



**FORTIFIED Home™ – Hurricane**  
FORTIFIED Roof™ – New Roof Requirements



## THE ROOF DECK

All existing roof cover and flashings to be removed, and the deck to be a clean workable surface free from debris. Damaged or rotten roof decking and roof framing members to be repaired prior to starting work.

### Deck Material and Thickness

Minimum sheathing thickness is 7/16 in.

### Deck Fastening

#### Condition 1: Existing Fasteners are Staples, 6d Nails or Unknown Nails

- Entire deck shall be re-nailed with 8d ring-shank nails (minimum diameter 0.113 in. and minimum length  $2\frac{3}{8}$  in.) at 6 in. o.c.

Exception: If the home is located within 600 ft of the ocean front, intercoastal waterway or a bay with more than a mile of open water, fasten with 8d ring-shank nails at 4 in. o.c. within 4 ft of a gable or 4-ft by 4-ft corner area of a hip roof as shown by the hatched areas in Figure 1 below.

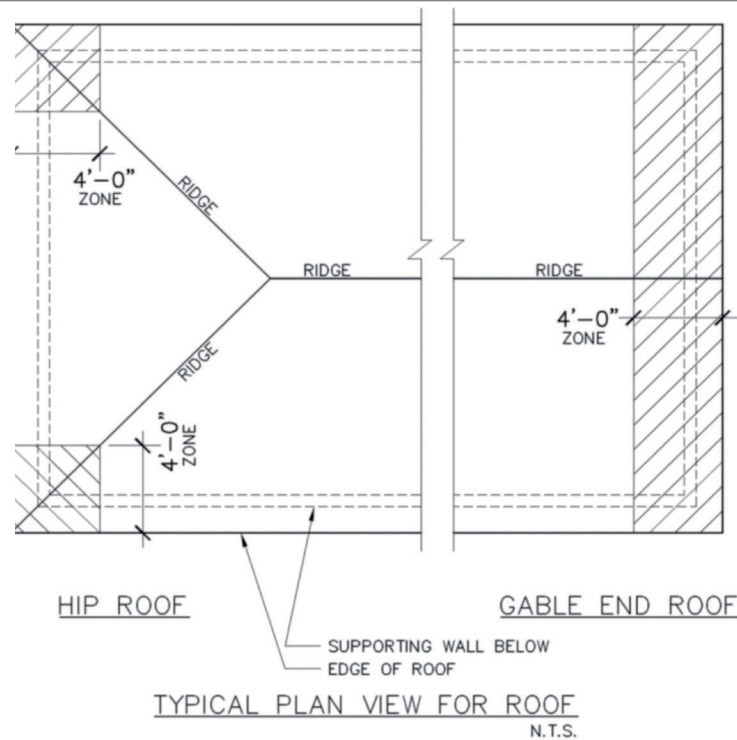


Figure 1. Identification of 4-ft Zones for Special Nailing Requirements

#### Condition 2: Existing Fasteners are 8d or Larger Common Nails

- Install 8d ring-shank nails (minimum diameter 0.113 in. and minimum length  $2\frac{3}{8}$  in.) between existing fasteners as necessary to achieve a maximum spacing between fasteners of 6 in.

Exception: If the home is located within 600 ft of the ocean front, intercoastal waterway, or a bay with more than a mile of open water, fasten with 8d ring-shank nails at 4 in. o.c. within 4 ft of a gable or 4-ft by 4-ft by 4-ft corner area of a hip roof as shown by the hatched areas in Figure 1 below.

## SEALING THE ROOF DECK

Use one of the methods described below.

### Method 1: Self-Adhering Polymer-Modified Bitumen Membrane/“Peel-and-Stick” (Appropriate for Asphalt Shingles, Metal or Tile Roof Covers)

- Must conform to ASTM D1970 requirements.
- If membrane adhesion to OSB is marginal, apply a manufacturer-specified compatible primer to the OSB panels to ensure the proper attachment of the membrane.
- For asphalt shingles, a #15 felt bond break tacked over the membrane before shingle installation is recommended. The bond break shall be held back 8 in. from the eave and rake edges to allow application of flashing cement or self-adhering starter strip along the edges to ensure proper sealing of the shingles at roof edges.
- If a fully adhered membrane is applied to a ventilated attic, attic ventilation must meet shingle manufacturer and building code requirements.

### Method 2: Tape Seams Between Roof Deck Wood Structural Panels

- Apply a 4-in.-wide ASTM D1970 compliant self-adhering polymer-modified bitumen flashing tape or a 3<sup>3</sup>/<sub>4</sub>-in.-wide AAMA 711-13, Level 3 (for exposure up to 80°C/176°F) compliant self-adhering flexible flashing tape to seal all horizontal and vertical joints in the roof deck.
- If membrane adhesion to OSB is marginal, apply a manufacturer-specified compatible primer to the OSB panels to ensure the proper attachment of the membrane.
- Cover the entire deck with a code-compliant #30 ASTM D226 Type II or ASTM D4869 Type IV underlayment over the self-adhering tape OR a reinforced synthetic roof underlayment which has an ICC evaluation report as an alternate to ASTM D226 Type II felt and has passed ASTM D4869 Section 8.6 liquid water transmission test. (If synthetic underlayment is being used, it shall have a minimum tear strength of 15 lbf in accordance with ASTM D4533 and a minimum tensile strength of 20 lbf/in. in accordance with ASTM D5035.)
- Underlayment shall be attached using annular-ring or deformed-shank roofing fasteners with minimum 1-in.-diameter caps (button cap nails) at 6 in. o.c. spacing along all laps and two equally spaced rows with 12-in. o.c. spacing vertically or horizontally between the laps. More stringent fastener schedules may be required by the manufacturer or for high-wind and prolonged exposure installations.
- Horizontal laps shall be a minimum of 4 in. and end laps shall be a minimum of 6 in. Weave underlayment across valleys.
- Double-lap underlayment across ridges (unless there is a continuous ridge vent).
- Lap underlayment with minimum 6-in. leg “turned up” at wall intersections; lap wall weather barrier over turned-up roof underlayment.
- Method 2 is appropriate as described for both asphalt shingle and metal roof covers. When this method is used with clay or concrete tile roof covers, only the ASTM D226 Type II felt is approved as an anchor sheet and must be covered with a self-adhering polymer-modified bitumen cap sheet complying with ASTM D1970 or the roof tile underlayment must be hot-mopped using hot asphalt and covered with a #90 mineral surface cap sheet or approved modified cap sheet. See Clay and Concrete Roof Tiles section.

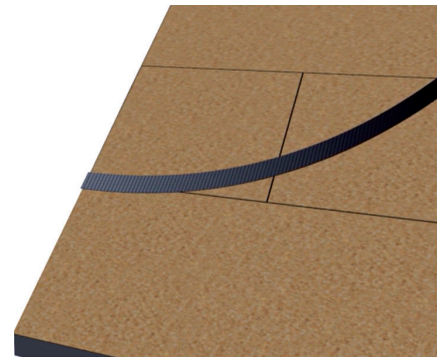


Image 1

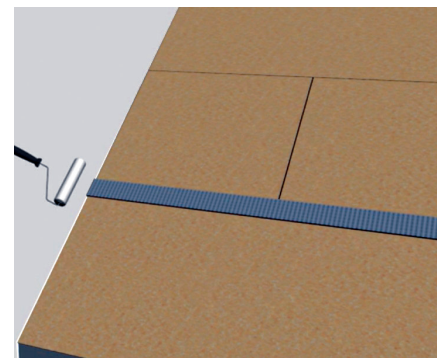


Image 2

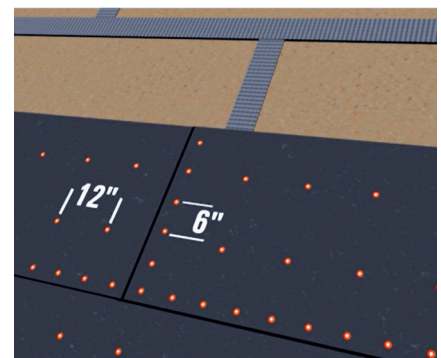


Image 3

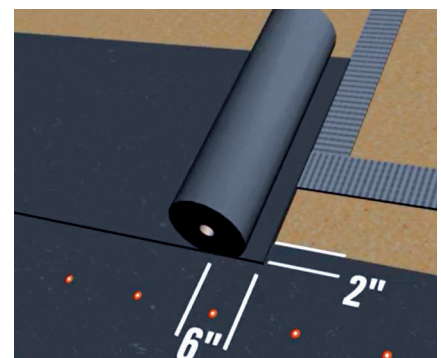


Image 4

## Drip Edge Installation Requirements

- Provide drip edge at eaves and gables.
- Overlap to be a minimum of 3 in. at joints.
- Eave drip edges shall extend 1/2 in. below sheathing and extend back on the roof a minimum of 2 in.
- The drip edge shall be mechanically fastened to the roof deck at maximum of 4 in. o.c. Mechanical fasteners shall be applied in an alternating (staggered) pattern along the length of the drip edge with adjacent fasteners placed near opposite edges of the leg/flange of drip edge on the roof.
- Drip edge at eaves shall be installed over the underlayment (this is compatible with high-wind installations where flashing cement is used to seal the edges).



Image 5

## ROOF COVERINGS

Roof coverings and their attachments shall be rated for the ASCE 7 design wind speed for the site location of the building and shall be installed in accordance with the manufacturer’s recommendations for high-wind regions.

### Asphalt Shingles

Asphalt shingles shall be tested in accordance with ASTM D7158 and meet the classification requirements listed in Table 1 for the design wind speed at the building site. Their packaging shall be labeled (Image 6) to indicate compliance with ASTM D7158 and the classification required for the applicable International Residential Code (IRC)/American Society of Civil Engineers (ASCE) Standard 7 design wind speed at the building site.

2012 IRC/ASCE 7-05 Basic Design Wind Speed $V_{ASD}$ (mph)	2015 IRC/ASCE 7-10 Basic Design Wind Speed $V_{ult}$ (mph)	ASTM D7158 Shingle Testing Standard/ Classification
110	140	G or H
120	152	G or H
>120 to 150	>152 to 190	H

Table 1. Classification of Asphalt Shingles Based on Design Wind Speed

### Shingle Attachment

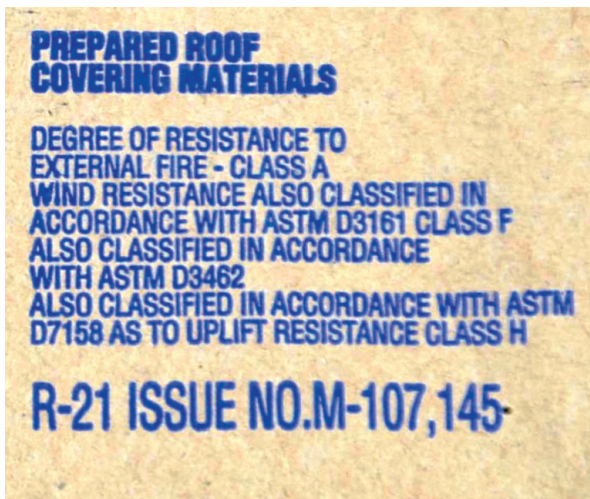


Image 6

- Install shingles using the number of fasteners required by the manufacturer for high-wind fastening. In areas where the local building code requires more fasteners than required by the manufacturer, fasteners shall comply with the local building code.

#### Installation of starter strips at eaves is required (drip edge installed over underlayment)

- Manufacturer-approved starter strips at eaves shall be set in a minimum 8-in.-wide strip of compatible flashing cement. Maximum thickness of flashing cement shall be 1/8 in. (Image 7)
- Fasten starter strips parallel to the eaves along a line above the eave line according to the manufacturer’s specifications. Position fasteners to ensure they will not be exposed under the cutouts in the first course.
- Starter strips and shingles must not extend more than 1/4 in. beyond the drip edge.



Image 7

### Approved Option

Shingle manufacturer–approved ASTM D1970 fully adhered starter strip with asphaltic adhesive strip at eave—installed so that starter strip adheres to and covers the drip edge top surface.

### Installation of shingles at rakes (drip edge installed over underlayment)

Install shingles at rakes set in a minimum 8-in.-wide strip of compatible flashing cement. Maximum thickness of flashing cement shall be 1/8 in. Fasten shingles at the rakes according to the manufacturer's specifications.

### Optional installation of starter strips at rakes (drip edge installed over underlayment)

Manufacturer-approved starter strips at rakes shall be set in a minimum 8-in.-wide strip of compatible flashing cement. Maximum thickness of flashing cement shall be 1/8 in. Fasten starter strips parallel to the rakes according to the manufacturer's specifications. Position fasteners to insure they will not be exposed. Starter strips and shingles must not extend more than 1/4 in. beyond the drip edge.

### Approved Option

Shingle manufacturer–approved ASTM D1970 fully adhered starter strip with asphaltic adhesive strip at rake—installed so that starter strip adheres to and covers the drip edge top surface.

### Attachment of shingles at intersections and valley

Shingles installed at all intersections and both sides of open valleys shall be set in a minimum 8-in.-wide strip of flashing cement. Maximum thickness of flashing cement shall be 1/8 in. Cut side of closed valleys shall be set in a minimum 2-in.-wide, 1/8-in.-thick strip of flashing cement. Woven valleys to be according to the manufacturer's specifications.

## Metal Panels

Metal panel roofing systems and their attachment shall be installed in accordance with the manufacturer's installation instructions and shall provide uplift resistance equal to or greater than the design uplift pressure for the roof based on the site design wind speed and exposure category. The metal panels shall be installed over continuous decking and one of the acceptable sealed roof deck underlayment methods.

## Clay and Concrete Roof Tiles

Clay and concrete roof tile systems shall be installed over continuous 19/32-in.-thick plywood roof decking and one of the acceptable sealed roof deck underlayment methods (note additional requirement for Method 2). Clay and concrete roof tile systems and their attachments (mortar set tile or mortar set hip and ridge tiles are not permitted) shall meet the requirements of the site design wind speed and exposure category in compliance with the following:

- **For design wind speeds based on 2006, 2009 or 2012 IRC**, roof tile system shall be installed in accordance with FRSA/TRI installation guidelines, "Concrete and Clay Roof Tile Installation Manual Fourth Edition, FRSA/TRI 07320/08-05."
- **For design wind speeds based on 2015 IRC**, roof tile system shall be installed in accordance with FRSA/TRI installation guidelines, "Florida High Wind Concrete and Clay Roof Tile Installation Manual Fifth Edition FRSA/TRI April 2012 (04-12)."

## Other Roof Coverings

For all other roof coverings, the designer must provide documentation showing the roof covering and the attachments were designed for the component and cladding wind pressures corresponding to the site design wind speed.

- All roof coverings, regardless of type, shall be installed in accordance with the manufacturer's installation guidelines for the appropriate design wind speed.
- When applicable (e.g., wood shakes, slate roofs), the roof deck shall be sealed using one of the options provided that is compatible with the manufacturer's installation requirements for the roof covering selected.

# ROOF VENTILATION (RIDGE AND OFF-RIDGE)

- Shall be designed for the applicable wind load for location (if unknown, contact local building department).
- Shall be tested in accordance with the Florida Building Code TAS 100(A) and labeled for verification.
- Shall be installed using the manufacturer’s installation instructions for wind and wind-driven rain.

# ROOF VENTILATION (GABLE END VENTS)

- Protect gable end vents with operable or removable shutters that will seal the vents when a hurricane threatens.

# VERIFICATION AND DOCUMENTATION

The contractor shall provide the evaluator with in-progress photos with identifiable traits or landmarks of the property showing the following:

- Installation of tape or self-adhered membrane
- Fastening of underlayment
- Fastening of drip edge metal over underlayment
- Application of flashing cement along roof edges
- Installation of starter strips at eaves

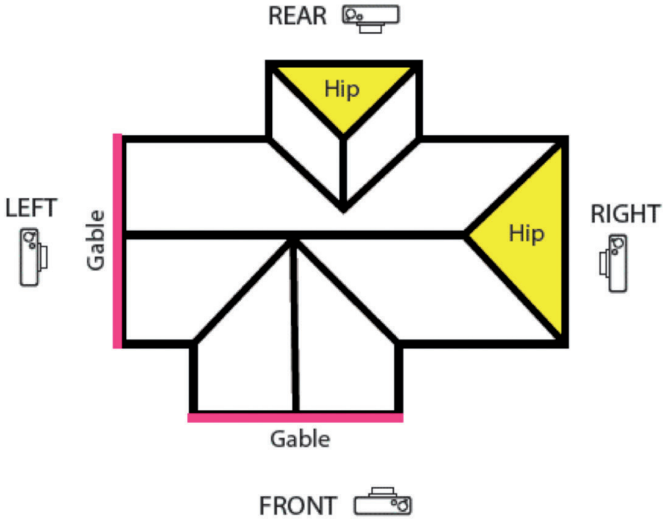


Figure 2



Image 8



For more information about FORTIFIED Home™, please visit [fortifiedhome.org](http://fortifiedhome.org).  
For more information about IBHS, please visit [disastersafety.org](http://disastersafety.org).