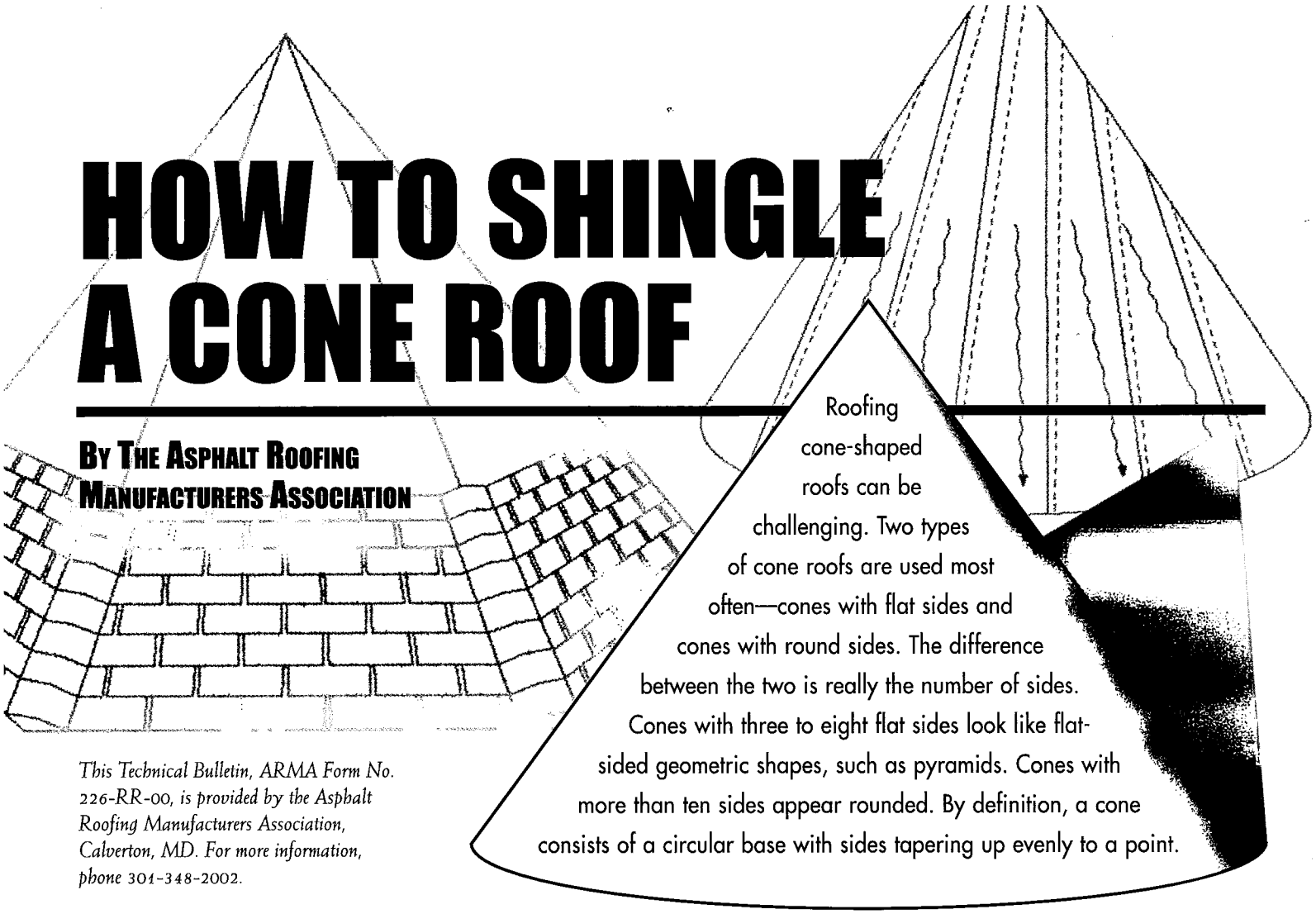
HOW TO SHINGLE A CONE ROOF

By The Asphalt Roofing Manufacturers Association



Roofing cone-shaped roofs can be challenging. Two types of cone roofs are used most often—cones with flat sides and cones with round sides. The difference between the two is really the number of sides. Cones with three to eight flat sides look like flat-sided geometric shapes, such as pyramids. Cones with more than ten sides appear rounded. By definition, a cone consists of a circular base with sides tapering up evenly to a point.

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Underlayment

On new construction, roofing underlayment is generally applied perpendicular to the flow of water. On a cone roof, underlayment should be applied vertically, following the flow pattern from the peak to the base (*Figure 1*). This will help to prevent the felt from wrinkling or buckling. Vertical application will result in an overlap of material near the cone's peak. This overlap should be trimmed during application and before applying shingles. Overlap the felt vertically as progress is made up the cone and cement the lap edge using asphalt plastic cement. Alternately, self-adhering eave and flashing membrane underlayment can be used to ensure a high degree of protection from wind-driven rain or from possible gaps between abutting shingles.

Ventilation

In many cases, the cone is open into the attic area and should be part of its ventilation system. Static ventilation may be accommodated in the main attic area by increasing the requirement for the net free venting area by approximately the same square footage as the cone-shaped room. If the area is open to the finished living space, a ceiling fan can help force heat and moisture from the cone-shaped room to the main living area for ventilation. A room dehumidifier may also be useful.

For positive ventilation, in cases of a completely circular cone, an off-peak, roll-type ridge vent or a specialty vent may be used at the peak. The ventilation formula for cone-shaped rooms is the same for any other residential area: 1 sq. ft. of net free vent area for every 300 sq. ft. of attic area, if equal intake and exhaust vents are used; or 1 sq. ft. of net free vent area for every 150 sq. ft. if only exhaust vents are used.[1] If no ventilation is used, the owner should be made aware of the possible accelerated weathering or effects on the product's warranty that will likely occur. Contact the shingle manufacturer for more specific requirements.

Roofing a Flat-sided Cone

To roof a flat-sided cone, the applicator should use the same proce-

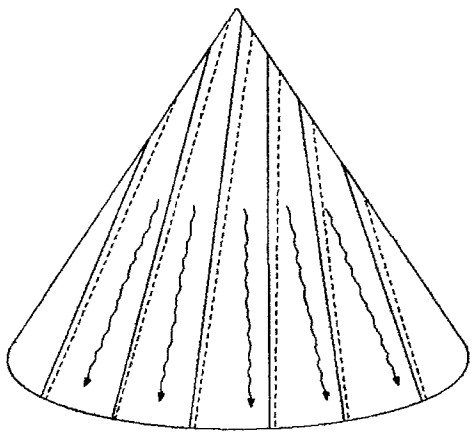

Figure 1: Underlayment on cones is generally applied perpendicular to the eave, with the laps cemented.

dure used on an ordinary hip roof (*Figure 2*). On each of the flat sides of the pyramid, a chalk line is snapped from the tip of the cone to the center of the eave. Shingles are applied to the flat areas and cut at the joints or hips. To complete the hip joints, a standard hip and ridge shingle is used. Continuous horizontal chalk lines should be snapped around the cone to ensure that the shingles line up on the structure's adjacent sides. Shingles applied to steep-sided cones (greater than 21-in-12 slope) may require hand sealing with asphalt plastic cement. Consult the manufacturers' directions for application to steep slopes.

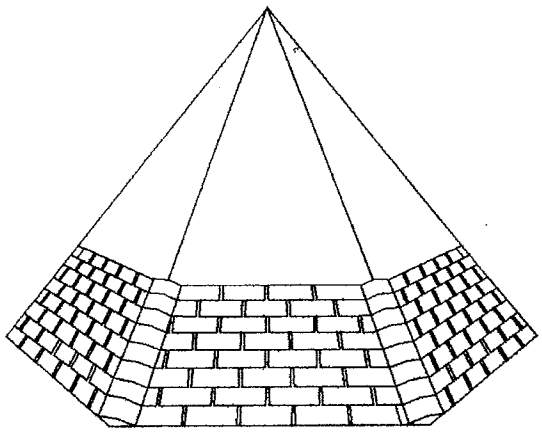

Figure 2: When roofing flat-sided cones, use the standard hip and ridge application method. Snap horizontal chalk lines to ensure a continuous roofing line.

Roofing a Round-sided Cone

This is a more complicated style to shingle. Because the cone is curved, there is no linear eave to follow. If one attempts to create a line by butting the sides of the shingle together, the shingles will gradually curve downward and not align properly after encircling the cone. This condition is more pronounced as one moves toward the top of the cone.

Aligning the shingle tab cutouts vertically is another challenge. Since the cone tapers up from the bottom to the peak, less material is needed to shingle each succeeding course. The amount of horizontal offset and the shingle's cutouts vary, creating a random appearance. If standard three-tab shingles are used, each shingle has to be trimmed for proper vertical alignment. To simplify this process, use a random tab shingle that does not require vertical alignment.

Vertical Alignment

The following recommendations are for round cones with a base diameter slightly wider than the cone's height. After the underlayment is in place, snap two vertical lines from the cone's peak to its base. These lines should be about 36 inches apart—or the width of the shingle—at the cone's base. Use the vertical lines as a guide for placing the shingles. In the first courses, a full-width shingle will fit between the two lines. However, as one moves up the cone, the distance between the vertical lines narrows. In these areas, trim the shingles to fit between the lines. To minimize waste, divide the cone into three zones: bottom, middle, and top (*Figure 3*). Mark zone areas by attaching a string to the cone's peak and using a chalk to mark a line around the circumference. If access to the peak is difficult, there is an alternate method: measure a series of equidistant points from the eaves and connect the points by drawing chalk line around the cone.

In Zone 1, starting at the cone's base, use a full-width shingle between two vertical lines. In Zone 2, near the middle of the cone, use two-thirds of a shingle; and in Zone 3, one-third of a shingle. To mark the division between Zone 1 from Zone 2, cut a two-thirds width shingle and scribe a line around the cone where the two-thirds shingle fits precisely between two of the vertical lines. To differentiate Zone 2 from 3, take the remaining one-third of the shingle and move it up on the cone until it fits snugly between the two vertical lines. Mark the zone by scribing an exposure line around the cone's circumference.

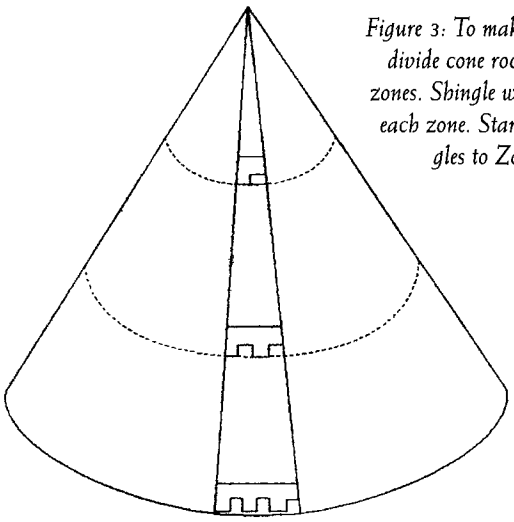

Figure 3: To make application easier, divide cone roofs into three distinct zones. Shingle widths will change in each zone. Start by applying shingles to Zone 1, then work up.

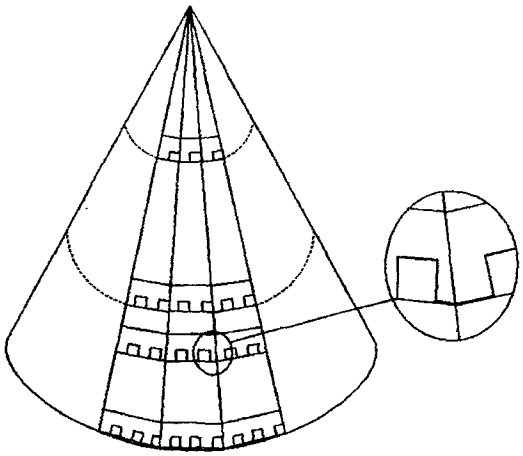

Figure 4: Side overlap of shingles is more noticeable in the upper portions of each cone. Trim shingles at an angle to make the joint parallel to water flow. Vertical lines are for calculating shingle width. Do not align the shingle sides. Shingles should be offset by at least 3 inches.

In the lower part of each zone there is little side overlap between shingles. As you move up the cone, however, side overlap becomes more of a problem and shingles must be trimmed at an angle for the end joint to be parallel to the flow of water (Figure 4). This is done by marking a string line from the cone's apex and trimming the shingles on the angle. This will reduce the chances of water flowing into the joints and causing a leak.

Horizontal Alignment

Horizontal alignment can be maintained within each zone by scribing alignment lines similar to those used to establish the three zones. It is not necessary to mark every row; every two or three is sufficient. Make sure that side joints from one course do not line up with side joints in the courses immediately above or below. Shingle end joints in successive courses should be offset by 3 inches or more. ■

References

1. For more on this topic, see "Ventilation and Moisture Control for Residential Roofing," ARMA Technical Bulletin.

Roofing Contractor Earnings Survey

A survey by the National Roofing Contractors Association (NRCA) shows that the average roofing company president who reported earned $89,581 per year with a $56,030 bonus in 2000. Vice presidents earned $68,333 and a bonus of $33,442. Average hourly wage for roofing superintendents was $22.26, with an annual bonus of $8,539. The Pacific region paid the highest for its roofing workers, with the Southwest paying the lowest.