

## Six Steps to Better Roof Protection

**1.** Have your roofer remove all of the roof covering materials down to the sheathing. In strong wind areas you should never add a second layer of shingles over an existing layer.



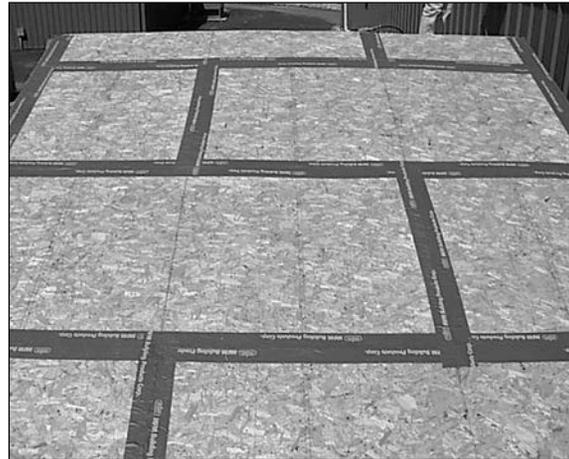
**2.** Have the roof sheathing inspected for damage or decay. Replace any weak material with sheathing rated for your truss or rafter spacing (16 or 24 inch).



**3.** Have the sheathing refastened using either 8d ring-shank nails or #8 screws 2 inches long (see listing of auto-feed screw guns). The nails or screws should be installed between the existing fasteners and at a spacing of not more than 6 inches between the old and new fasteners. A smaller spacing (4 to 5 inches) is recommended if the ring-shank nails are used. Also, if

your roof has gable end overhangs, you should have nails or screws installed at 4 inches on center on the last truss or rafter.

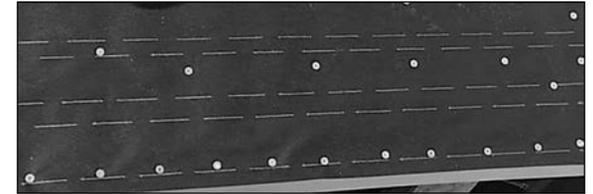
**4.** Provide a backup level of water protection by installing self-adhesive roof or window flashing tape over the joints between the sheathing. Four- or six-inch wide strips are readily available in 100-foot rolls for about \$20 per roll. Have your roofer seal around roof deck penetrations with roof tape, sealant, or asphalt roof cement. Replace boots around pipes and flashing at wall or chimney intersections as needed.



**5.** Specify as a minimum, ASTM D 226 Type I (15#) asphalt impregnated felt paper underlayment with a 19 inch overlap. The felt paper should be attached using low profile capped head nails or thin metal tins and roofing nails. The tins or caps should have a minimum diameter of 1 inch. Fasteners should be installed at no more than 6 inch intervals along all seams or laps and at 12 inch spacing in the field. Offset any vertical laps 12 inches. Have metal drip flashing installed along roof edges, nailed at a minimum spacing of 10 inches on center. If your house is within 3,000 feet of salt water, use hot-dipped galvanized fasteners for the underlayment attachment.

This underlayment specification corresponds to IBHS recommendations and the middle level option

suggested in the new FEMA Coastal Construction Manual. The FEMA recommendation for the highest level of protection uses a single layer of ASTM D 226 Type II (30#) felt paper nailed as above and covered by a single layer of self-adhered modified bitumen sheet complying with ASTM D 1970.



**6.** Install shingles with six nails per shingle or as recommended by the manufacturer. Consider specifying a Dade County, Florida approved shingle. A listing of Dade County approved products including roofing materials is available at <http://www.buildingcodeonline.com>. Use a starter course at the bottom of each slope and consider specifying hand tabbing shingles within 3 feet of roof edges. Shingles should not extend more than 1/4 to 1/2 inch beyond the edge of the roof deck.

The protective measures outlined in this pamphlet are consistent with guidelines for potential rate reductions recently adopted by the Florida Wind Pool and meet the Institute for Business and Home Safety's criteria for their fortified home program. While there are no insurance premium reductions currently available if you take these measures, documentation that the various steps have been taken may lead to savings in the future if the proposed rate reductions for mitigation in a Florida Wind Pool rate filing are extended to other areas of the country and picked up by other insurers.

While these measures will not hurricane proof your house, when combined with other measures such as protection of openings and installation of strapping to tie the structure together, they can help give your home a fighting chance for surviving the next strong hurricane, moderate tornado, or other severe windstorm.

## ***Why strengthen roof connections?***

Most existing houses contain a weak link in the connection of the roof sheathing to the rafters or roof trusses. This makes them vulnerable to loss of roof sheathing in a severe windstorm such as a hurricane, downburst, microburst or tornado.

The reason is that nail sizes and spacing used to attach the sheathing to the roof's structural members (rafters or trusses) do not provide enough strength to keep the sheathing on during an intense windstorm. Before Hurricane Andrew devastated South Florida in 1992, roof sheathing was generally attached using 6d nails spaced at 6 inches along the edges of the sheathing and at 12 inches along interior structural members.

Tests at Clemson University's Wind Load Test Facility show that the sheathing can be pulled off the rafters or trusses with a 40 pound per square foot uplift pressure when it is attached using these older nailing patterns. Use of 8d nails has become more common in recent years but this only increases the typical failure pressure to about 70 pounds per square foot. In contrast, a strong hurricane such as Hugo could exert uplift pressures as high as 100 pounds per square foot in critical areas of the roof if your house is in an exposed location.

Stricter requirements were adopted by most building codes in hurricane prone regions after Hurricane Andrew. However, most existing houses have been built using the older standards and even the new requirements do not provide a very good margin of safety (extra strength beyond the bare minimum).

There are several ways to improve the roof sheathing attachment. The cheapest and easiest is to re-nail or better yet, screw down the sheathing when you replace your roof covering. This should cost you an extra \$200 to \$300 for a typical house. Re-fastening your sheathing and undertaking the extra measures outlined in this brochure will provide a significant reduction in the vulnerability of your roof to wind damage.

### ***Sources of Adhesive Weather Stripping Material***

#### **MFM Building Products Corporation**

800-882-ROOF  
www.mfmbp.com

#### **Protecto Wrap Co**

800-759-9727  
www.protectowrap.com

#### **GAF**

877-423-7663  
www.gaf.com

### ***Sources of Automatic Feed Screw Guns***

#### **Simpson Strong-Tie**

800-999-5099  
www.strongtie.com

#### **FastenMaster**

800-518-3569  
www.fastenmaster.com

#### **Grabber Construction Products**

800-477-TURN  
www.grabberman.com

#### **Makita USA**

800-462-5482  
www.makita.com

#### **Stanley Black + Decker**

860-225-5111  
www.stanleyblackanddecker.com

## ***Wind Load Test Facility***

### ***Reducing Wind Losses Through Research***



Department of Civil Engineering  
Clemson University  
Phone: 864-656-3000

**S.C. SEA GRANT  
EXTENSION  
PROGRAM**



S.C. Sea Grant Consortium  
Phone: 843-953-2078  
Internet: www.scseagrant.org

# **Re-Roofing?**



## ***Opportunities For Reducing Wind Damage Vulnerability When You Re-Roof***