

## Overlay or tear-off

The re-roofing of a structure having **asphalt shingles** may be accomplished by either adding an additional layer of asphalt shingles or completely removing the existing shingles, underlayment, flashing, etc. (tear-off) and installing the roofing as if it was new construction.

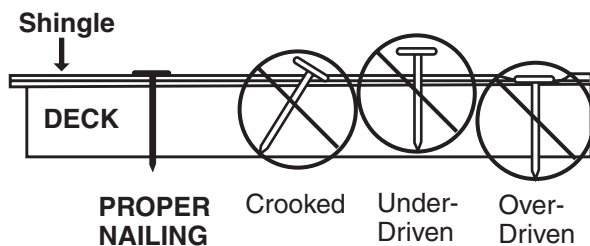
To assist in making the decision whether to overlay or tear-off, consider the following:

1. Check the framing beneath. It must be adequate to carry the additional weight of new materials plus the weight of roofers and their equipment.
2. Check the condition of the exiting deck sheathing. It must be adequate for both support and anchorage for new roofing fasteners.
3. Check the condition of the roofing surface. If it is warped, curled, or so badly weathered that providing a level surface for the new material will be difficult, it should be removed.

## Fasteners

Asphalt shingles shall be fastened with not less than four nails. Nails shall be not less than 12-gauge with 3/8 inch minimum diameter heads. Nails shall be of sufficient length to penetrate through roofing material and at least 3/4 inch into roof sheathing or through the thickness of the sheathing, whichever is less. Nail head shall be driven so that it tightly bears against the shingle but does not cut the surface of the shingle. Nails must be installed in the location on each shingle per the manufacturer's instructions. **Any crooked nails should be removed and replaced.** (See illustration.)

Note: Use of other types of fasteners must be approved by the Building and Inspection Division.



## Sheathing

Roof sheathing shall be checked prior to re-roofing and repaired or replaced if rotted or unsound. Replacement sheathing shall conform to the requirements of the Building Code.

## Roof pitch

Asphalt shingles **shall not** be used on roofs with less than a 2:12 pitch and require special application procedures for pitches less than 4:12. Manufacturer's instructions on package must be followed.

## Underlayment

(New or tear-offs only)

### A. For roof pitches of 2:12 to less than 4:12

Two layers of 15# felt applied shingle fashion. Starting with a 19 inch strip and a 36 inch wide sheet over it at the eaves, each subsequent sheet shall be lapped 19 inches horizontally.

**Note:** For ice protection, manufacturer's instructions must be followed.

### B. For roof pitches of 4:12 and over

One layer of 15# felt lapped two inches horizontally and 4 inches vertically. End laps shall be offset by six feet in all applications.

## Valley underlayment

(New or tear-offs only)

Valley linings shall be installed per the manufacturer's requirements before applying shingles.

## Valley flashing

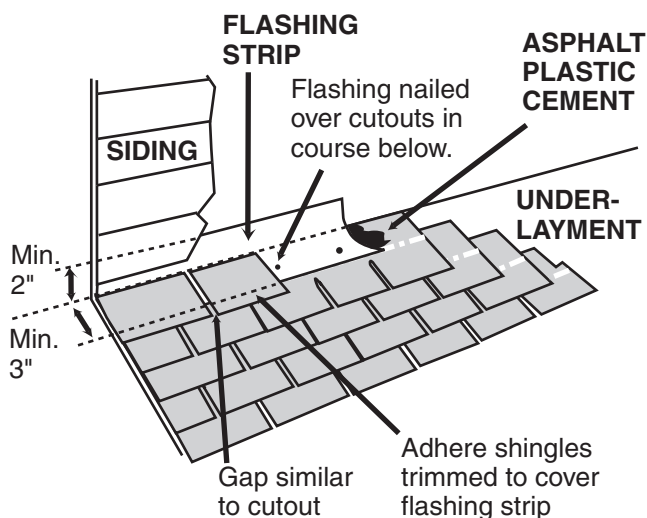
When existing flashing is no longer serviceable, it shall be replaced. Valley flashing shall consist of not less than No. 26-Gauge corrosion-resistant, galvanized sheet metal. The metal shall extend at least 12 inches from the center line each way. Sections of flashing shall have an end lap of not less than four inches. Alternately, the valley may consist of woven asphalt singles or closed-cut style applied in accordance with the manufacturer's instructions.

## Other flashing

All other flashing and roof vents shall be checked and if rusted or in bad condition shall be replaced. When replacing flashing of metal, it shall be of not less than No. 26-Gauge corrosion-resistant metal. Roof vents and other flashings must be installed according to manufacturer's instructions. Generally, all require the bottom part of the vent to be placed above the shingles so that about half of the vent is above the lower shingles and half is below the uppermost shingles. Any replacement of flashing at masonry chimneys must be properly cut in and re-tuckpointed or caulked with an approved product.

## Vertical wall flashing (26-gauge)

1. Apply shingles up the roof until a course must be trimmed to fit at the base of the vertical wall. Plan to adjust the exposure slightly (and evenly) in the previous courses, so that the last shingle is at least 8 inches wide (vertically). This allows a minimum 5 inch exposure of the top course and a 3 inch headlap.

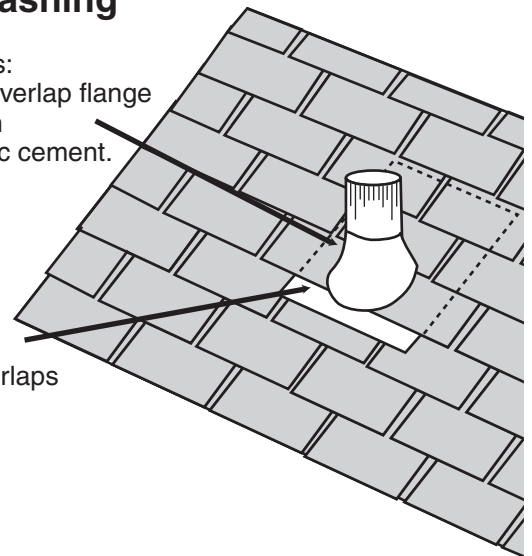


2. The flashing strip should be bent, using a metal brake, to extend at least 2 inches up the vertical wall and at least 3 inches onto the last shingle course; that is, to the top of the cutout.
3. Apply the flashing, 8 feet to 10 feet over the last course of shingles. Embed the flashing in asphalt plastic cement, or another appropriate adhesive, and nail it to the roof every 12 inches. Do not nail the strip to the wall.
4. If side laps are necessary, overlap the pieces at least 6 inches. Do not fasten in this joint area.

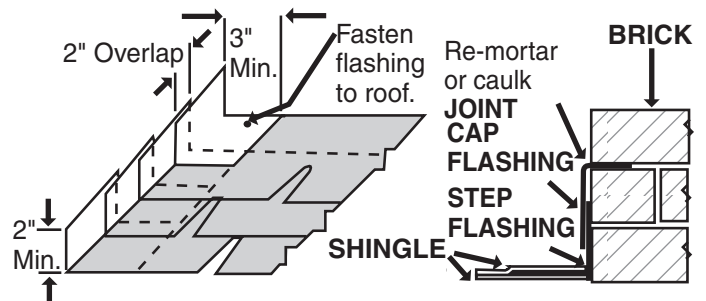
## Shingle application around flashing

Top and sides:  
**SHINGLES** overlap flange and are set in asphalt plastic cement.

Bottom:  
**FLANGE** overlaps shingles.



## Sidewall flashing (26-Gauge)



## Ice dam protection membranes

*Required for ALL building structures in new or tear-off applications.*

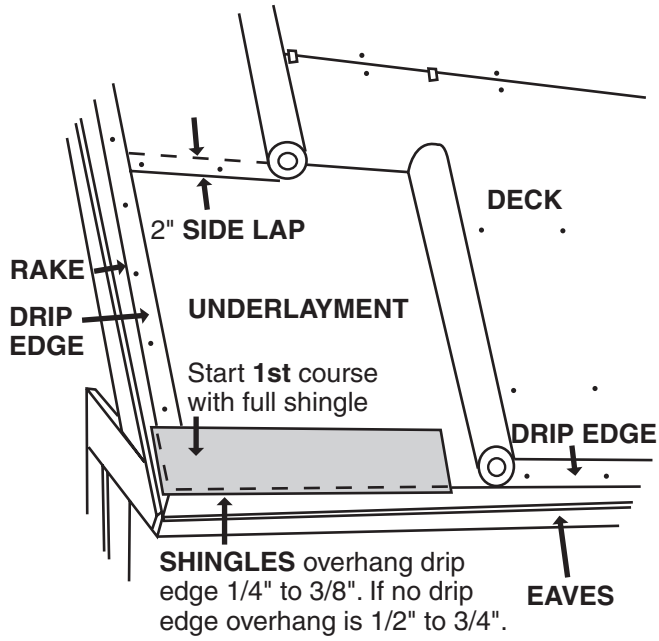
### A. For roof pitches of 2:12 to less than 4:12

**Same as for underlayment and, additionally,** an approved waterproofing underlayment shall be installed to a point no less than 24 inches inside the interior wall line. When the manufacturer's specifications are more restrictive than the Building Code, the manufacturer's specifications shall be followed.

### B. For roof pitches of 4:12 and over

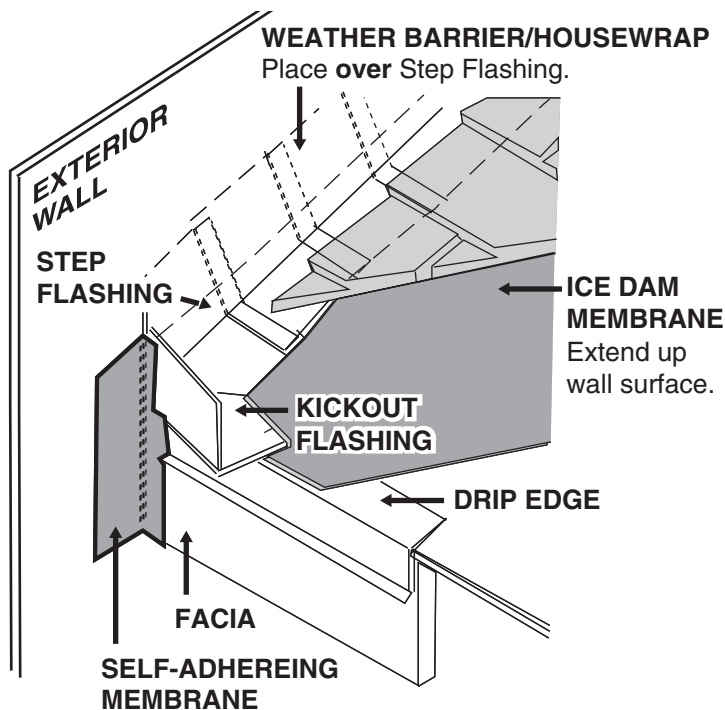
**Same as for underlayment and, additionally,** a manufactured ice protection membrane or its code-approved equivalent assembly must be installed per manufacturer's instructions including, but not limited to, the following: The membrane shall extend from over the metal or wood drip edge to a point not less than 24 inches measured horizontally inside the wall line. Typically, two rows (six feet) are required but more than two rows may be required depending on the size of the soffit overhang. The underlayments must extend to the outer edge at all fascia boards.

## Ice protection underlayment

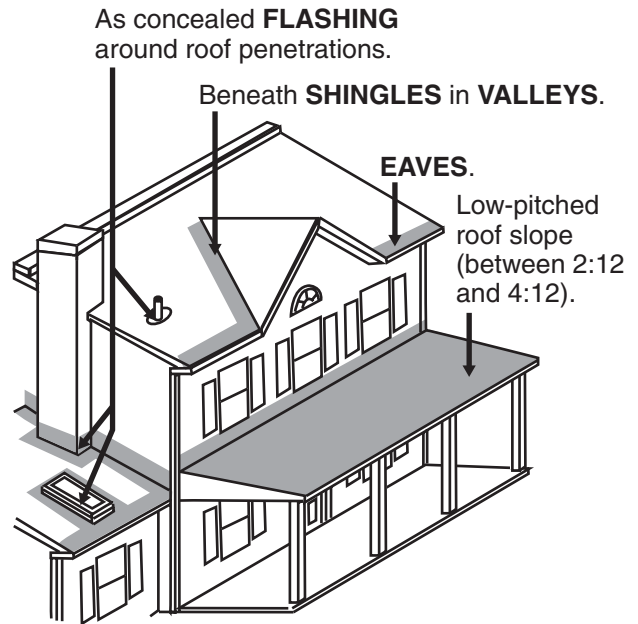


**Installation:** When applying underlayment, keep the product as wrinkle-free as possible. Unroll the underlayment parallel with the eaves. The underlayment should go over eaves' drip edge flashing, but go under the rake's drip edge flashing.

## Kick-out flashing



## Where to use ice protection



## Roof and soffit vents

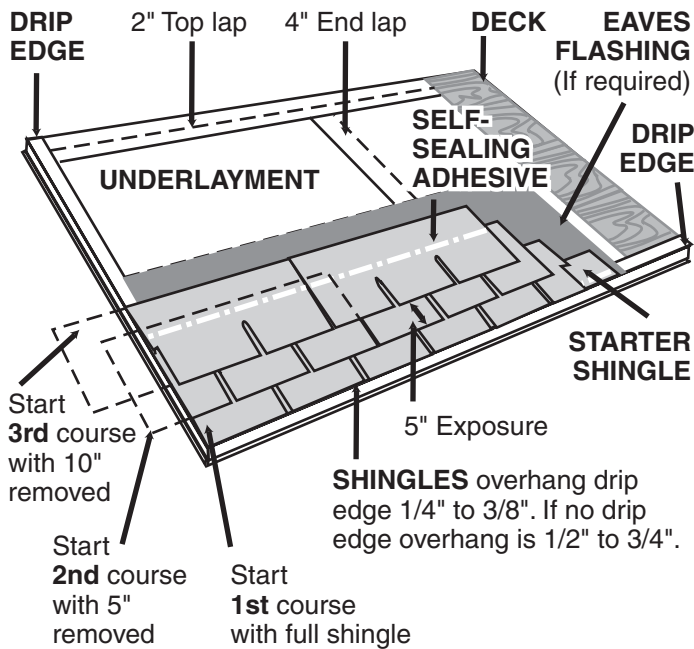
If necessary, additional roof and soffit vents must be installed so that for every 300 square feet of attic area there is at least 1 square foot of ventilation. At least 50 percent, but not more than 80 percent, shall be in the upper portion of the roof and the balance to be provided by eave or soffit vents.

## Exhaust vents

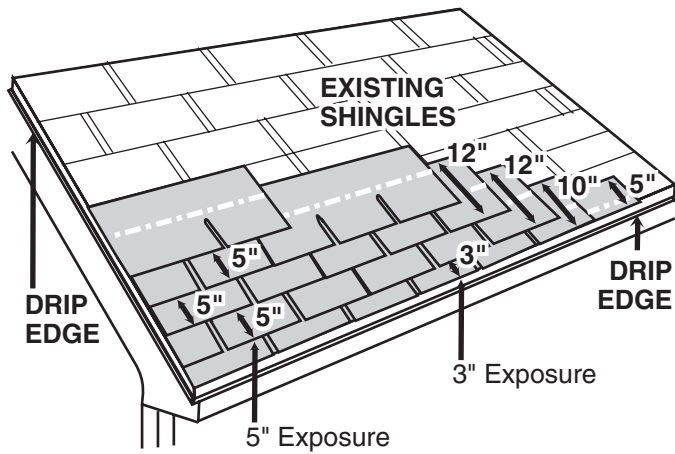
Care should be taken to ensure that kitchen and bathroom exhaust fan pipes are connected to the appropriate dampered exhaust roof vent with no openings into the attic that would allow exhaust air back into the attic space. The exhaust vents shall be installed the same as other attic vents and vent pipe flashings.

When re-roofing around furnace flues, take care to not dislodge the joints of the flue pipe within the attic or within interior chases this pipe might pass through. If in doubt, consult a licensed heating contractor.

## Shingle application using 5-inch method



## Nesting procedure: New asphalt shingle application over existing asphalt shingles



## Skylight: Basic sheet metal components

All dimensions approximate.

**BACKER FLASHING** under shingles minimum 3 courses. Where necessary (depending upon anticipated debris and/or snow accumulation), hold shingles up 1 course and nail high.

**INTEGRAL COUNTER FLASHING** with hemmed drip edge.

**COUNTER FLASHING** over base and step flashing approx. 2" min.

**APRON FLASHING** with lower edge hemmed under.

**RAISED CURB** (2" x 8" suggested as minimum to attain flashing clearance.)

**STEP FLASHING**

**WATERPROOFING UNDERLAYMENT** turned up under curb

