



Thank you for choosing AES!

We are here to help. It is vitally important that you understand the Fortified Process. If you're selling a Fortified Roof, you should know how to deliver one. This guide is not designed to teach you how to install a fortified roof.

The following link will take you to the fortifiedhome.org building professionals website:

https://fortifiedhome.org/building-professionals/

This will provide you with official information on training and certifications. AES strongly advises you to become certified.

In the following pages, you will see a guide created by AES to assist in documenting the installation of a Fortified Hurricane-Standard Roof. This is only a guide and is not a substitute for adequate Fortified Training.

You've heard the saying knowledge is power. In this case, it is vitally important. If you are not sure on how to install a Fortified Hurricane-Standard Roof, please let AES know immediately.

AES has been monitoring live construction for over 20 years. We pride ourselves on working with professionals. We will do everything possible to capture and deliver the required information to IBHS.

As a fortified evaluator, we are required to visit the site of a fortified hurricane standard roof installation a minimum of two times. AES will make additional trips as necessary to capture the appropriate documentation.

Communication and logistics are vital components of the fortified hurricane standard roof evaluation process. Working together, the designation process can be smooth and efficient.

Please review this guide and contact us directly with any questions or concerns.

E-mail: aes@aesfortified.com





Failure to submit adequate or acceptable documentation may result in the denial of a FORTIFIED designation.

FORTIFIED Homeowners have peace-of-mind when storms hit, in part, because they trust IBHS research has guided them to implement the most critical upgrades to protect their homes from severe weather. That confidence is multiplied by the independent third-party verification required to achieve a FORTIFIED designation at any level (Roof, Silver or Gold).

The documentation provided by certified FORTIFIED Evaluators enables IBHS to enforce the FORTIFIED standards. Requiring appropriate and adequate documentation ensures that adequately rated, FORTIFIED-compliant materials are used and installed in compliance with both the FORTIFIED standards and manufacturer requirements.

DOCUMENTATION IS MORE THAN TAKING PICTURES

While photos are an extremely important method of verifying FORTIFIED requirements at a homesite, they only represent a portion of the documentation required for a FORTIFIED designation.

Depending on designation level, installation documentation may include the following:

- Photo documentation of product packaging
- Photo documentation of installation
- Certified testing reports and/or manufacturer installation instructions for certain products
- FORTIFIED Compliance Forms
- Additional documentation which may be required depending on individual specific site conditions and design elements

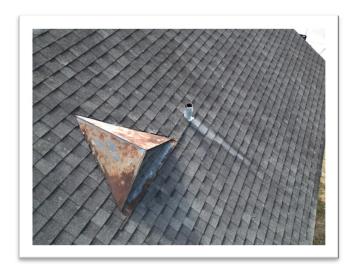
The photo guide that follows is a creation of AES and has no affiliation with IBHS. Its sole purpose is to provide a clearer understanding of the documentation needed for a FORTIFIED roof. As we encounter more installation scenarios, we plan to expand this guide accordingly.





New and Existing Homes

The following will need to be addressed before you begin work. IBHS is working on Ridge Tile guidance. Decorative vents much have supporting documentation. (TAS-100 A)



Roof Vents



Solar Panels

Ridge Tiles



Attached Structures





Existing Home Issues

No Dry Stack Foundations

Board Lumber Gaps no more than 1/8 inch

Spray Foam– Rafter Spacing 24 Inches



Dry Stack



Spray Foam

Board Lumber



Rafter Spacing





4 Photos of the Subject Property

4 Elevation Photos-Front-Left-Right-Rear Showing the entire structure from Foundation to roof.





Front



Left Side



Right Side

Rear





4 Foundation Photos

For slab on grade and stem-wall foundations, I photo minimum is acceptable.

For other types of foundations, such as elevated foundations, 4 photos minimum showing foundation type and any positive connections to structure are required. Photos should be close enough to clearly see connections/anchorage.

Observation of dry-stack foundation automatically DISQUALIFIES the home





Foundation



Foundation



Foundation

Foundation





Verify Sealed Roof Labels

I legible photo of each label for each approved synthetic underlayment, 30# felt, self-adhered underlayment, and/or seam tape product showing ASTM.



Underlayment



Seam Tape

CertainTeed



Roll Coveringe (Typica in et sq. ft.): 937.5
Shipping Weight (approx. Istroll): 23
Limitations: Do not install Rooffkruner as ice dam protection along cases. Two layers of Rooffkruner cemented together is not an equivalent to WinterGauerel'. This product is not designed to be permanently exposed to sunlight or to the weather.

Product Composition. Rooffkrunner roofing underlayment is based on a tough woven polyolefin reinforcement laminate between alyers of specially formulated UV-stabilized polymer films.

Tochnical Data.

Typical properties of Rooffkruner are shown in Table 1 below. Rooffkruner is manufactured to comply

Technical Data Shee RoofRunner™

Self-adhered

Material Specs





8 Photos Asphalt Shingle Roof Covers

I photo of shingle packaging showing manufacturer and product name I photo of shingle packaging showing shingle ASTM rating and class. You can also Download the spec sheet from the manufacturer.

4 photos of starter strip installation from different areas (include eave and rake)



Shingle Package



Shingle Package



Shingle Package



Spec-Sheet





4 Photos Roof Structure Members

4 photos minimum showing at least 3 exposed roof members (i.e. trusses, rafters) with tape measure between roof members to show on center spacing.



Rafter Spacing



Rafter Spacing



Rafter Spacing



Rafter Spacing





4 Photos Roof Deck Thickness

4 photos of sheathing type and thickness,

i.e. plywood/OSB grade stamp or sheathing edge with tape measure.

.



Roof Deck Thickness



Roof Deck Thickness



Roof Deck Thickness



Roof Deck Thickness



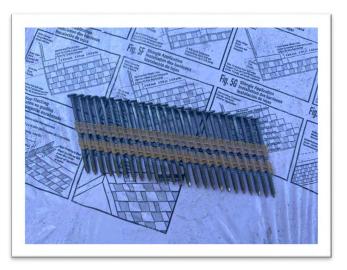


4 Photos Deck Fastener Type

4 photos I photo showing type of fastener used - photos must show either carton label indicating nail type and size, or full nails clearly showing ring shank with tape measure showing length (required minimum SD ring shank as specified in Section 2.6)



Deck Nail Type



Deck Nail Type



Deck Nail Type



Deck Nail Type





8 Photos Roof Deck Attachment

8 total photos showing maximum nail spacing: 4 photos must be taken from above roof deck showing nail spacing 4 inches on center with tape measure in four different locations and 4 photos must be provided from 4 locations within the attic. Each photo in attic must include 2 consecutive structural roof members. (Showing shiners-nails that have missed the rafters)



Decking Attachment



Decking Attachment



Decking Attachment



Decking Attachment

HURRICANE- NEW CONSTRUCTION ROOF DECK ATTACHMENTSTRUCTURAL WOOD PANELS



GENERAL NOTES:

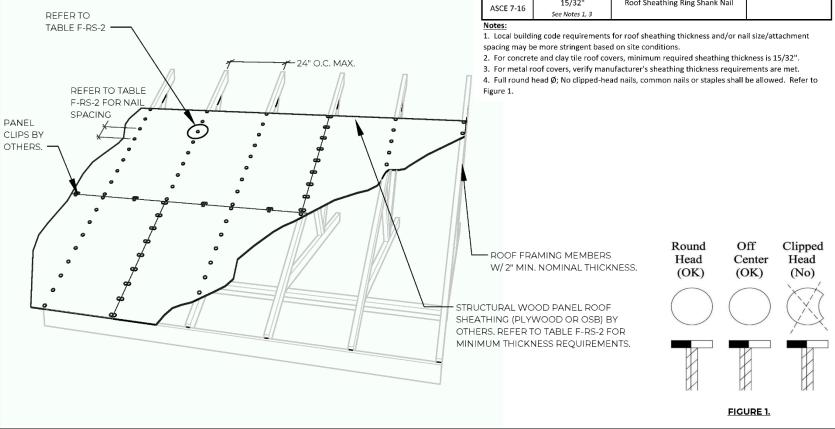
REFER TO APPLICABLE FORTIFIED HOME STANDARDS FOR ADDITIONAL INFORMATION. 1. 2.

FORTIFIED HOME STANDARDS ARE TO BE APPLIED IN CONJUNCTION WITH FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS IN ADDITION TO THE STRUCTURAL DESIGN WHICH IS BY OTHERS. IN CASE OF A CONFLICT BETWEEN

PROVISIONS, USE WHICHEVER IS MORE STRINGENT.



ASCE Edition	Minimum Roof Sheathing Thickness ^{1,2,3}	Minimum Nail Size/Type ^{1,4}	Maximum Nail Spacing (All Roof Areas) ¹
ASCE 7-10	7/16" See Notes 1, 2, 3	RSRS-01; 0.113" dia. x 2-3/8" Roof Sheathing Ring Shank Nail	4" O.C.
ASCE 7-16	15/32" See Notes 1, 3		



APPLICABLE STANDARDS:

FORTIFIED HOMETM - HURRICANE (2020)

DESCRIPTION:

HURRICANE - NEW CONSTRUCTION ROOF DECK ATTACHMENT -STRUCTURAL WOOD PANELS

DRAWING #:

F-RS-2

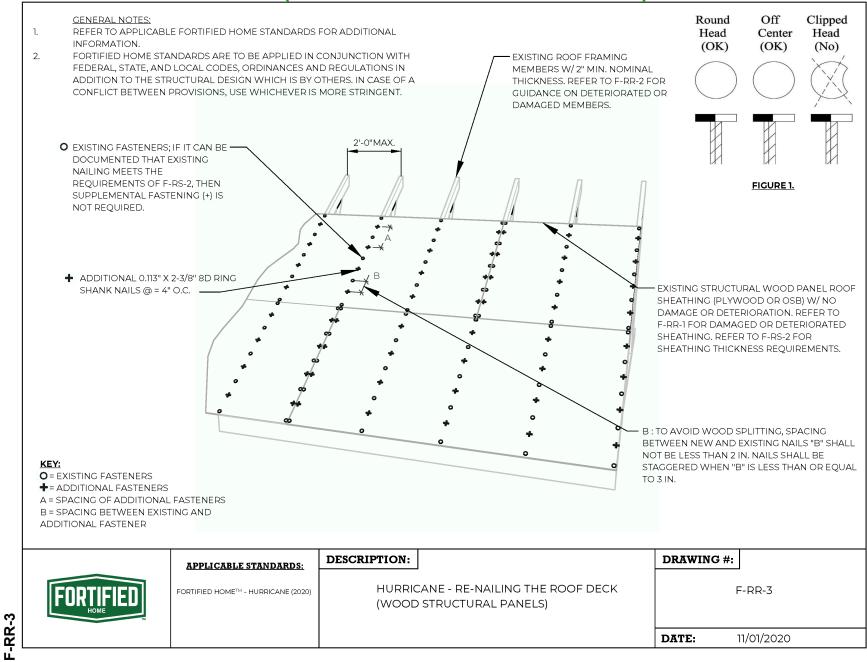
DATE: 11/01/2020

F-RS-2



FORTIFIED A PROGRAM OF IBHS

HURRICANE- RE-NAILING THE ROOF DECK (WOOD STRUCTURAL PANELS)









8 Photos Roof Deck Attachment

8 total photos showing maximum nail spacing: 4 photos must be taken from above roof deck showing nail spacing 4 inches on center with tape measure in four different locations and 4 photos must be provided from 4 locations within the attic. Each photo in attic must include 2 consecutive structural roof members. (Showing shiners-nails that have missed the rafters)



Attic Rafter Photos



Attic Rafter Photos



Attic Rafter Photos



Attic Rafter Photos





10 Photos Taped Seams and Underlayment

4 overall photos (one from each elevation) after seams are taped

- 4 overall photos (one from each elevation) after underlayment/anchor sheet is installed.
- 2 closer photos showing underlayment/anchor sheet nailing pattern.



BON FAIR STORY OF THE STORY OF

Seam Tape

Seam Tape





Seam Tape

Seam Tape

STEEP SLOPE SEALED ROOF DECK FLASHING TAPE AND UNDERLAYMENT SHINGLE OR METAL ROOF COVERS



GENERAL NOTES:

- REFER TO APPLICABLE FORTIFIED HOME STANDARDS FOR ADDITIONAL INFORMATION.
- 2. REFER TO FORTIFIED STANDARD DETAIL F-G-1 FOR CORROSION PROTECTION REQUIREMENTS.
- 3. APPLICABLE FOR ROOF PITCH 2:12 OR GREATER.
- 4. NAILS USED TO ATTACH UNDERLAYMENT SHALL BE ANNULAR RING OR DEFORMED SHANK ROOFING NAILS W/ 0.083" MINIMUM DIAMETER AND SUFFICIENT LENGTH TO PENETRATE THROUGH THE ROOF SHEATHING OR NOT LESS THAN 3/4" INTO THE ROOF SHEATHING W/1" DIAMETER BUTTON CAPS (METAL BUTTON CAPS ARE REQUIRED FOR ULTIMATE DESIGN WIND SPEED OF 160 MPH OR GREATER).
- 5. FORTIFIED HOME STANDARDS ARE TO BE APPLIED IN CONJUNCTION WITH FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS IN ADDITION TO THE STRUCTURAL DESIGN WHICH IS BY OTHERS, IN CASE OF A CONFLICT BETWEEN PROVISIONS, USE WHICHEVER IS MORE STRINGENT.

FLASHING TAPE AT ALL PANEL SEAMS FULLY ADHERED W/ NO WRINKLES OR VOIDS USING ROLLER.

MATERIAL OPTION 1: 4" WIDE ASTM D1970 COMPLIANT SELF-ADHERING POLYMER -MODIFIED BITUMEN FLASHING TAPE. MATERIAL OPTION 2:3-3/4" WIDE AAMA 711-13 LEVEL 3 (FOR EXPOSURE UP TO 80°C/176°F) COMPLIANT SELF-ADHERING FLASHING TAPE.

ASTM D226 TYPE II #30 OR ASTM D4869 TYPE III OR TYPE IV #30 UNDERLAYMENT. (FOR ASHPALT SHINGLE ROOF COVERS, ASTM D6757 UNDERLAYMENT IS ALSO ACCEPTABLE)

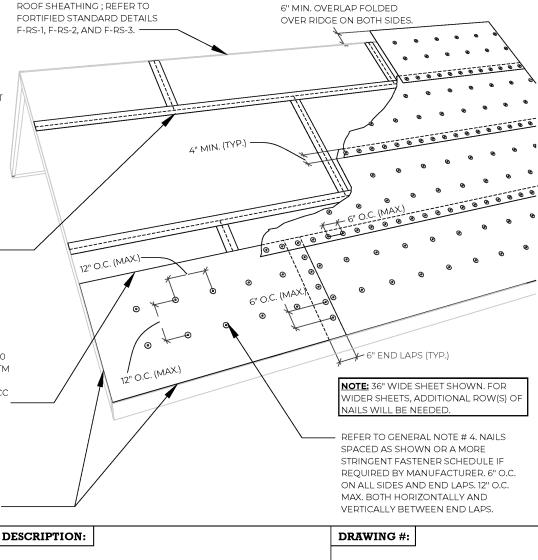
ALT: REINFORCED SYNTHETIC ROOF UNDERLAYMENT WITH ICC APPROVAL AS ASTM D226 TYPE II:

MINIMUM TEAR STRENGTH = 15 LBF PER ASTM D4533 MINIMUM TENSILE STRENGTH = 20 PSF PER ASTM D5035 PASS ASTM D4869 SHOWER TEST.

HORIZONTAL LAPS = 4" MIN.

END LAPS = 6" MIN.

HOLD BACK BUTTON CAPS AT EDGES TO AVOID INSTALLING DRIP EDGE OVER BUTTON CAPS. REFER TO F-DE-1 AND/OR F-DE-3 FOR DRIP EDGE INSTALLATION.





APPLICABLE STANDARDS:

FORTIFIED HOME™ - HURRICANE (2020)

FORTIFIED HOMETM - HIGH WIND (2020)

STEEP SLOPE SEALED ROOF DECK -FLASHING TAPE AND UNDERLAYMENT -SHINGLE OR METAL ROOF COVERS

F-SRD-2

DATE: 11/01/2020







10 Photos Taped Seams and Underlayment

4 overall photos (one from each elevation) after seams are taped.

4 overall photos (one from each elevation) after underlayment/anchor sheet is installed. Try to capture photos from each elevation! (Not Shown)

2 closer photos showing underlayment/anchor sheet nailing pattern.



Underlayment



Underlayment



Underlayment



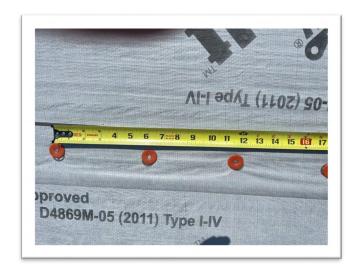
Underlayment





10 Photos Taped Seams and Underlayment

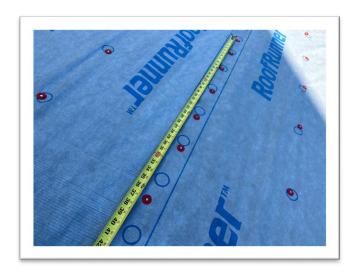
- 4 overall photos (one from each elevation) after seams are taped
- 4 overall photos (one from each elevation) after underlayment/anchor sheet is installed.
- 2 closer photos showing underlayment/anchor sheet nailing pattern.



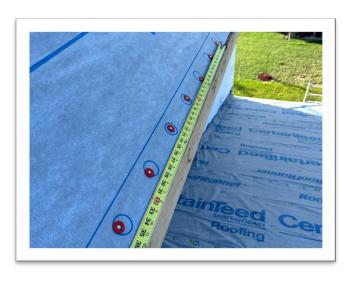
Nailing Pattern



Nailing Pattern



Nailing Pattern



Nailing Pattern

Insurance Institute for Business & Home Safety

STEEP SLOPE SEALED ROOF DECK FLASHING TAPE AND UNDERLAYMENT **NAIL PATTERN**

ROOF SHEATHING 15/32" MIN.; REFER TO



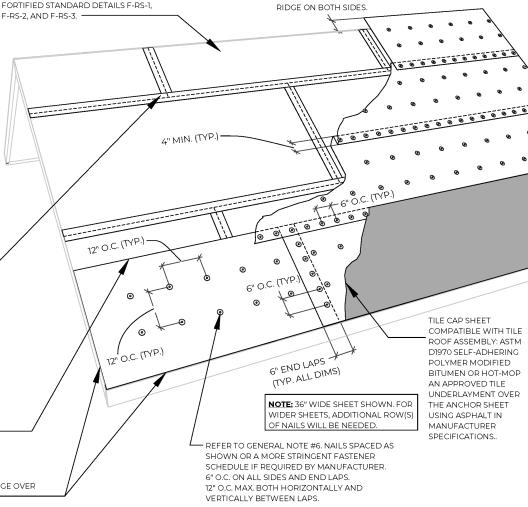
- GENERAL NOTES:
- REFER TO APPLICABLE FORTIFIED HOME STANDARDS FOR ADDITIONAL INFORMATION.
- 2. REFER TO FORTIFIED STANDARD DETAIL F-G-1 FOR CORROSION PROTECTION REQUIREMENTS.
- 3. APPLICABLE FOR ROOF PITCH 2:12 OR GREATER.
- 4. REFER TO AND INSTALL IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND INSTALLATION INSTRUCTIONS AND FRSA/TRI FLORIDA HIGH WIND TILE INSTALLATION MANUAL REVISED 5TH EDITION (FOR ASCE 7-10) OR 6TH EDITION (FOR ASCE 7-16). REFER TO PRODUCT APPROVAL TO VERIFY REQUIRED WIND PRESSURES ARE MET IF APPLICABLE.
- 5. ADEQUATE ATTIC VENTILATION IS REQUIRED. REFER TO UNDERLAYMENT AND PRIMARY ROOF SYSTEM MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR VENTILATION LIMITATIONS. ALSO CHECK WITH LOCAL BUILDING CODES FOR RESTRICTIONS.
- 6. NAILS USED TO ATTACH UNDERLAYMENT SHALL BE ANNULAR RING OR DEFORMED SHANK ROOFING NAILS W/ 0.083" MINIMUM DIAMETER AND SUFFICIENT LENGTH TO PENETRATE THROUGH THE ROOF SHEATHING OR NOT LESS THAN 3/4" INTO THE ROOF SHEATHING W/1" DIAMETER BUTTON CAPS (METAL BUTTON CAPS ARE REQUIRED FOR ULTIMATE DESIGN WIND SPEED OF 160 MPH
- FORTIFIED HOME STANDARDS ARE TO BE APPLIED IN CONJUNCTION WITH FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS IN ADDITION TO THE STRUCTURAL DESIGN WHICH IS BY OTHERS. IN CASE OF A CONFLICT BETWEEN PROVISIONS, USE WHICHEVER IS MORE STRINGENT.

FLASHING TAPE AT ALL PANEL SEAMS FULLY ADHERED W/ NO WRINKLES OR VOIDS USING

MATERIAL OPTION 1: 4" WIDE ASTM D1970 COMPLIANT SELF-ADHERING POLYMER -MODIFIED BITUMEN FLASHING TAPE. MATERIAL OPTION 2:3 - 3/4" WIDE AAMA 711-13 LEVEL 3 (FOR EXPOSURE UP TO 80°C/176°F) COMPLIANT SELF-ADHERING FLASHING TAPE.

ANCHOR SHEET COMPATIBLE WITH TILE ROOF ASSEMBLY: ASTM D226 TYPE II #30 UNDERLAYMENT INSTALLED AS SHOWN OR PER MANUFACTURER SPECIFICATIONS IF MORE STRINGENT.

HOLD BACK BUTTON CAPS AT EDGES TO AVOID INSTALLING DRIP EDGE OVER BUTTON CAPS, DRIP EDGE SHALL BE INSTALLED PER F-DE-1 •



6" MIN. OVERLAP FOLDED OVER



APPLICABLE STANDARDS:

FORTIFIED HOMETM - HURRICANE (2020)

FORTIFIED HOMETM - HIGH WIND (2020)

DESCRIPTION:

STEEP SLOPE SEALED ROOF DECK -FLASHING TAPE, UNDERLAYMENT AND **ROOF TILE CAP SHEET - CONCRETE AND CLAY TILE ROOF COVERS**

DRAWING #:

F-SRD-5

DATE: 11/01/2020







6 Photos 2-Ply Underlayment

4 overall photos (one from each elevation) showing installed underlayment

2 closer photos showing underlayment nailing pattern



2-Ply Underlayment



2-Ply Underlayment



2-Ply Underlayment



2-Ply Underlayment





6 Photos 2-Ply Underlayment

4 overall photos (one from each elevation) showing installed underlayment

2 closer photos showing underlayment nailing pattern



2-Ply Nailing Pattern



2-Ply Nailing Pattern



2-Ply Nailing Pattern



2-Ply Nailing Pattern

F-SRD-3

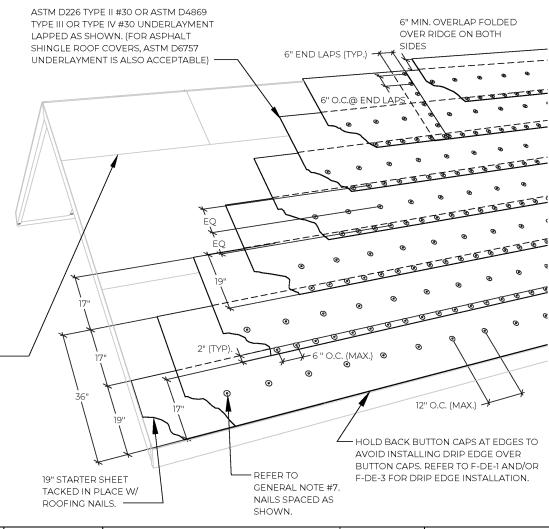
STEEP SLOPE SEALED ROOF DECK -TWO LAYERS FELT UNDERLAYMENTSHINGLE OR METAL ROOF COVERS

GENERAL NOTES:

4.

- REFER TO APPLICABLE FORTIFIED HOME STANDARDS FOR ADDITIONAL INFORMATION.
- 2. REFER TO FORTIFIED STANDARD DETAIL F-G-1 FOR CORROSION PROTECTION REQUIREMENTS.
- 3. WEAVE UNDERLAYMENT ACROSS VALLEYS.
 - DOUBLE LAP UNDERLAYMENT ACROSS RIDGES (UNLESS THERE IS A CONTINUOUS RIDGE VENT).
- 5. LAP UNDERLAYMENT WITH MININUM 6" LEG "TURNED UP" AT WALL INTERSECTIONS; LAP WALL WEATHER BARRIER OVER TURNED-UP ROOF UNDERLAYMENT.
- 6. APPLICABLE FOR ROOF PITCH 2:12 OR GREATER.
- 7. NAILS USED TO ATTACH UNDERLAYMENT SHALL BE ANNULAR RING OR DEFORMED SHANK ROOFING NAILS W/ 0.083" MINIMUM DIAMETER AND SUFFICIENT LENGTH TO PENETRATE THROUGH THE ROOF SHEATHING OR NOT LESS THAN 3/4" INTO THE ROOF SHEATHING W/ 1" DIAMETER BUTTON CAPS (METAL BUTTON CAPS ARE REQUIRED FOR ULTIMATE DESIGN WIND SPEED OF 160 MPH OR GREATER.)
- FORTIFIED HOME STANDARDS ARE TO BE APPLIED IN CONJUNCTION WITH FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS IN ADDITION TO THE STRUCTURAL DESIGN WHICH IS BY OTHERS. IN CASE OF A CONFLICT BETWEEN PROVISIONS, USE WHICHEVER IS MORE STRINGENT.

ROOF SHEATHING BY OTHERS: REFER TO FORTIFIED STANDARD DETAILS F-RS-1, F-RS-2, AND F-RS-3.





FORTIFIED HOMETM - HURRICANE (2020)

DESCRIPTION:

STEEP SLOPE SEALED ROOF DECK -TWO LAYERS FELT UNDERLAYMENT -SHINGLE OR METAL ROOF COVERS

DRAWING #: F-SRD-3

DATE: 11/01/2020

APPLICABLE STANDARDS:

FORTIFIED HOMETM - HIGH WIND (2020)







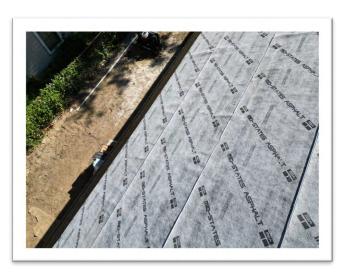
4-8 Photos Self-Adhered Membrane

4 overall photos (one from each elevation) showing installed membrane before bond break is applied

if bond break is applied, 4 photos from different eave/rake locations showing bond break held back 8" from edge.



Self-Adhered Membrane



Self-Adhered Membrane



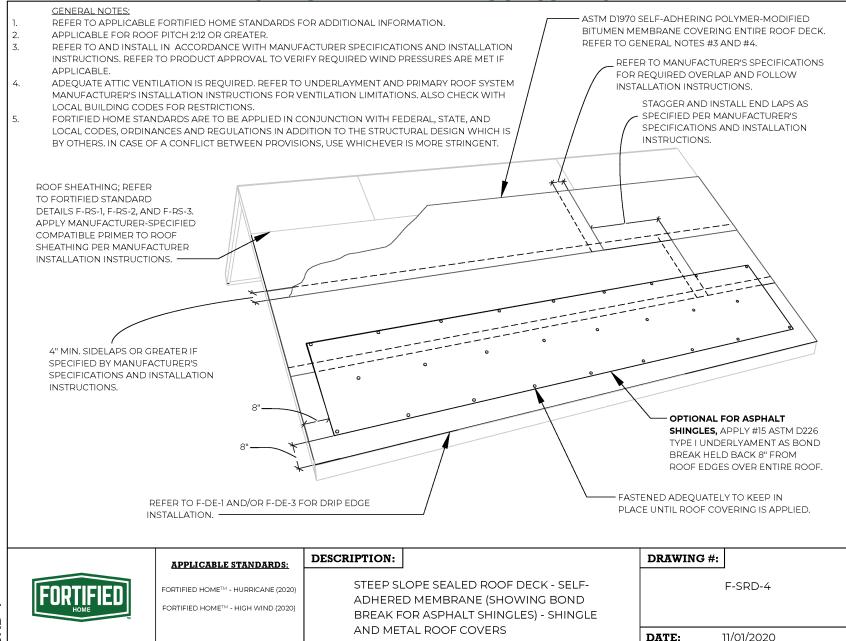
Self-Adhered Membrane



Self-Adhered Membrane

FORTIFIED A PROCRAM OF 1845

STEEP SLOPE SEALED ROOF DECK - SELFADHERED MEMBRANE (SHOWING BOND BREAK FOR ASPHALT SHINGLES) SHINGLE AND METAL ROOF COVERS









4 Photos Verify Drip Edge

4 photos from different areas showing drip edge installation and nailing pattern. Show Tape Measure for more accurate data capture.



Drip Edge



Drip Edge



Drip Edge



Drip Edge

HURRICANE - DRIP EDGE INSTALLATION OVER UNDERLAYMENT



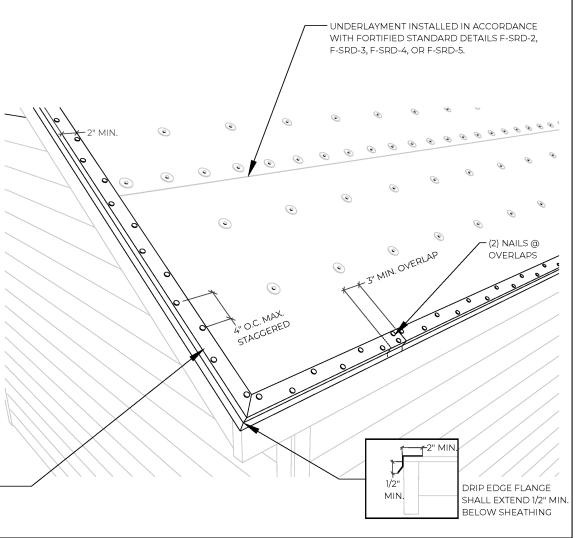
GENERAL NOTES:

- REFER TO APPLICABLE FORTIFIED HOME STANDARDS FOR ADDITIONAL INFORMATION.
- 2. REFER TO FORTIFIED STANDARD DETAIL F-G-1 FOR CORROSION PROTECTION REQUIREMENTS.
- 3. BEST PRACTICES TO SEAL THE DRIP EDGE: SHINGLE ROOF COVERS; SEAL THE DRIP EDGE, UNDERLAYMENT AND STARTER STRIP AT THE EAVE BY EITHER USING A SELF-ADHERING STARTER STRIP OR APPLYING AN 8" WIDE LAYER OF COMPATIBLE FLASHING CEMENT WITH 1/8' MAX. THICKNESS OVER THE DRIP EDGE AND UNDERLAYMENT.

FOR METAL ROOF COVERS; APPLY A COMPATIBLE MANUFACTURER-APPROVED SEALANT BETWEEN THE DRIP EDGE AND ADJACENT UNDERLAYMENT TO PREVENT WATER FROM ACCUMULATING UNDER THE DRIP EDGE OR USE A MANUFACTURER APPROVED 4" SELF-ADHERED SEAM TAPE.

- 4. APPLICABLE FOR ROOF PITCH 2:12 OR GREATER. FOR ROOF SLOPES LESS THAN 2:12, REFER TO MANUFACTURER'S DRIP EDGE INSTALLATION REQUIREMENTS.
- FORTIFIED HOME STANDARDS ARE TO BE 5. APPLIED IN CONJUNCTION WITH FEDERAL. STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS IN ADDITION TO THE STRUCTURAL DESIGN WHICH IS BY OTHERS. IN CASE OF A CONFLICT BETWEEN PROVISIONS. USE WHICHEVER IS MORE STRINGENT.

METAL DRIP EDGE (MINIMUM 26 GAUGE FOR STEEL) ALONG ALL EAVES AND GABLE RAKE EDGES INSTALLED OVER UNDERLAYMENT. MAKE SURE THE TOP SURFACE OF THE DRIP EDGE IS CLEAN, FREE OF OIL, AND IF REQUIRED BY THE STARTER STRIP MANUFACTURER, PRIMED WITH ASTM D41 PRIMER, FOR SEALING THE DRIP EDGE REFER TO GENERAL NOTE #3.





APPLICABLE STANDARDS:

FORTIFIED HOMETM - HURRICANE (2020)

DESCRIPTION:

HURRICANE - DRIP EDGE INSTALLATION OVER UNDERLAYMENT

DRAWING #:

F-DF-1

DATE: 11/01/2020







8 Photos Asphalt Shingle Roof Covers

I photo of shingle packaging showing manufacturer and product name
I photo of shingle packaging showing shingle ASTM rating and class. You
can also Download the spec sheet from the manufacturer.

4 photos of starter strip installation from different areas (include eave and rake)



Starter Strip



Starter Strip



Starter Strip

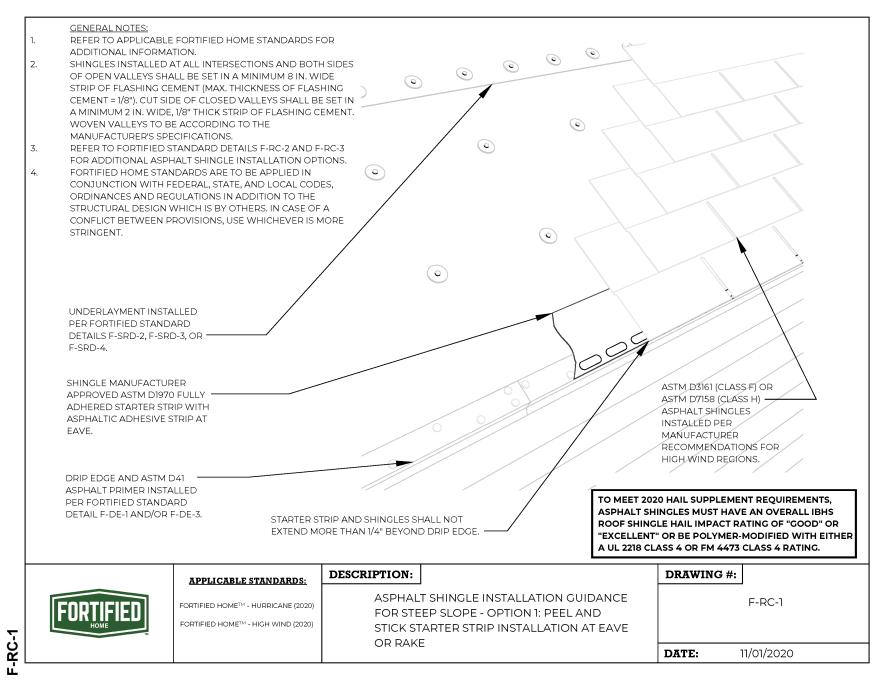


Starter Strip

Insurance Institute for Business & Home Safety®

ASPHALT SHINGLE INSTALLATION GUIDANCE FOR STEEP SLOPE PEEL AND STICK STARTER STRIP INSTALLATION AT EAVE OR RAKE









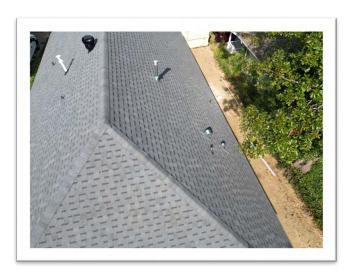


4 Photos Verify Roof Cover Rating and Attachment

Documentation for all roof covers: Minimum roof slope for all roof cover types present on the home Some examples of how roof slope can be documented are by holding a T-square up to the roof eave to show "rise over run", by placing an inclinometer on the roof and photographing the reading, or by using a mobile opp to measure and including a photo capture of the results. **Documentation for all roof covers:** 4 finished elevation photos from each side of the home showing installed roof cover



Roof Cover



Roof Cover



Roof Cover



Roof Cover