

Nails should be driven straight, flush and snug to the surface of asphalt shingles.

The nailing of hips, ridges and some roof accessories may require the use of longer nails because fasteners must penetrate through more layers of roofing and/or material.

For full-width shingles, a minimum of four nails should be used per shingle. See Figure 7.

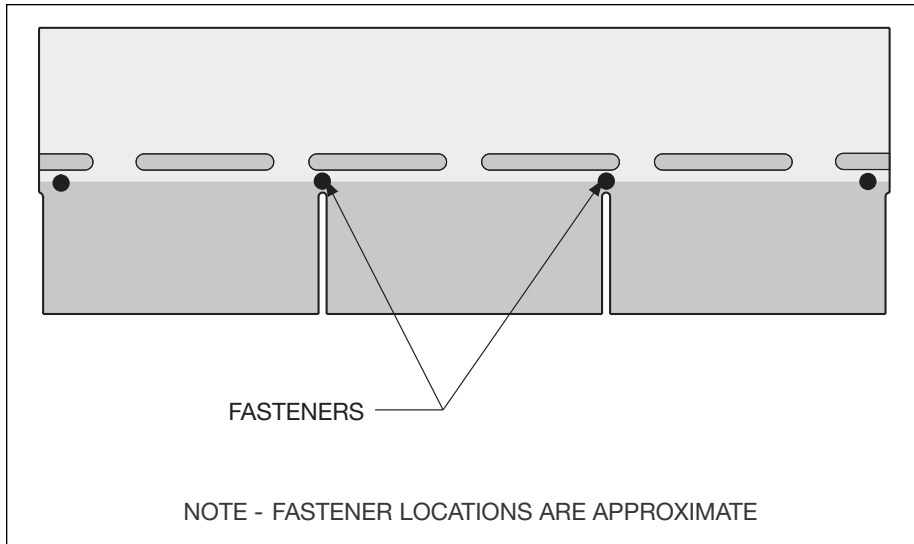


Figure 7: Approximate fastener locations for four-nail pattern

Six nails per full-width strip shingle may be required by building codes in some high-wind areas. See Figure 8.

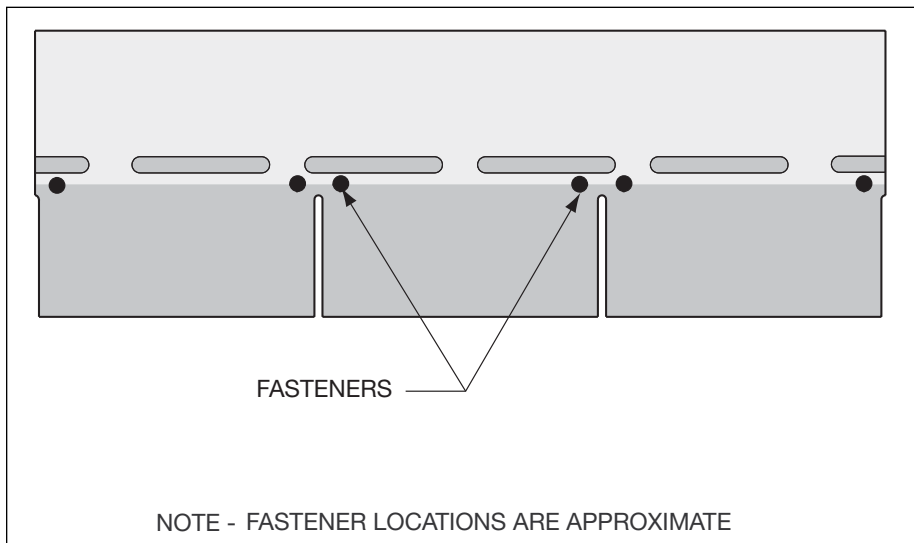


Figure 8: Approximate fastener locations for a six-nail pattern

For roof slopes 18:12 (56 degrees) and greater, NRCA recommends that asphalt shingles be fastened with six nails and manually sealed with asphalt flashing cement. The latter process is commonly known as “hand tabbing.” Some manufacturers require six nails per shingle and hand tabbing on slopes as low as 12:12 (45 degrees) depending on the shingle product. Consult manufacturers for specific product requirements.

For individual shingles, a minimum of two nails should be used per shingle.

The locations for asphalt shingle fasteners as shown in Figures 7 and 8 and manufacturers’ printed installation instructions should be recognized as the approximate locations where attachment is intended. Actual consistent fastener placement in the exact locations depicted is not possible in the application of asphalt shingles under normal rooftop conditions. The application of asphalt shingles in a rooftop environment is not an exact process and minor deviations from the intended fastener locations should be anticipated and tolerated.

### 3.5 Exposure and Appearance

Starter courses for asphalt shingles are consistent for each shape or style of shingle. Typical exposure for standard size strip shingles is 5 inches (125 mm) and for metric size strip shingles is 5 1/8 inches (143 mm). The offset patterns illustrated only apply to three-tab shingles. Laminated strip shingles vary in style and appearance and each manufacturer's installation guidelines should be consulted for specific exposure and offset instructions.

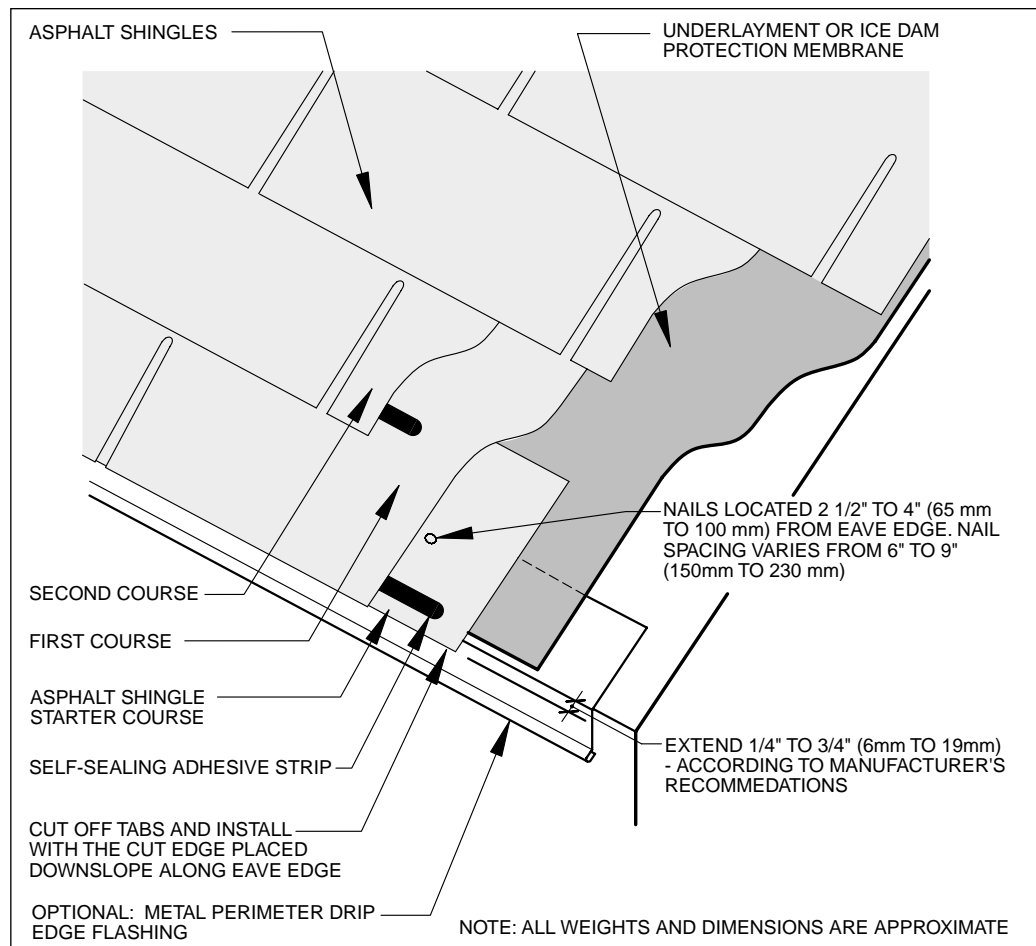
#### 3.5.1 Starter Courses

Before the first course of shingles is installed, a starter course is applied directly over the underlayment or ice dam protection membrane along the eave of a roof system. Its primary purpose is to shed water that may migrate through the joints and cut-outs of the shingles in the overlying first course.

NRCA suggests using self-sealing asphalt shingles for starter courses. To prepare the starter course consisting of self-sealing shingles, cut the exposed tab portion off of enough shingles to accommodate the total length of the downslope perimeter roof edge (e.g., eaves). Then, cut approximately 3 to 6 inches (76 to 152 mm) off the end of the first shingle. (See Figure 17.) Alternatively, a 9 inch (229 mm) or wider starter strip of mineral-surfaced asphalt roll roofing material may be applied along the downslope edges of the roof to serve as a starter course.

The lower edge or edges of the roofing material should be even with the outer edge of the perimeter metal flashing if extended drip edge flashing is used. (See Figure 8A.) If an "L"-type metal flashing or no flashing is used, extend the starter course beyond the perimeter eave and rake edges 1/4 to 3/4 inch (6 to 19 mm), according to the manufacturer's recommendations, to assist in directing runoff away from the fascia board and other underlying building components. Fasten the starter course with roofing nails along a line that is parallel to and 2 1/2 to 4 inches (65 to 100 mm) above the downslope perimeter edges of the roof. Place the nails in such a way that the nail heads will not be exposed through the overlying shingle's cutouts or at butt joints between individual shingles that make up the first course.

Figure 8A: Example of a starter course of asphalt shingles



### 3.5.2 Offset Patterns

There are several offset or side-lap gauge patterns used with three-tab shingles, and the pattern used generally is selected based on manufacturer or installer preference, regional or climatic experience, or common practice. However, there are three general pattern variations that are common for the application of square-butt, three-tab strip shingles.

Following are descriptions of these three patterns.

- Cutouts that break joints on thirds, or the 4-inch method — A cutout is the section of a three-tab asphalt shingle that has been cut out at a factory to separate individual tabs. For standard size shingles, the offset pattern is achieved by offsetting the consecutive shingle courses by 4 inches (100 mm) as shown in Figure 9. For metric-sized shingles, the offset pattern is achieved by offsetting each consecutive course 112 mm (4 $\frac{3}{8}$  inches). Cutouts are also referred to as key-way or water-slots. However, it is the gauging of these cutouts in neighboring shingle courses that gives a shingle roof system a particular pattern. See Figure 9.

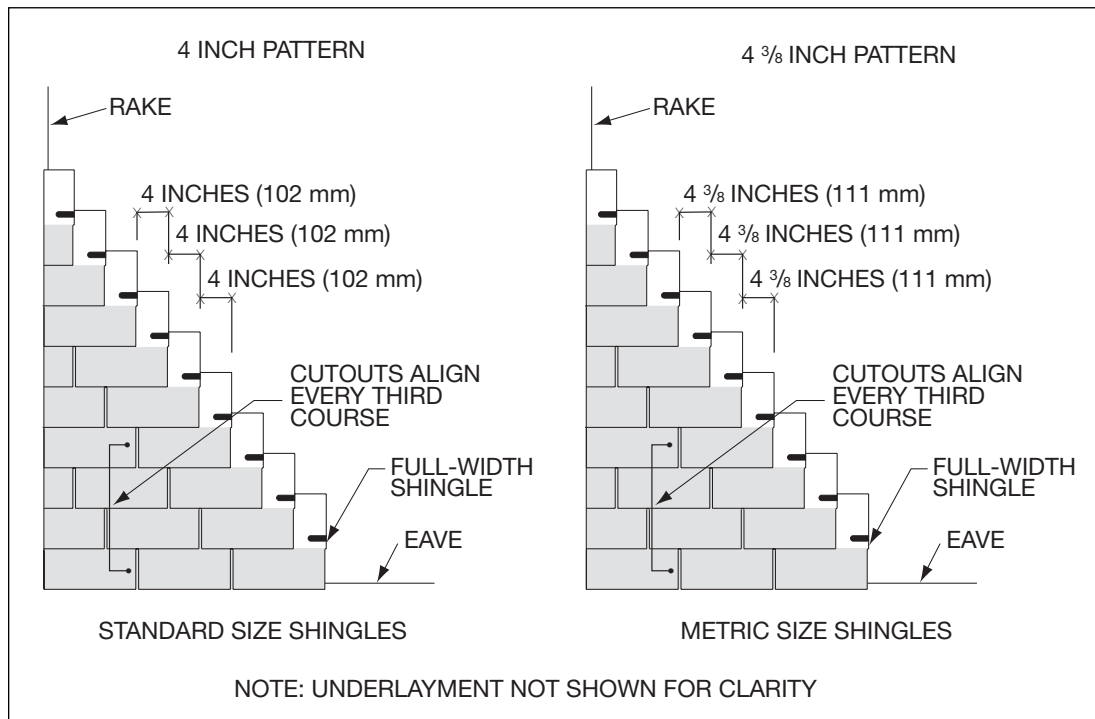


Figure 9: Example of aesthetics of a 4-inch pattern

- 5- and 5 $\frac{1}{2}$ -inch methods — A more random visual affect of a finished roof system can be achieved by offsetting cutouts in neighboring courses. For standard-sized shingles, the offset pattern is usually accomplished by removing approximately 5 inches (125 mm) from each consecutive course (after the first full-width shingle in the first course). For metric-sized shingles, this offset pattern is achieved by offsetting each consecutive course 143 mm (5 $\frac{5}{8}$  inches) as shown in Figure 10.

The page is intentionally left blank.