requirements

## **Chimneys**

- Level Change: For Hurricane, the chimney tie down requirements have been moved to FORTIFIED Silver (previously in FORTIFIED Gold)
- Added new FORTIFIED Home Standard Detail F-CTD-1 “Chimney Tie Down Detail”
  - No changes to anchorage requirements

## **Attached Structures**

- For attached structures, removed the uplift worksheet and replaced with link to the new “Porch and Carport Calculator” to be available on the FORTIFIED website
- Provided clarification for multi-level attached structures to address multi-level porches with middle floor levels
- Added the requirement that nail-only connections (such as toe-nailed connections) for roof, beam, and column connections are not permitted for a FORTIFIED designation and are an immediate disqualifier

## **FORTIFIED Gold™ Designation Requirements**

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### **General**

- Updated and reformatted compliance forms for relevance and ease of use (use the forms that are specific to the type of CLP)
  - GC1 – Gold Compliance Form for Engineer – Engineered CLP for New Construction
  - GC2 – Gold Compliance Form for Contractor – Engineered CLP for New Construction
  - GC3 – Gold Compliance Form for Engineer – CLP for Retrofit of Existing Home
  - GC4 – Gold Compliance Form for Contractor – CLP for Retrofit of Existing Home
  - GC5 – Gold Compliance Form for Contractor - Prescriptive CLP for High Wind Only New Construction
- Added clarification on impact and design pressure reports and testing documentation requirements for openings and opening protection systems in sections 2.7 and 2.8

### **Continuous Load Path (CLP)**

- Added clarification on what counts as “new construction”
  - The Certificate of Occupancy has been issued less than 12 months prior to the application being made to IBHS
  - All required documentation has been obtained during the construction process and has been provided to IBHS
  - For construction that does not meet the above requirements, refer to section 6.5 “Continuous Load Path for Retrofit of Existing Homes”
- Updated requirements for prescriptive High Wind CLP design option for wood framed homes (refer to section 6.4.2) and included checklist in separate appendix section (F)
- Added new section “Prescriptive CLP Design by Professional Engineer” (6.4.3) to address the use of prescriptive design standards for homes that fall outside the limitations of appendix F
- Included CLP requirements for retrofit of existing homes (refer to section 6.5) in appendix G
- For New Construction: the following basic elements have always been included as required parts of the engineered CLP design, but additional minimum requirements for engineered CLP designs have been added (listed under each main heading below) and are reflected in the new GC1 and GC2 compliance forms

- Roof framing design including roof diaphragm design
  - EOR must review the design of roof framing members by specialty engineer (i.e., trusses)
- Floor framing design including floor diaphragm design
  - EOR must review the design of floor framing members by specialty engineer (i.e., trusses)
- Wall framing design including shear wall design
  - Shear walls must be designed as either full height, fully sheathed walls (perforated or segmented) or moment frames, and there must be sufficient percentage of full height walls on all building sides to adequately transfer shear loads
  - CMU/concrete walls must be 8 in. (nominal) minimum width
  - At top of all CMU/concrete walls, fully grouted bond beams with continuous reinforcement including required laps at corners and intersections must be specified
  - For CMU/concrete walls, vertical reinforcement must be specified at a regular O.C. spacing and at all corners including required ties to bond beam reinforcement at top and foundation reinforcement at bottom
  - For CMU/concrete walls, lintels and vertical cells around all wall openings (windows/doors) must be fully grouted with vertical and horizontal reinforcement including ties specified
- Foundation design
  - Slab on grade or stem wall foundation design (including retaining wall design if applicable) must include vertical reinforcement at corners and in grouted cells at an adequate spacing
  - For elevated foundations (such as piers/pilings), beams spanning between pilings, embedment depth of pilings, if applicable, and bracing/reinforcing of foundation/piling system, and adequate positive connections from the floor or wall structure to the supporting foundation must be specified
  - **Unrestrained stacked masonry or stone (dry-stack foundations) are NOT permitted for FORTIFIED and are an immediate disqualifier**
- Roof-to-wall connection requirements to resist uplift and applicable shear forces
  - Acceptable connections may be metal strap/tie connectors that adequately transfer vertical load from the roof members to the wall members below (i.e., straps/connectors must be connected to both plies of double top plates with additional straps to wall studs as needed on the interior or attached to sheathing on the exterior)
  - Alternative acceptable connections may be thru-bolt or screw connections with sufficient embedment to connect through both plies of the wall top plate, with additional straps to walls studs below as needed on the interior or attached to sheathing on the exterior
  - **Toe-nailed connections are not acceptable for FORTIFIED and are an immediate disqualifier**
- Wall above-to-below connection requirements to resist cumulative uplift and applicable shear forces
  - Acceptable connections may be exterior sheathing lapped at least width of floor system

- Alternative acceptable connections may be exterior sheathing lapped at least width of floor system with additional vertical metal straps
- Alternative acceptable connections may be vertical metal straps and horizontal framing plates (if exterior sheathing is not lapped)
- Adequate positive anchorage (hold-downs/tension ties) at all building corners (for all floor levels) are a FORTIFIED requirement and must be specified
- Ground wall-to-foundation connection requirements to resist cumulative uplift and applicable shear forces
  - Positive wall-to-foundation anchorage connections consisting of bolts (with washers and nuts), embedded straps, or anchors are required and may be spaced no greater than 48 in. O.C. with a minimum of 2 anchors per wall segment

## FORTIFIED Hail Supplement Requirements

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- Included the 2020 FORTIFIED Home Hail Supplement requirements (introduced in May 2020) in the standard
  - Applicable for both High Wind and Hurricane designations

## APPENDICES

- Reorganized and re-formatted
  - Original Appendix A removed
  - Original Appendix B updated and moved to “Definitions” section
  - Original Appendix C updated and moved to new Appendix B, Table B2.3
  - Original Appendix D removed (Corrosion resistance chart moved to new section 2.11, also contained in Standard Detail F-G-1)
- New Appendix A is full set of FORTIFIED Standard Details
- New Appendix B contains updated minimum pressure requirements:
  - Table B2.1 – Low Slope Roof ASD Wind Uplift for Roof Heights 30 ft or less
  - Table B2.2 – Wind Design Pressures for Soffit Panels
  - Table B2.3 – ASD Wind Design Pressures for Components
- New Appendix C is “References” section where industry standards, manuals, and guides referenced in the body of the FORTIFIED Home Standard are located with hyperlinks
- New Appendix D is “Definitions” section:
  - Added definition for “Components and Cladding (C&C)”
  - Added definition for “Designation”
  - Included definitions for “Exposure B”, “Exposure C”, and “Exposure D”
  - Added definition for “Professional Engineer”
  - Added definition for “Main Wind Force Resisting System (MWFRS)”
- New Appendix E is “IBHS Roof Shingle Hail Impact Ratings”
- New Appendix F is “FORTIFIED Prescriptive CLP Design Limitations and Minimum Requirements for High Wind”
- New Appendix G is “FORTIFIED Retrofit CLP Inspection List and Minimum Requirements”
- Technical Bulletins Removed:
  - Technical Bulletin content that belongs in the FORTIFIED Home Standard has been included and corresponding Technical Bulletins have been retired