



# FORTIFIED MULTIFAMILY™–WIND EXISTING CONSTRUCTION, STEEP-SLOPED (>10°) RE-ROOFING

This form captures the specific construction details for existing construction, steep-sloped re-roofing. Qualifications are listed in section 3.1.1 of the *FORTIFIED Multifamily–Wind Standard*.

This form is to be filled out by the project architect, a licensed structural engineer, and the general contractor and/or roofer. It confirms the requirements for the selected FORTIFIED level have been included in the building documents and the contractor and/or roofer is aware of these requirements.

Fill out only the applicable sections. Some portions of the sections may pertain only to Hurricane or High Wind—fill out accordingly depending on your building’s exposure.

## Compliance Agreement

I, the DESIGNER COMPLETING THIS CHECKLIST, understand and agree that:

1. The *FORTIFIED Multifamily–Wind Existing Construction, Steep-Slope Re-Roofing Form* must be completed FULLY and CORRECTLY for the applicable hazards.
2. I will provide engineered plans (and all other necessary documentation) that verify the structure meets FORTIFIED design criteria BEFORE construction starts. These plans and documents must be:
  - Legible
  - Complete
  - Certified by the Professional of Record
  - Included with this document
3. The plans submitted will comply with all local building codes and with the FORTIFIED Multifamily criteria as detailed in the *FORTIFIED Multifamily–Wind Standard*.

Full Name: \_\_\_\_\_

License/Registration Number: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Hazard and FORTIFIED Level

Select the site-specific hazard<sup>1</sup>:  Hurricane  High Wind

Select the FORTIFIED Commercial Wind level being pursued:

- FORTIFIED Roof™**—Enhanced roof performance
- FORTIFIED Silver™**—FORTIFIED Roof requirements plus building envelope protection and reduction of business operations downtime
- FORTIFIED Gold™**—FORTIFIED Silver requirements plus enhanced structural performance and maintaining business operations

## BUILDING OVERVIEW

Street Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Zip Code: \_\_\_\_\_

Year of Construction: \_\_\_\_\_

**Existing buildings with wood frame roofs must be constructed in accordance with the 2000 IBC or later for eligibility.**

Yes  No  N/A

Please select the option which best describes the buildings proximity to saltwater:

- Within 300 feet
- More than 300 ft but less than 1,000 ft
- More than 1,000 ft but less than 3,000 ft
- More than 3,000 ft

Corrosion protection requirements defined in section 3.1.4 of the *FORTIFIED Multifamily–Wind Standard* have been implemented

Yes  No

## Project Status

Tentative Re-Roofing Start Date: \_\_\_\_\_

Tentative Completion Date: \_\_\_\_\_

Re-covering applications are not permitted.  
Check this box to confirm this method is not being used.

Select the options that best describe the building:

- Steep-slope re-roofing using existing structural roof deck<sup>2</sup>
- Steep-slope re-roofing with new structural roof deck
- Steep-slope re-roofing with new structural roof deck and new roof framing members
- Other<sup>3</sup>: \_\_\_\_\_

<sup>1</sup>Hurricane-prone regions are areas vulnerable to hurricanes as defined in ASCE 7. See section 1.4 of the *FORTIFIED Multifamily–Wind Standard* for more information.

<sup>2</sup>All damaged or deteriorated roof deck must be removed and replaced. See section 3.1.1.2.2 of the *FORTIFIED Multifamily–Wind Standard*.

<sup>3</sup>Must be confirmed/approved by IBHS and/or the FORTIFIED Multifamily Evaluator.



## General Building Characteristic

Number of Stories: \_\_\_\_\_

Roof Slope: \_\_\_\_\_

Gross Square Footage (sq ft): \_\_\_\_\_

Building Dimensions (ft):

Length: \_\_\_\_\_

Width: \_\_\_\_\_

Height: \_\_\_\_\_

Occupancy Type: \_\_\_\_\_

Wall/Framing (gravity system) [select all that apply]:

- Concrete       Masonry
- Steel             Light Gauge
- Wood
- Other: \_\_\_\_\_

Lateral System [select all that apply]:

- Moment Frames or Braced Frames
- Shear Walls
- Other: \_\_\_\_\_

## Flood—Recommended Whole-Building Protection (Not Required)

While protecting electrical and mechanical systems from flood is a requirement of FORTIFIED Silver, whole-building protection against the flood hazard is not be required under FORTIFIED Multifamily.

First finished floor elevation (ft): \_\_\_\_\_

FEMA-designated flood zone<sup>4</sup>: \_\_\_\_\_

If located in a FEMA-designated flood zone (V, A, B, D, and X-shaded), please select one of the following options:

- The building's first finished floor is located above the 500-year flood level.  
500-year flood level (ft): \_\_\_\_\_
- The building's first finished floors is located 3 ft above the base flood elevation.  
Flood level (ft): \_\_\_\_\_
- Dry flood protection such as flood gates, walls, or doors, inflatable barriers, sand bags, or similar devices are readily available on site to help mitigate water intrusion.
- Not applicable (N/A)

<sup>4</sup>Flood zone as defined by FEMA.

<sup>5</sup>See section 2.4.2 of the *FORTIFIED Multifamily–Wind Standard*.

<sup>6</sup>When seeking FORTIFIED Gold, the existing foundation systems must be evaluated by the structural engineer of record. Additional information and on-site testing may be required to verify the structural capacity of the existing conditions.

<sup>7</sup>Damage or deterioration could be from moisture, weathering, or insect infestation. Damaged or deteriorated deck would generally be marked by one of more of the following characterizes: soft or spongy wood, wood swelling or buckling, delaminating (plywood), excessive rusting or crumbling and flaking of the wood.

## Hail—Recommended Protection (Not Required)

While hail protection is not required for FORTIFIED Multifamily, if the building is in a hail-prone region as designated in section 2.4.2 of the *FORTIFIED Multifamily–Wind Standard*, it is recommended to provide a hail-resistant roof cover.

Is the building located in a hail-prone region<sup>5</sup>?  Yes  No

If **yes**, select one of the following options for the installed roof cover:

- FM Approval Standard 4473 Class 4
- UL 2218 Class 4
- Not Applicable

## EXISTING CONDITIONS VERIFICATION

### Foundations

Check the box beside each requirement to indicate that the existing foundation is in accordance with the standard. Fill out requested information where indicated.

- The existing foundation system is NOT constructed of unrestrained stacked masonry or stone (dry-stacked foundation).
- The existing foundation system has adequate positive connections from the floor or wall structure to support the foundation.<sup>6</sup>

### Steep-Slope Re-Roofing Using Existing Structural Roof Deck Yes No

If the existing structural roof deck is going to be re-used, complete the following section.

Check the box beside each requirement to indicate that the existing structural roof deck is in accordance with the standard. Fill out requested information where indicated.

Existing deck material [select all that apply]:

- Structural Metal Panel
- Plywood  
Thickness (in.): \_\_\_\_\_
- Oriented Strand Board  
Thickness (in.): \_\_\_\_\_
- Other: \_\_\_\_\_

The existing structural roof deck was inspected after old roofing materials were removed.

Were there any locations where the existing structural roof deck was damaged or deteriorated?<sup>7</sup>

Yes     No



If YES was selected, please describe the type of damage.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Fill out the following if damage or deterioration to existing structural deck was indicated:

Supporting wood members were not cut or notched when removing the damaged existing deck.

Yes No N/A

The damaged sections of the deck were removed, and the entire sheet was replaced with the same deck type and thickness as the existing.

Yes No

*If the roof deck is damaged, there is a possibility that the framing members are damaged as well.*

Roof framing members below the deteriorated roof deck were evaluated for damage.

Yes No

For wood, ¼ in. of the surface was deteriorated or damaged?

Yes No N/A

If Yes was indicated, that ¼ in. of the structural framing member was damaged or deteriorated, then the members must be evaluated by a structural engineer. Please provide the signed and sealed conditions report by a licensed structural engineer.

### Steep-Slope Re-Roofing with New Structural Roof Deck Yes No

If the existing structural roof deck is going to be replaced with a new one, please complete the following section. Check the appropriate box for each requirement to indicate that the existing structural roof framing is in accordance with the standard. Fill out requested information where indicated.

Supporting wood members were not cut or notched when removing the damaged existing deck.

Yes No N/A

Roof framing members below the deteriorated roof deck were evaluated for damage.

Yes No

¼ in. of the surface was deteriorated or damaged?

Yes No N/A

If Yes was indicated, that ¼ in. of the structural framing member was damaged or deteriorated, then the members must be evaluated by a structural engineer. Please provide the signed and sealed conditions report by a licensed structural engineer.

### Steep-Slope Re-Roofing with New Structural Roof Deck and New Roof Framing Members

Yes  No

If the existing structural roof deck and roof framing members are going to be replaced with new ones, please complete the following section.

The roof framing plans are submitted with this document.

Yes No

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## FORTIFIED Roof™

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### Roof Configuration

Does the building have more than one roof type? Yes No

If yes, please fill out either section 3.0 for the corresponding quantity of roof systems.

There are \_\_\_\_\_ different roof types.

Does the building have roofs at multiple heights? Yes No

If yes, are the heights different enough that roof systems with different wind ratings are specified? Yes No

If yes, fill out section 3.0 for each roof system with a different wind rating.

### General Information

Roof Type Number: \_\_\_\_\_ Out of: \_\_\_\_\_

Roof Slope (degrees): \_\_\_\_\_

Average Roof Height (ft): \_\_\_\_\_

ASCE 7 Roof Dimension "a" (ft): \_\_\_\_\_

### Re-roofing Code Specification

Select the applicable code and fill out the corresponding information:

ASCE 7-05

Risk Category II

Risk Category III

Risk Category IV

Importance Factor: \_\_\_\_\_

Design wind speed (V<sub>ult</sub>): \_\_\_\_\_ mph

ASCE 7-10

Risk Category II

Risk Category III

Risk Category IV

Design wind speed (V<sub>ult</sub>): \_\_\_\_\_ mph

ASCE 7-16

Risk Category II

Risk Category III

Risk Category IV



Design wind speed ( $V_{ult}$ ): \_\_\_\_\_ mph

Select the applicable building code:

- IBC 2000     IBC 2012
- IBC 2003     IBC 2015
- IBC 2006     IBC 2018
- IBC 2009

### Exposure Category and Classification

The exposure category per ASCE 7 is:     C     D

In accordance with the code selected in the above section, please identify the building exposure classification:

- Partially enclosed
- Enclosed
- Open

## Steep-Slope Re-Roofing Details

### Asphalt Shingles and Architectural Metal Panel

Yes     N/A

Select either asphalt shingles or architectural metal panels and fill out the corresponding information. Additionally, provide information regarding the sealed roof deck.

#### Asphalt Shingles Yes    N/A

If the building is less and 60 ft tall, select one of the following options from the table. If not, additional engineering calculations are required and must be submitted with this form.

Selection	Wind speed ( $V_{asd}$ )	Wind speed ( $V_{ult}$ )	Shingle testing standard / classification
<input type="checkbox"/>	100 MPH	129 MPH	ASTM D3161 (Class F) or ASTM D7158 (Class G or H)
<input type="checkbox"/>	110 MPH	142 MPH	
<input type="checkbox"/>	120 MPH	155 MPH	
<input type="checkbox"/>	130 MPH	168 MPH	ASTM D3161 (Class F) or ASTM D7158 (Class H)
<input type="checkbox"/>	140 MPH	180 MPH	
<input type="checkbox"/>	150 MPH	194 MPH	

Manufacturer Name: \_\_\_\_\_

Number of nails used to install shingles for high wind rating (per shingle tab)<sup>8</sup>: \_\_\_\_\_

Shingles are installed at eaves using (check one):

- Peel-and-stick starter strip
- 8-in.-wide x 1/8-in.-thick bed of flashing cement

Shingles are installed at rakes/gable edges using (check one):

- 8-in.-wide x 1/8-in.-thick bed of flashing cement

Starter strip set in an 8-in.-wide x 1/8-in.-thick bed of flashing cement

ASTM D1970 peel-and-stick starter strip with asphaltic adhesive strip

Shingles installed at intersections and valleys:

- 8-in.-wide x 1/8-in.-thick bed of flashing cement
- Not applicable

#### Architectural Metal Panels Yes    N/A

A check in the box beside each requirement indicates that the architectural metal panel installation is in accordance with the standard.

The architectural metal panels were designed to meet the design wind pressures as defined in section 3.1.1.3.1 of the *FORTIFIED Multifamily-Wind Standard*.

Provide the applicable design wind pressures (psf) for an effective wind area of 10 sq ft based on section 3.1.1.3.1 of the *FORTIFIED Multifamily-Wind Standard*.

Field: \_\_\_\_\_ (psf)

Perimeter: \_\_\_\_\_ (psf)

Corner: \_\_\_\_\_ (psf)

Select architectural metal panel system approval:

- Florida Product Approval
- ICC-ES
- Miami-Dade
- TDI
- UL

Provide the documentation number associated with the approved system (i.e., FL Number for FPA):

Multiple systems

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Single system: \_\_\_\_\_

Enhancements (describe):

\_\_\_\_\_  
\_\_\_\_\_

#### Sealed Roof Deck Options for Asphalt Shingles and Metal Panels

In some areas of the country, the availability of underlayment products that meet these criteria are becoming limited. ASTM D6757 is acceptable in place of ASTM D226 Type II (#30) or ASTM D4869 Type IV (#30) as specified in section 3.1.3.3.1 of the *FORTIFIED Multifamily Wind Standards*.

<sup>8</sup>Six nails per shingle are usually required by shingle manufacturers for high-wind installation.



Select one of the following options to indicate how the roof deck is sealed:

- OPTION 1A: SELF-ADHERING POLYMER-MODIFIED BITUMEN FLASHING TAPE** at least 4-in. wide meeting ASTM D1970. It shall be applied directly to the roof deck (or primer if required by manufacturer) to all horizontal and vertical joints in the roof deck; then a #30 ASTM D226 Type II felt or #30 ASTM D4869 Type IV felt underlayment or a reinforced synthetic underlayment which has an ICC approval as an alternate to ASTM D226 Type II felt paper installed over the entire roof deck and secured with button cap nails (with 1-in. diameter) at maximum 6 in. o.c. at laps and 12 in. o.c. vertically and horizontally in the field. Horizontal laps must be minimum of 4 in. and end laps must be a minimum of 6 in.<sup>9</sup>
- OPTION 1B: SELF-ADHERING AAMA 711-13, LEVEL 3 (FOR EXPOSURE UP TO 80°C/176°F) COMPLIANT FLEXIBLE FLASHING TAPE**, at least 3¾-in. wide, applied directly to the roof deck (or primer if required by manufacturer) to all horizontal and vertical joints in the roof deck; then a #30 ASTM D226 Type II felt or #30 ASTM D4869 Type IV felt underlayment or a reinforced synthetic underlayment which has an ICC approval as an alternate to ASTM D226 Type II felt paper installed over the entire roof deck and secured with button cap nails at maximum 6 in. o.c. at laps and 2 rows spaced evenly in the field at 12 in. o.c.
- OPTION 2: A FULL LAYER OF SELF-ADHERING POLYMER MODIFIED BITUMEN MEMBRANE** (“peel-and-stick”) meeting ASTM D1970 is installed over the entire roof deck with a second layer of minimum ASTM D226 Type I felt installed as a “bond break” between the peel-and-stick and the shingles.
- OPTION 3: INSTALL TWO (2) LAYERS OF ASTM D226 TYPE II (#30) OR ASTM D4869 TYPE IV (#30)** underlayment in a shingle fashion, lapped 19 in. on horizontal seams (36-in. roll), and 6 in. on vertical seams. Fasten underlayment at maximum 6 in. o.c. along the laps and at maximum 12 in. oc. in the field of the sheet centered between the side laps. Secure underlayment using annular ring or deformed shank nails with 1-in-diameter caps (button cap nails).<sup>10</sup>

Concrete and Clay Tile Yes  N/A

**Concrete and Clay Tile Material and Installation**

A check in the box beside each requirement indicates that the tile installation is in accordance with the standard.

- Tile is installed in accordance with FRSA/TRI Florida High Wind Concrete and Clay Tile Installation Manual for the design wind speed as defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.<sup>11</sup>
- Clay and concrete tiles are installed over a minimum <sup>15</sup>/<sub>32</sub>-in.-thick plywood.
- Mortar-set tile or mortar-set hip and ridge tiles are not used.

- Metal flashing is installed in accordance with FRSA/TRI Florid High Wind Concrete and Clay Tile Installation Manual.
- Hip and ridge tile structural support and attachment is installed in accordance with FRSA/TRI Florida High Wind Concrete and Clay Tile Installation Manual. **NOTE:** Mortar set attachment is not acceptable.
- Tile attachment is installed in accordance with FRSA/TRI Florida High Wind Concrete and Clay Tile Installation Manual. **NOTE:** Mortar set attachment is not acceptable.

**Concrete and Clay Tile Sealed Roof Deck**

In some areas of the country, the availability of underlayment products that meet these criteria are becoming limited. ASTM D6757 is acceptable in place of ASTM D226 Type II (#30) or ASTM D4869 Type IV (#30) as specified in section 3.1.3.3.1 of the *FORTIFIED Multifamily Wind Standards*.

Select one of the following options to indicate how the roof deck is sealed:

- OPTION 1A: SELF-ADHERING POLYMER-MODIFIED BITUMEN FLASHING TAPE** at least 4-in. wide meeting ASTM D1970. It shall be applied directly to the roof deck (or primer if required by manufacturer) to all horizontal and vertical joints in the roof deck; then a #30 ASTM D226 Type II felt or #30 ASTM D4869 Type IV felt underlayment or a reinforced synthetic underlayment which has an ICC approval as an alternate to ASTM D226 Type II felt paper installed over the entire roof deck and secured with button cap nails (with 1-in. diameter) at maximum 6 in. o.c. at laps and 12 in. o.c. vertically and horizontally in the field. Horizontal laps must be minimum of 4 in. and end laps must be a minimum of 6 in.<sup>10</sup>
- OPTION 1B: SELF-ADHERING AAMA 711-13, LEVEL 3 (FOR EXPOSURE UP TO 80°C/176°F) COMPLIANT FLEXIBLE FLASHING TAPE**, at least 3¾-in. wide, applied directly to the roof deck (or primer if required by manufacturer) to all horizontal and vertical joints in the roof deck; then a #30 ASTM D226 Type II felt or #30 ASTM D4869 Type IV felt underlayment or a reinforced synthetic underlayment which has an ICC approval as an alternate to ASTM D226 Type II felt paper installed over the entire roof deck and secured with button cap nails at maximum 6 in. o.c. at laps and 2 rows spaced evenly in the field at 12 in. o.c.
- OPTION 2: A FULL LAYER OF SELF-ADHERING POLYMER-MODIFIED BITUMEN MEMBRANE** (“peel-and-stick”) meeting ASTM D1970 is installed over the entire roof deck with a second layer of minimum ASTM D226 Type I felt installed as a “bond break” between the peel-and-stick and the shingles.

Other Roof Coverings Yes  N/A

Roof type: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

<sup>9</sup>Photographs of product labels and installation required. If ASTM D4869 felt underlayment does not specifically state that it is Type IV, the product must weight 26 lb/100 ft<sup>2</sup> to meet this requirement.

<sup>10</sup> Photographs of product labels and installation required. If ASTM D4869 felt underlayment does not specifically state that it is Type IV, the product must weight 26 lb/100 ft<sup>2</sup> to meet this requirement.

<sup>11</sup>ASCE 7-16 wind loads are not addressed in the FRSA/TRI Installation (Fifth Edition Revise) guidelines. In jurisdictions that require ASCE 7-16 wind loads, follow the tile manufacturer installation guidance and product approvals for the design wind pressures, and, if the roof tile is installed with adhesives, the adhesive manufacturer’s product approval for those wind pressures.



Describe how the roof covering meets the design pressures as outline in section 3.1.1.3 and that the attachments meet the design pressures as outline in section 3.1.1.3.1.

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If applicable, please describe the sealed roof deck method:

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## Structural Roof Deck and Attachment

Select the appropriate structural roof deck and fill out the corresponding information.

**Plywood and Oriented Strand Board** Yes  N/A

Select the structural deck:  Plywood  OSB

Check the box beside each requirement to indicate that the structural roof deck and attachment installation is in accordance with the *FORTIFIED Multifamily–Wind Standard*.

- Roof sheathing can resist the loads and load combinations specified in ASCE 7 as defined section 3.1.1.3.1 of the *FORTIFIED Multifamily–Wind Standard*.
- Wood structural panel thickness is not less than  $7/16$  in. and no less than  $15/32$  in. for the installation of new clay or concrete roof tiles.

Sheathing Fastening:

Roof peak height (ft.): \_\_\_\_\_

Sheathing fastening and roof member spacing for roofs with a peak height greater than 30 feet must be designed by a structural engineer. Calculations must be provided with this submittal.

Roof Square Footage (sq. ft.): \_\_\_\_\_

Sheathing fastening for roofs with a peak height of 30 feet or less and a roof square footage greater than 5000 sq. ft. must be designed by a structural engineer. Calculations must be provided with this submittal.

Roof member spacing (in.)<sup>12</sup>: \_\_\_\_\_

Sheathing thickness (in.): \_\_\_\_\_

Fastener type: \_\_\_\_\_

**Note:** Smooth-shank nails are not permitted.

- 8d ring-shank nails
- 10d ring-shank nails
- Other (engineer of record must provide calculations)

Fastener spacing<sup>13</sup>:

Field:

4 in o.c.  6 in. o.c.  Other: \_\_\_\_\_

Perimeter:

4 in o.c.  6 in. o.c.  Other: \_\_\_\_\_

Corner:

4 in o.c.  6 in. o.c.  Other: \_\_\_\_\_

**Sawn Lumber or Wood Boards** Yes  N/A

Check the box beside each requirement to indicate that the sawn lumber or wood boards are in accordance with the standard. Fill out requested information where indicated.

- Sawn lumber or wood board roof deck can resist the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3.1 of the *FORTIFIED Multifamily–Wind Standard*.

Manufacturer: \_\_\_\_\_

Dimensions:

Width (in): \_\_\_\_\_

Thickness (in): \_\_\_\_\_

Roof member spacing (in)<sup>14</sup>: \_\_\_\_\_

- Sawn lumber or wood board roof deck attachments can resist the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.

Describe the attachment detail:

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**Structural Steel Decks** Yes  N/A

Check the box beside each requirement to indicate that the sawn lumber or wood boards are in accordance with the standard. Fill out requested information where indicated.

- Structural steel deck can resist the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3.1 of the *FORTIFIED Multifamily–Wind Standard*.

Gauge: \_\_\_\_\_

Roof member spacing (in.): \_\_\_\_\_

- Structural steel deck attachments can resist the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.

<sup>12</sup>For mean roof height less than 30 ft, the maximum allowed roof member spacing is 24 in. o.c. unless calculations are provided by the engineer of record. For height greater than 30 feet, calculations must be provided.

<sup>13</sup>For fastener spacing see section 3.1.3.2.1 of the *FORTIFIED Multifamily–Wind Standard*.

<sup>14</sup>Measured from centerline to centerline in inches.



Describe the attachment details<sup>15</sup>:

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The structural steel deck and attachment have been verified by a structural engineer.

### Drip Edge (Edge Flashing) Yes N/A

Check the box beside each requirement to indicate that the drip edge is in accordance with the standard. Fill out requested information where indicated.

- Minimum 26 gauge
- Joints are overlapped a minimum of 3 in.
- Drip edge extends ½ in. below sheathing and extends back on the roof a minimum of 2 in.
- Mechanically fastened at 4 in. o.c. and fasteners are alternating (staggered)
- Drip edge is installed **over** the underlayment

### Flashing (all non-edge flashing applications) Yes N/A

Check the box beside each requirement to indicate that the flashing is in accordance with the standard. Fill out requested information where indicated.

- Meets the 2018 IBC
- Meets the manufacturer’s installation guidelines

### Ridge and Off-Ridge Vents Yes N/A

Check the box beside each requirement to indicate that the ridge and off-ridge vents are in accordance with the standard. Fill out requested information where indicated.

- Ridge and off-ridge vents are TAS 100(A) rated for resisting water intrusion in high winds.
- Attached to the roof per the manufacturer’s installation guidelines.

### Gable End Vents Yes N/A

IBHS recommends against including gable end vents in new commercial buildings built in hurricane-prone regions. If they must be used to meet code they must meet:

- Gable end vents are TAS 100(A) rated for resisting water intrusion in high winds.
- Attached to the roof per the manufacturer’s installation guidelines.

### Skylights Yes N/A

Check the box beside each requirement to indicate that the skylights are in accordance with the *FORTIFIED Multifamily–Wind Standard*.

- Skylights and their attachments are designed and detailed for the ASCE 7 wind loads and provide an uplift resistance with a minimum factor of safety 2.0 for ASCE 7 ASD loads (1.67 for ASCE 7-16 ASD loads). Installation must meet the air and water infiltration requirements of ASTM E330 and ASTM E331. The curb installation must be confirmed by the engineer of record that it shall meet the required uplift with a minimum factor of safety as described in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.

#### Hurricane-Prone Regions Only:

Skylights shall conform to **one** of the following:

- Current and active FM Approval per ANSI FM 4431 with large missile impact rating.
- Miami-Dade County Approved with a current and active Notice of Acceptance with large missile impact rating.
- When the ASCE 7-05 wind speed is ≥130 mph (ASCE 7-10 and 7-16 when appropriate Risk Category design wind speed is ≥165 mph), skylights shall also meet AAMA 520-09.

### Roof-Mounted Equipment Yes N/A

Check the box beside each requirement to indicate that the RME are in accordance with the *FORTIFIED Multifamily–Wind Standard*.

- All RME and their attachments have been designed with a minimum factor of safety as defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.

All RME and their attachments are in accordance with one of the following:

- ASCE 7-10 Section 29.5.1 (h≤60ft)
- ASCE 7-16 Section 29.4

### Photovoltaic Systems Yes N/A

Photovoltaic (PV) systems and their attachments are designed with a minimum factor of safety defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard* and in accordance with (select all that apply):

- ASCE 7-16
- SEAOC PV2
- Model-scale wind tunnel study that meets the requirements of ASCE 49-12 (documentation must be submitted)

Provided the wind loads used are consistent with the provisions described above, the following options are acceptable:

- Rigid PV modules that are FM Approved or meet Approval Standard 4478 (wind uplift, combustibility from above the deck).
- Flexible PV modules that are FM Approved or meet Approval Standard 4476.

<sup>15</sup>Include attachment method (i.e. weld, screw), size, and spacing.



## Re-Roofing Photo Documentation

This section outlines the photo documentation required to be submitted to the FORTIFIED Multifamily evaluator.

Photo documentation is a supplementary tool that helps the FORTIFIED Multifamily Evaluator inspect the roofing job more efficiently. Clear and focused photos help ensure all items are captured and could reduce the time of the overall inspection process.

Please submit a compressed file including all requested photos with this form. Please correspond titles of photos to the titles mentioned in this document. All photos must be clear and focused on item(s) of interest. IBHS or the FORTIFIED Multifamily Evaluator may request more photos.

Example photos are provided at the end of this section for reference purposes only.

### On-Site Material Verification

#### Wood Deck Attachment- Fastener Yes N/A

- Photo - manufacturer label on box showing the fastener details
- Photo - nails (see figure 1)

#### Sealed Roof Deck Yes N/A

- Photo - manufacturer label of all materials used in accordance with §3.1.3.3 of the *FORTIFIED Multifamily-Wind Standard* (i.e., reinforced synthetic underlayment, flashing tape, self-adhering modified bitumen membrane; see figure 2)
- Photo - (if applicable) underlayment mechanical fastener manufacturer label

#### Shingles and Fasteners Yes N/A

- Photo - shingle nails manufacturer label
- Photo - starter strip or mastic manufacturer label
- Photo - shingles manufacturer label indicating wind testing standard/classification

#### Clay and Concrete Tiles and Attachments Yes N/A

- Photo - (if applicable) tile nails manufacturer label
- Photo - (if applicable) roof tile adhesive
- Photo - tile manufacturer label indicating wind testing standard/classification

#### Metal Panels, Fasteners and Accessories Yes N/A

- Photos - manufacturer labels of all applicable products designated by the approved system and manufacturer installation guidelines.<sup>16</sup>
- Photo - manufacturer label on box showing the fastener details
- Photo(s) - screws<sup>17</sup>

#### Gutters, Downspouts and Hold-downs Yes N/A

- Photo - manufacturer label

#### Ridge Vents or Off-Ridge Vents Yes N/A

- Photo - manufacturer label on box

### Existing Conditions Documentation

#### Overview

- Photo(s) - exposed structural deck with removed cover (shingles, architectural metal panel, or other deck) in the corner, perimeter, and field conditions <sup>18</sup>

#### Damaged or Deteriorated Structural Deck and Framing Members Yes N/A

- Photo(s) - damaged or deteriorated existing structural deck
- Photo(s) - photos of the structural framing members under the damaged or deteriorated existing structural deck (damaged deck removed)

### Roof System Installation

#### Structural Deck Fastening Yes N/A

Use a measuring tape to show spacing of existing fasteners and additional fasteners added to meet the minimum spacing requirement specified in the *FORTIFIED Multifamily-Wind Standard*.

- Photos (Minimum of 2 locations) - decking in the corner area
- Photos (Minimum of 2 locations) - decking in the field area
- Photos (Minimum of 2 locations) - decking at the roof ridge or top of a mono-sloped roof
- Photos (if applicable)- decking at the valley

#### Sealed Roof Deck Yes N/A

View sample photos 3–6 for examples.

- Self-Adhering Polymer-Modified Bitumen Flashing Tape
  - Photo(s) - 4-in.-wide min tape applied to roof deck in corner areas
  - Photo - 4-in.-wide min tape applied to roof deck in field areas
  - Photo - underlayment direction of placement
  - Photo(s) - (if applicable) Underlayment placement at valleys and hips
  - Photo(s) - underlayment button cap nail fastening- corner and field areas
- Self-Adhering AAMA 711-13, Level 3 Compliant Flexible Flashing tape
  - Photo(s) - 4-in.-wide min tape applied to roof deck in corner areas
  - Photo - 4-in.-wide min tape applied to roof deck in field areas
  - Photo - underlayment direction of placement
  - Photo(s) - (if applicable) underlayment placement at valleys and hips

<sup>16</sup>Provide photos for all applicable products including but not limited to panel sheets, fire barriers, tape/tube sealant, and universal closures.

<sup>17</sup>Provide a photo per different fastener required by the approved system. This includes but is not limited to wood screws and stitch screws.

<sup>18</sup>A photo is required in all areas of the roof; for example, if the roof has four corner conditions, four corner conditions are captured.



- Photo(s) - underlayment button cap nail fastening- corner and field areas
- A Full Layer of Self-Adhering Polymer-Modified Bitumen Membrane
  - Photo - direction of placement
  - Photo(s) - placement at valleys and hips
  - Photo(s) - bond break installation over entire roof
- Install Two (2) Layers of ASTM D226 Type II or ASTM D4869 Type IV (#30)
  - Photo - underlayment direction of placement
  - Photo(s) - underlayment placement at valleys and hips
  - Photo(s) - underlayment fastening - annual-ring or deformed-shank nails with 1-in.-diameter caps - corner and field areas

**Edge Conditions**

Yes  N/A

- Photo - (if applicable) drip edge fastened at 4 in. o.c. staggered (verify with tape measurer)
- Photo - (if applicable) drip edge overlapped a minimum of 3 in. (verify with tape measurer)
- Photo(s) - (if applicable) drip edge with self-adhering starter strip or mastic bed for the first course/starter strip
- Photo(s) - (if applicable) architectural metal panel flashing attachment per manufacturer specifications in the corner and perimeter locations

**Cover Installation<sup>19</sup>**

Yes  N/A

- Photo (minimum of 2 locations) - fastening pattern in the corner area
- Photo (minimum of 2 locations) - fastening pattern in the field area
- Photo (minimum of 2 locations) - fastening pattern at the roof ridge or top of a mono-sloped roof
- Photo (if applicable) - fastening pattern at the valleys

**Example Photos**



Sample Photo 1: Photo of Nails



Sample Photo 2: Photo of Starter Strip Manufacturer Label



Sample Photo 3: Underlayment Nailing



Sample Photo 4: Underlayment “peel-and-stick”



Sample Photo 5: Mastic Application Over Drip Edge for Starter Strip Adhesion

<sup>19</sup>Cover installation includes but is not limited to shingles, concrete and clay tiles, and architectural metal panels. All other cover installations must be approved by the FORTIFIED Multifamily Evaluator and shall be photo documented. If necessary, the FORTIFIED Multifamily Evaluator may request additional photos outside of this list.



Sample Photo 6: Drip Edge with Self-Adhering Starter Strip

## FORTIFIED SILVER

All FORTIFIED Roof™ requirements must be satisfied.

For this section, check the box beside each requirement or respond to the item to indicate that items are in accordance with the FORTIFIED Multifamily–Wind Standard.

### Opening Protection

#### Wall Design Pressures

Provide select and fill out the appropriate wind pressures.

- ASCE 7-05 and 7-10 design pressures (psf) using minimum terrain Exposure C or D and effective wind area of 10 sq ft

Please select the method used to obtain base pressures:

- ASD       LRFD

Specify the wind pressures (psf):

Zone 4: \_\_\_\_\_

Zone 5: \_\_\_\_\_

- ASCE 7-16 design pressures (psf) using minimum terrain Exposure C or D and effective wind area of 10 sq ft

Please select the method used to obtain base pressures:

- ASD       LRFD

Specify the wind pressures (psf):

Zone 4: \_\_\_\_\_

Zone 5: \_\_\_\_\_

#### Windows and Glazed Openings Yes N/A

Select the type(s) of window system:

- Single-pane
- Double-pane
- Laminated glass
- Impact-rated laminated window and frame system
- Triple-pane impact-rated laminated window and frame system

Check the box beside each requirement or respond to the item to indicate that the windows are in accordance with the FORTIFIED Multifamily–Wind Standard.

- Windows and glazed openings are designed for the load combinations defined in section 3.2.1 of the FORTIFIED Multifamily–Wind Standard.

#### Existing Construction, Steep-Sloped (>10°) Re-Roofing

**Hurricane-Prone Regions:** Fill out the following if you are located in a hurricane-prone region.

- Labels verifying the impact rating and pressure capacity are visible on the installed windows.

Check the box beside each requirement or respond to the item to indicate that the windows are in accordance with the FORTIFIED Multifamily–Wind Standard.

- Glazed openings that do not have impact-rated products installed will be protected from wind-borne debris by permanently or temporarily installed shutter systems such as roll-down, accordion, storm panels, fabric, or screen products.
- All openings located within 30 ft of grade, are specified as impact rated or to be protected with an impact-rated protection system. At a minimum, the specified products or systems meet ASTM E1886 cyclic pressure and ASTM E1996 large missile impact requirements.
- Glazing specified for locations 30 ft or higher above grade are rated for the design pressure and small missile impact.

Openings required to be protected and located at upper levels without access from a porch or balcony shall have permanently installed protection which, at a minimum, shall be an impact rated product or operable from the inside the building.

- Yes     N/A

#### Commercial Doors Yes N/A

- All commercial doors are designed in accordance with section 3.2.1.1 of the FORTIFIED Multifamily–Wind Standard.

**Hurricane-Prone Regions:** Fill out the following if you are located in a hurricane-prone region.

- All commercial doors meet both ASTM E1886 cyclic pressure and ASTM E1996 large missile impact requirements.
- Labels verifying the impact rating and pressure capacity are visible on the installed doors.

#### Exterior Personnel Doors Yes N/A

- All personnel doors are designed for the load combinations defined in section 3.2.1.1 of the FORTIFIED Multifamily–Wind Standard.

**Hurricane-Prone Regions:** The following applies if you are located in a hurricane-prone region.

- Exterior personnel doors with or without windows located 30 ft of grade meets both ASTM E1886 cyclic pressure and ASTM E1996 large missile impact requirements.

### Exterior Walls and Wall Protection

#### Wall Types

Select all that apply; for hurricane-prone regions, exterior walls must be impact rated (denoted as “IR” below).

- Reinforced concrete block (IR)
- Precast concrete/tilt up panels (IR)
- Cast-in-place concrete (IR)
- Brick veneer over wood or metal frame



- Brick with concrete block backing (IR)
- Metal walls
  - Metal wall systems are designed and tested for resistance in accordance with ASTM E1592. Each assembly shall be tested for a load equal to 1.5 times the design pressure.
- Insulated concrete form
- Sandwich panel wall systems
  - Meets the International Code Council (ICC) Evaluation Service – Acceptance Criteria for Sandwich Panels AC04. Any adhesives used shall comply with ASTM D2559 or the ICC Acceptance Criteria for Sandwich Panel Adhesives AC05.
- Exterior insulating finishing systems (EIFS) <sup>20</sup>
  - Hurricane-Prone Regions Only:** EIFS Installed on a metal or wood frame are not permitted unless they are a Miami-Dade County Approved system.
- Solid insulated concrete forms / 3/4-in. plywood/ ≥7/16-in. wood structural panel sheathing with one of the following finishes:
  - 1/2-in. stucco (IR)
  - 1/2-in. thick wood (IR)
  - 1/2-in. fiber-cement-based planking (IR)
  - ≥3/8-in.-thick wood structural panel sheathing with vinyl or aluminum siding (IR)

Other walls

Describe “Other” wall system:

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- Wall systems are designed for the load combinations as defined in section 3.1.1.3.1 of the *FORTIFIED Multifamily–Wind Standard*

**Hurricane-Prone Regions:** Fill out the following if you are located in a hurricane-prone region.

- Wall impact resistance meets the requirements of ASTM E1886 and ASTM E1996 for the impact of a 9-lb nominal 2x4 lumber missile impacting end on at 34 mph (50 ft/s) (large missile impact level D).

**Parapets**

Yes  N/A

Is the parapet taller than 3 ft from base connection to free end?

- Yes  No

If **Yes**, is structural bracing (internal or external) provided and does it meet the minimum ASCE 7 standards?

- Yes  No

**Gable Ends**

Yes  N/A

- Gable overhangs will not have openings for attic ventilation.
- Gable end walls, wall sheathing, overhangs, and overhang soffit covers will be designed for ASCE 7 ASD wind with a minimum factor of safety as defined in section 3.1.1.3 of the *FORTIFIED Multifamily–Wind Standard*.
- Gable wall vents will be protected against water intrusion.
- Gable overhangs using outlooker framing will have adequate connection at gable wall and at roof framing members. Connections must be designed by a registered PE or developed using prescriptive connection details available from IBHS.
- Box-type soffit overhangs (eave) and gable overhangs with a depth of greater than 12 in. (measured from the back of fascia to exterior wall surface) and covered with aluminum or vinyl material, will have a center brace installed mid-span.
- Gable walls will be sheathed with a minimum of 7/16-in. structural sheathing (Plywood or OSB) or equivalent wall sheathing.
- Gable end walls on gables greater than 48 in. in height will be braced to withstand the ASCE 7 wind loads. A bracing design by a licensed PE is required. Bracing must be installed per design.

As an alternate, bracing details provided in the International Existing Building Code Appendix C or in the Florida Building Code may be used.

**Electrical/ Mechanical Systems**

**Flood Protection**

All electrical and mechanical equipment and connections necessary to operate critical systems are located above the 500-year flood level if known, or at least 3 ft above the known base flood elevation (100-year flood level) or advisory flood elevation.

- Yes  N/A

If the building is located out of a 500-year and 100-year flood zone, all electrical and mechanical equipment and connections necessary to operate critical systems are not exposed to flood waters.

- Yes  N/A

**Electrical Connections for Backup Power**

Yes  N/A

**Recommended- not required**

- Transfer switch or docking station (sometimes referred to as a storm switch), that support connection of a generator capable of powering, at a minimum, the critical systems needed to provide continuity of operation.

<sup>20</sup>EIFS that are not visibly damaged, deteriorated, chipped, cracked, have structurally sound horizontal and vertical seals including around windows and penetrations, are free of leaks, and have at least 5 years of useful life remaining are eligible for a FORTIFIED Silver designation or certificate. EIFS that do not meet these conditions and/or that do not have at least 5 years of useful life remaining shall require repairs or replacement to be eligible for a FORTIFIED Silver designation or certificate.



All electrical connections for backup power are located above the 500-year flood level, if known, or at least 3 ft above the known base flood elevation (100-year flood level) or advisory flood elevation.

Yes  N/A

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## FORTIFIED GOLD

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**All FORTIFIED Silver requirements must be satisfied.**

For this section, check the box beside each requirement or respond to the item to indicate that items are in accordance with the FORTIFIED Multifamily–Wind Standard.

### Continuous Load Path

- A continuous and adequate load path from the roof to the foundation of the building exist. The building has positive connections from the roof to foundation as a means to transmit wind uplift and lateral loads safely to the ground. This includes providing roof-to-wall connection hardware (e.g., hurricane straps for wood) with the required roof uplift resistance as determined by the designer or specified in the prescriptive method being used.
- Inter-story connections in multi-story structures have a continuous load path through the wall to the foundation.

### Attached and Accessory Structures

Yes  N/A

- Canopies, carports, porte cocheres or any other vehicle-type drive-through structures will have adequate load path members and connections to resist the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3.1.

### Chimneys

Yes  N/A

- Chimneys have adequate load path members and connections capable of resisting the loads and load combinations specified in ASCE 7 as defined in section 3.1.1.3.1.

### Backup Power

Yes  N/A

**Recommended, not required.**

- Backup power shall be available and capable of powering critical electrical and mechanical systems that maintain vital business operations. All equipment shall be installed in accordance with the requirements of Electrical Systems (Flood) described in section 3.2.3.