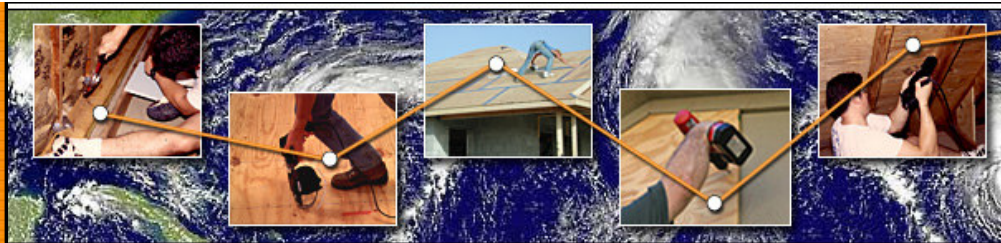


Hurricane Retrofit Guide



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Re-Roofing

Once the roof sheathing anchorage has been checked and improved if necessary, the next step is to add a high quality water barrier. The roof covering is the raincoat that helps to shed water from the roof of your house. The underlayment provides the waterproof foundation upon which the roof cover (shingles, tile, metal, or other products) is applied.

After the deck attachment is improved, the roofer should sweep or use leaf blower to clean the deck.

There is a large number of options for installing an underlayment that will keep your roof dry in most normal rains and thunderstorms. The building code and reference documents from the various roofing manufacturers provide lots of details on the options. You can get information on underlayments for tile roof installations from the Tile Roofing Institute (TRI), www.tilerooting.org, or the Florida Roofing, Sheet Metal and Air Conditioning Contractors Association, Inc (FRSA), www.floridarooft.com. For high wind installations, both the TRI and FRSA will direct you to the FRSA **Concrete and Clay Roof Tile Installation Manual**. In addition, the FRSA website also provides the following:

- Glossary of Roofing Terms for the Consumer
- Identifying parts of a roof
- What every property owner should know about hiring a roofing contractor (English and Spanish versions)

Other groups such as the National Roofing Contractors Association (NRCA), www.nrca.net, also provide guidance. The NRCA maintains a roof installation manual that goes into a great amount of detail and while the four volumes are expensive to buy, they do have a copy that you can review online and even copy selected pages. Their guide is available at:

<http://www.nrca.net/consumer/technical/manual/manual.aspx>

The Federal Emergency Management Association (FEMA), www.fema.gov, also provides rebuilding guidance through technical fact sheets and recovery guides that suggest ways to build or re-build better in hurricane prone regions. A listing of all the Technical Fact Sheets that are available for free download is available at:

http://www.fema.gov/rebuild/mat/mat_fema499.shtm

The particular fact sheet applicable to roofing underlayments is available by clicking **FEMA Underlayment Recommendations for Shingle Roofs**. The main differences between the guidance given below and the FEMA guidance are the recommendations (below) that self adhesive membranes be attached directly to the roof (except in Dade and Broward Counties), and that the drip edge at the eave be placed over the top of the underlayment with a bead of asphalt adhesive to seal the drip edge to the underlayment.

Since there is so much damage to roofs, typically 70 to 90 or more percent of homes that are damaged in hurricanes suffer roof damage, this website takes the approach of recommending systems that provide backup protection from water pouring into your attic if the roof cover is damaged. These better methods provide underlayments that can also serve as the weather cover if they are called on to do that because of damage to the normal roof cover (shingles, tile, or metal). These top of the line options are not the lowest cost alternatives, but they may make the difference between being able to wait for a roofer to get to your house and putting up one, two or possibly even three blue tarps as you try to keep the water out.


The basic steps required to achieve a safer, more wind resistant roof are:

Option 1 - Self-Adhered Underlayment - Applied Direct to Wood Deck.

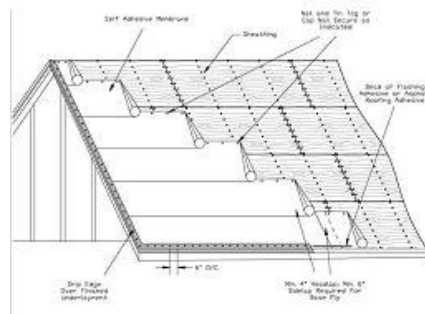
1. Install drip edge metal at the eaves before the underlayment is installed. The metal should be fastened at 6" on center using 12 ga. Corrosion resistant roofing nails or fasteners of compatible metals. All joints need to be lapped 2" and sealed with flashing cement. As an alternate, you can install the drip edge metal at the eaves over the top of the underlayment provided you seal it to the top of the underlayment. To do this, complete item 2 below, then apply a 1/4" bead of roofing cement along the top of the underlayment about 1/2" in from the edge of the roof at the eaves followed by installing the eave drip edge metal as described above.
2. Apply a self adhesive single ply underlayment system with a granular surface direct to the wood deck following the self-adhered underlayment manufacturer's recommendations. **Be careful if your roof deck is OSB**, these panels are usually processed with a wax to help keep them from sticking to the manufacturing machinery. If you have an OSB deck, check the self adhering membrane manufacturer's information, you will probably need to prime the deck to make sure that the self adhesive membranes actually stick to the deck surface.
3. Apply drip edge metal on the gable end rakes over the top of the underlayment. The metal should be fastened at 6" on center

using 12 ga. Corrosion resistant roofing nails or fasteners of compatible metals. All joints need to be lapped 2" and sealed with flashing cement.

Most roofing manufacturers now sell these self adhesive products. The granular surface membrane provides a redundant weather roof under the roof cover and gives you an extra measure of protection.



Warning: In Dade and Broward Counties of Florida, the building code does not allow the self adhesive membrane to be applied directly to the deck. Instead, if you apply one, it has to be applied on top of a roofing felt underlayment that is nailed to the deck. While this may seem like a waste of money, in these counties the felt paper is attached using a close spacing of nails with tin-tabs that help to keep the felt paper in place. Adding the membrane to the top of the felt paper will cover the exposed edges of the felt paper and prevent tears that could result in the felt paper being torn from the roof deck. You want to assure that the self stick membrane selected bonds well to the felt paper.



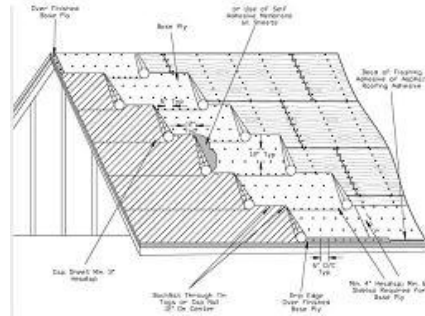
Sketch of suggested roof cover underlayment for Option 1

(click image for larger version)

Option 2 - Hot Mop No. 30 or No. 43 / 90 lb. Organic or Modified Cap Sheet.

1. An initial layer of 30# felt is nailed to the deck using nails with tin caps (Miami-Dade and Broward Counties) or round cap nails. The nails are installed in a 12" grid staggered in two rows in the field and at 6" on center along the laps. Side laps should be a minimum of 6" and laps at the top of the sheets should be a minimum of 2".
2. The base sheet is then coated (hot mopped) with a layer of asphalt and a 90# granular surface cap sheet is anchored to the base by the layer of adhesive. The top edges of the 90# granular surface cap sheet is nailed with the same fasteners as the 30# felt at 12" spacing.

3. Apply a 1/4" bead of roofing cement along the top of the underlayment about 1/2" in from the edge of the roof at the eaves. Apply drip edge metal on the eaves and gable end rakes over the top of the underlayment. The metal should be fastened at 6" on center using 12 ga. Corrosion resistant roofing nails or fasteners of compatible metals. All joints need to be lapped 2" and sealed with flashing cement.

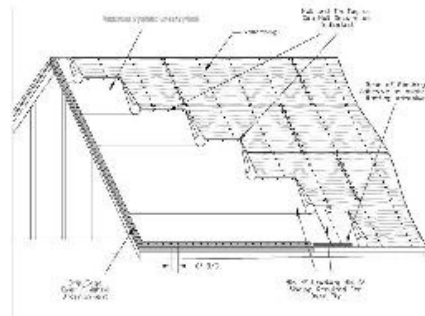


Sketch of suggested roof cover underlayment for Option 2

(click image for larger version)

Option 3 - Reinforced Synthetic Underlayment

1. Select a reinforced synthetic underlayment with an ICC approval and a minimum tear strength per ASTM D1970 or ASTM D4533 of 20 lbs, instead of standard felt paper.
2. Install drip edge metal at the eaves before the underlayment is installed. The metal should be fastened at 6" on center using 12 ga. Corrosion resistant roofing nails or fasteners of compatible metals. All joints need to be lapped 2" and sealed with flashing cement. As an alternate, you can install the drip edge metal at the eaves over the top of the underlayment provided you seal it to the top of the underlayment. To do this, complete items 3 and 4 below, then apply a 1/4" bead of roofing cement along the top of the underlayment about 1/2" in from the edge of the roof at the eaves followed by installing the eave drip edge metal as described above.
3. Attach the reinforced synthetic underlayment to the deck with annular ring or deformed shank roofing fasteners with minimum 1-inch diameter metal or plastic caps at the spacing required by the manufacturer for high wind installations or code requirements if more stringent.
4. Seal all seams in the underlayment a compatible adhesive or compatible 4-inch wide tape to create of continuous water resistant surface.



Sketch of suggested roof cover underlayment for Option 3

(click image for larger version)

General Notes and Comments:

The granular surface self adhesive membranes or 90# top sheets with granular surfaces are recommended because they will allow the underlayment to function as a roof covering for some time after a storm, even if some of the roof cover is blown off. If the nails holding the roof cover are lost, there may be a need to patch nail holes in the roof deck to prevent small water leaks. Unless the underlayment is also damaged, you should have a lot less water entering your attic and you may not need to immediately buy and install a tarp over the roof. However, most of these underlayments have time limits (usually 60, 90, or at the most 180 days) for exposure if you are putting another roof cover over the top. This mainly relates to the membrane sealing around the fasteners holding the roof cover as they are installed through the membrane. Consequently, after a storm, you may still have to apply another layer of underlayment before re-installing the roof cover, if the underlayment has been exposed for some time while you waited for a roofer.

Note that there are a lot of details that the roofer has to account for whenever a wall, chimney or dormer intersects with the roof. Valleys and ridges also require special attention and are frequently covered with metal, sometimes before the underlayment is applied, but always before the weather roof is installed.

When you have a storm resistant underlayment you are ready to move on to the weather roof. The options for underlayments outlined above should be acceptable for use with most roof coverings. If you decide not to go with one of these upgraded roof underlayments, you should at least apply flashing tape over the joints between the sheathing to provide backup protection from water pouring through the gaps between the sheathing if your roof covering is blown off. This flashing tape comes in



Installing tape over seams

(click image for larger version)

various widths. We recommend you use 4" or wider tape.

Installing Wind-Resistive Roof Coverings:

Click on one of the links below to learn more about installing wind-resistive roof coverings.

[Shingle Roof](#)

[Tile Roof](#)

[Metal Roof](#)

[Membrane or Built-Up Roof](#)

[Back to main roofing page](#)

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