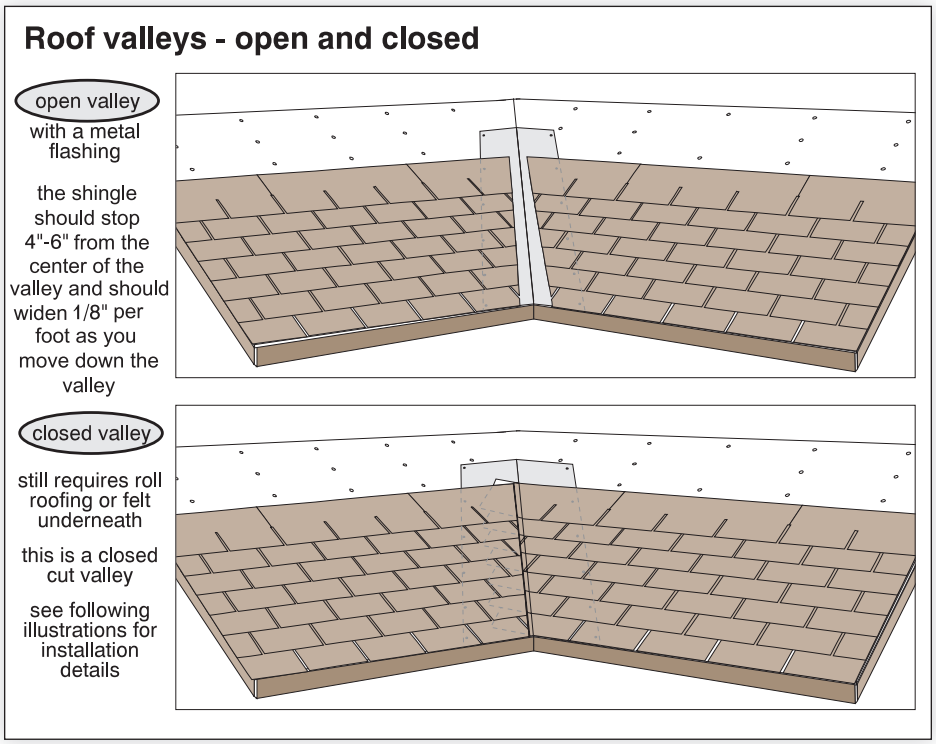
# 3.0 Valley Flashings

Valley flashings are used where **two different roof slopes come together to form a low trough** or valley. Valleys should be sloped so water runs off one end. Valleys that are dead flat along their length are likely to be sources of leakage. Valleys obstructed by chimneys or parapet walls, for example, are also likely to leak.

Valley flashings may be visible (open valley) or may be completely covered by the roofing material (a closed valley).




Valley flashings are typically a shedding system rather than a watertight membrane.

WHY VALLEYS ARE WEAK SPOTS

Valley flashings are vulnerable points on roofs. This is because –

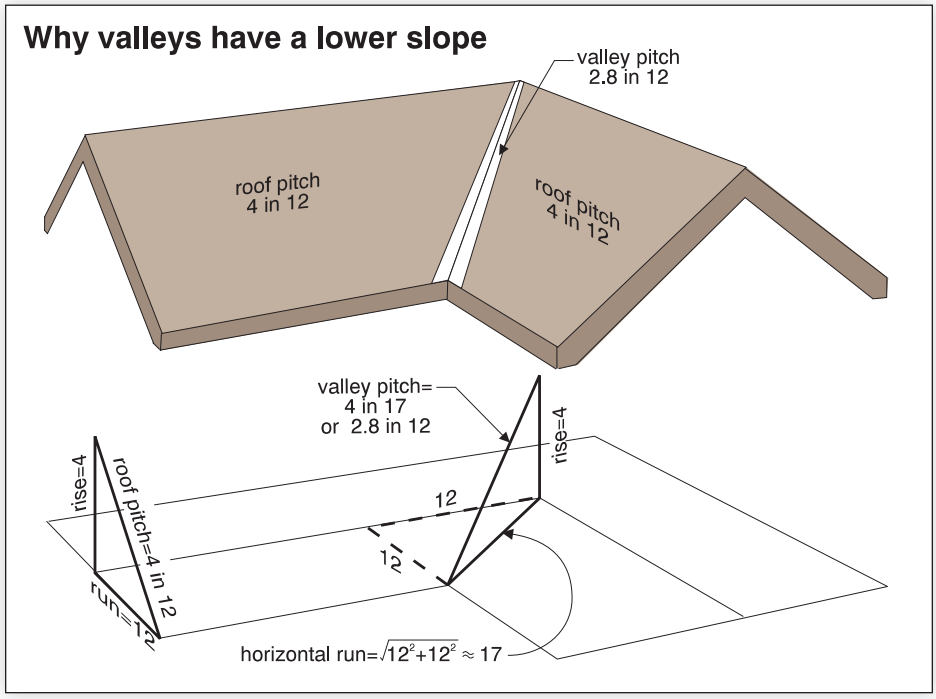
- The valley has to carry a large volume of water because water from two adjacent roof slopes is drained into the valley.
- Snow and ice accumulate in valleys causing ice dams.
- Valley flashings are long sections of material, subject to stretching and buckling forces (thermal expansion and contraction).
- Valleys have a lower slope than the adjacent roof surfaces.

Most people can understand the first three points readily, but the idea that the valley slope is different from adjacent roof slopes is worthy of some discussion.

WHY VALLEYS ARE LOW-SLOPE

Picture a roof with a 4 in 12 roof slope with a valley in it. Assume that the horizontal distance from the eave to the ridge is 12 feet on both adjacent slopes. Since the pitch is 4 in 12, this means the ridge will be exactly 4 feet taller than the eave on either side.

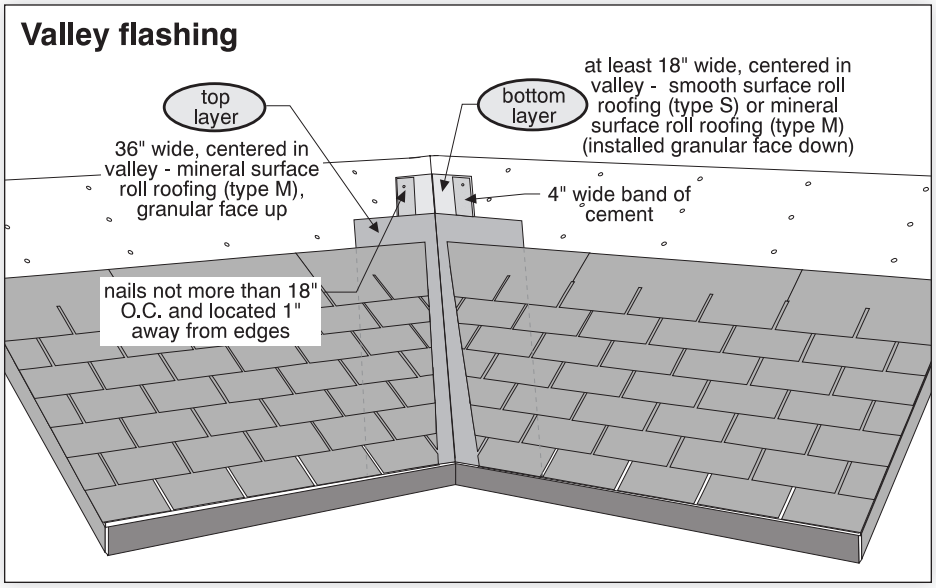
Now look at the run of the valley. The horizontal distance from the top of the valley at the ridge to the bottom of the valley at the eave is approximately 17 feet. Because we know the ridge is 4 feet higher than the eave, the vertical drop of the valley must be 4 feet. The slope of the valley is 4 in 17, rather than 4 in 12! This means the valley slope is 2.82 in 12! While it seems strange, it is true that valleys on 4 in 12 roofs have slopes that are less than 3 in 12. This helps explain why valleys are vulnerable.




# 3.1 Open valleys

Open valleys have flashing material exposed to the elements along the length of the valley.

Valleys should have 4-6 inches from the center of the valley to the edge of the shingle. Valleys should widen out at a rate of about ⅛ inch per foot as you move down the valley.




WIDER AT BOTTOM

There are two reasons the valleys should widen at the bottom.

1. Lower sections of the roof and valley see more water than upper sections.
2. Valleys that widen as they descend are less likely to hang up snow and ice. Valleys of uniform width are more prone to ice damming.

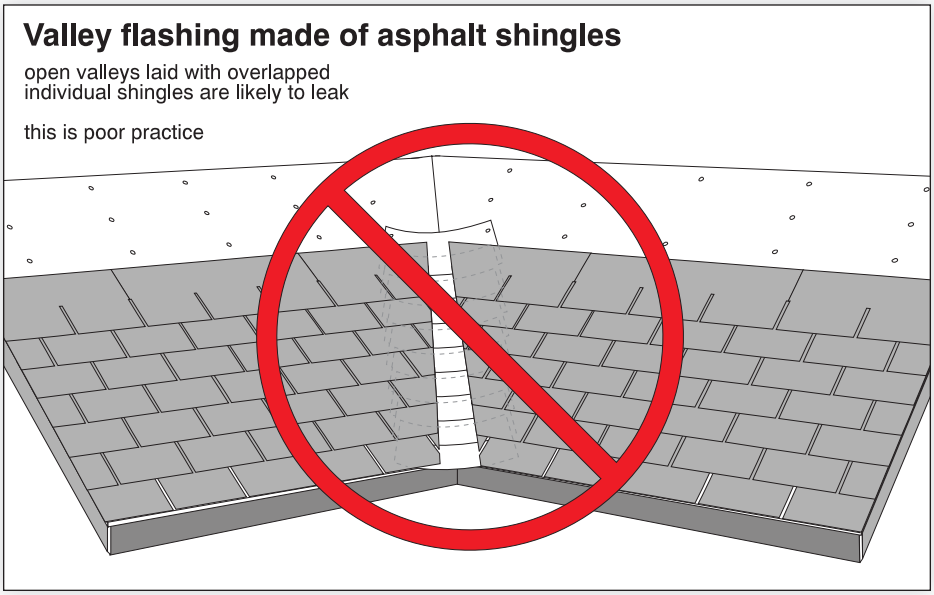
## TYPICAL MATERIALS

Open valley flashings for asphalt shingle roofs are typically **roll roofing** or **metal**.

ROLL ROOFING

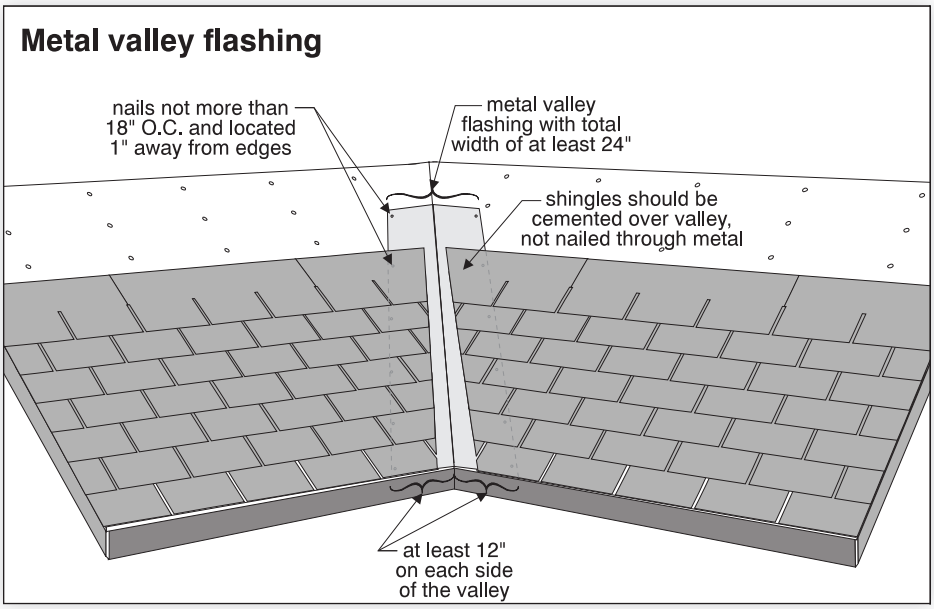
Roll roofing valley flashing for open valleys require two layers. There is typically an 18 inch wide piece laid with the mineral surface down. The second layer is a 36 inch wide piece of roll roofing with the mineral surface facing up. The flashings are installed before installing the shingles.

Open valleys laid with overlapped individual shingles are very likely to leak. This is poor practice.




METAL VALLEYS

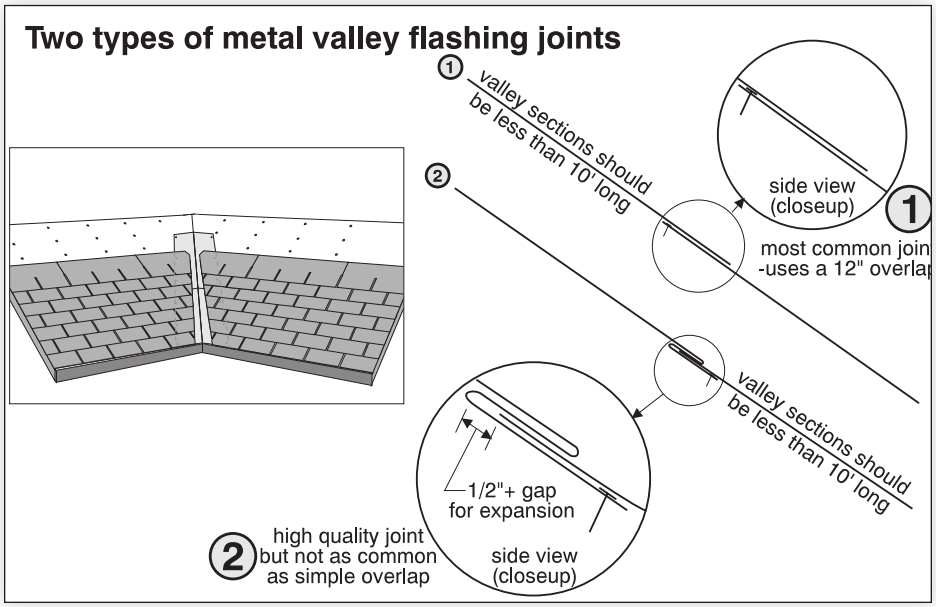
Metal valley flashings are typically 24 inches wide. Some authorities recommend that they extend at least 4 inches out under the roofing material at the eaves. We believe this leaves very little room for error. We prefer to see them extend out further. On very long valleys, the valley flashings may have to be wider than 24 inches because they widen about ⅛ inch per foot. Many roofers use 15-pound felts under metal valley flashings, others use roll roofing or Ice and Water Shield. Some roofers also use 18 inch wide strips of Ice and Water Shield to extend the width of metal flashings on either side.



MAXIMUM LENGTH OF METAL

Individual pieces of metal valley flashings should be no longer than 10 feet. This is because the expansion and contraction, caused by changes in temperature, may cause buckling. When the sheets are lapped, the upper piece overlaps the lower piece by at least a foot. Ideally, plastic cement is used to seal the joint.

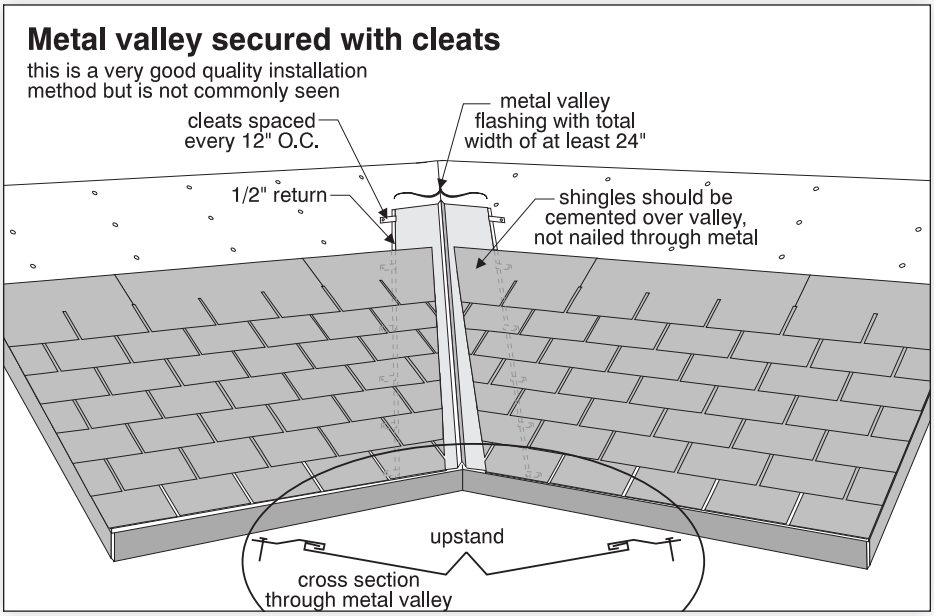



OVERLAP OF VALLEY PIECES

The same overlap technique is used on roll roofing. Where the roll is cut, the upper piece overlaps the lower piece by a foot and the two sections are cemented together.

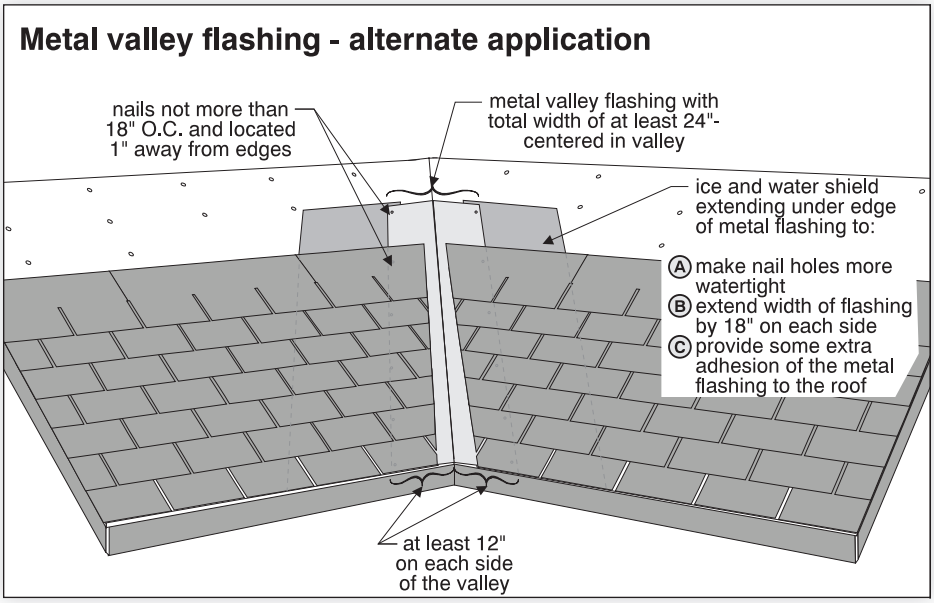
NAILING THROUGH VALLEY FLASHINGS

Many roofing authorities specify that no nails should go through metal valley flashings. The “elegant” approach is to bend the outside edges of the metal over to form a ½ inch return. Metal cleats are then hooked onto this return and it is the cleat that is nailed into the decking. This provides a flashing detail with no nails through the flashing. Furthermore, the ½ inch return on the edges stops water that may drive up under the shingles and along the flashing. The cleats are usually spaced about every 12 inches along the valley length.




NAILED NEAR EDGES

This treatment is very unusual and is almost never seen with asphalt shingles. In practice, the metal flashings are usually nailed near the edges. Using a layer of Ice and Water Shield under the flashing (base flashing) is helpful. The nail hole in the metal can leak but the Ice and Water Shield will not. Ice and Water Shield is a self-healing material. If a nail is driven through it, it won't leak around the nail.




CEMENT SHINGLES IN PLACE

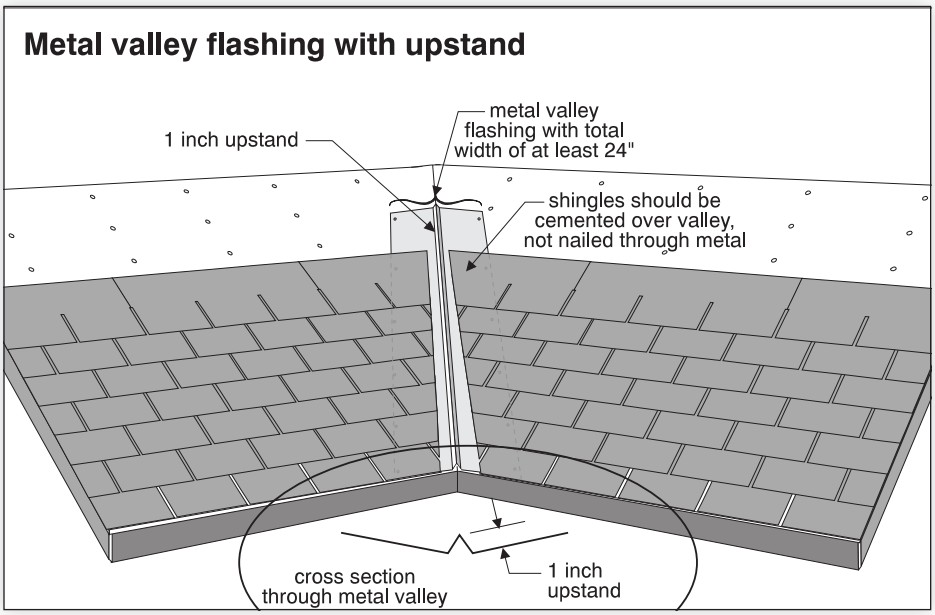
Shingles covering the valley flashing are often held in place with plastic asphalt cement rather than nails to avoid nailing through the valley flashings.

Most of these details won't be visible during the inspection, and you'll have to be looking for resultant leakage.

UPSTANDS

Metal valley flashings often have a one-inch **upstand** or splash diverter in the center (metal sticks up perpendicular to the centerline of the valley).




This inverted "v" shaped flashing detail helps prevent water driving down from one side of the roof, under the shingles on the other side of the valley. Upstands are more important on –

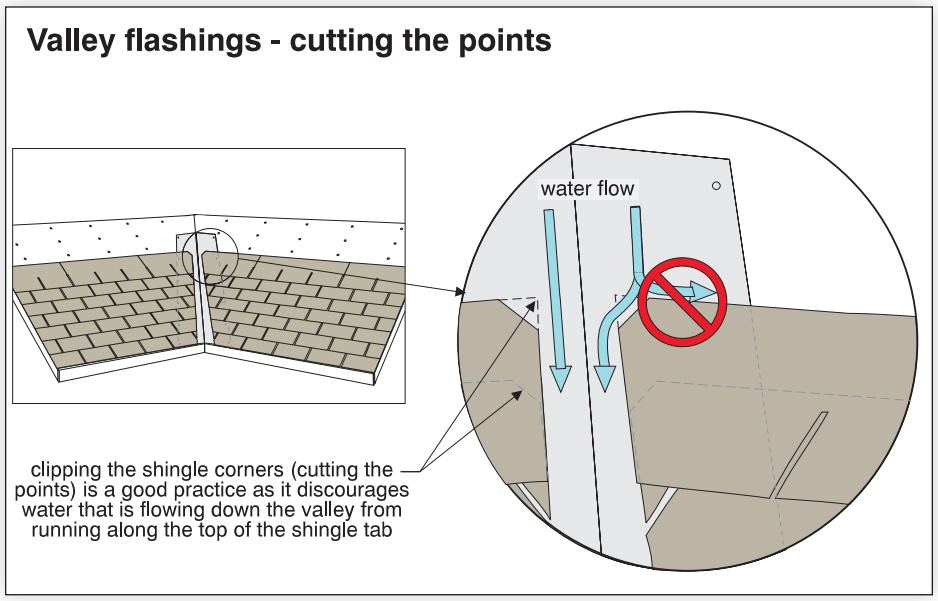
- steep roofs
- roofs that have one side of the valley fed by a much larger surface than the other
- or valleys where one side is much steeper than the other

NO EXPOSED NAIL HEADS

No matter what type of valley flashing material is used, there should be no exposed nail heads in the valleys.

CUTTING THE POINTS

We talked briefly before about clipping the corners off the top of the shingles where they enter the valley. This discourages water from running along the top of the shingle and getting into the roof system. It is good practice to cut the points.




WOOD SHINGLE AND SHAKE DETAIL

Joints between adjacent wood shingles and shakes should not break into the valley. Good roofers set aside the widest shingles for use at the valleys to avoid this problem.

## 3.2 Closed valleys

ASPHALT ONLY

Closed valleys are commonly used with strip asphalt shingles only. The flashing material is not exposed. The shingles continue through the valley. Individual asphalt shingles (different from the common 3-tab shingles) are not suitable for closed valleys, since they aren't wide enough to carry through the valley without joints. Closed valleys are not recommended for wood. They can be used on clay, concrete and slate, for example, but are less common. Closed valleys are more difficult to execute and may be more prone to leakage.

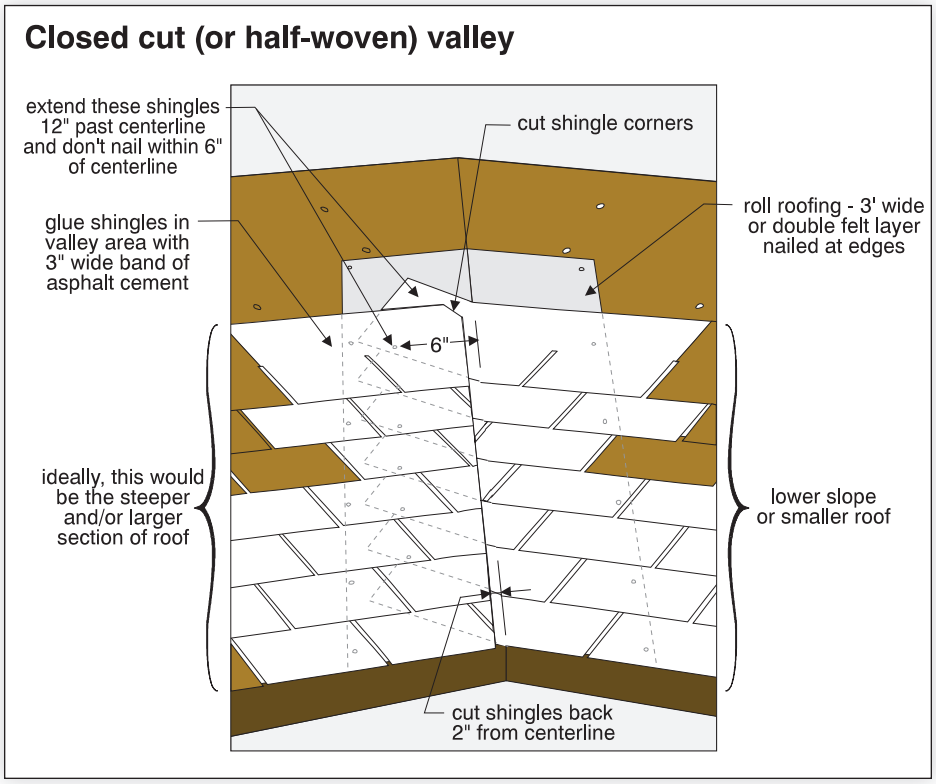
TYPES

With asphalt shingles, there are two types of closed valleys:

1. the closed cut or half-woven
2. fully woven valley

VALLEY FLASHING

In both cases, a single 3-foot-wide sheet of roll roofing (some use a double layer of 15-pound felt) is laid along the valley. The shingles from one side (ideally the smaller or lower slope section) are extended past the centerline of the valley at least 12 inches. The shingle going through the valley should be continuous. In some cases, the shingle coming up to the valley has to be cut short so that a strip shingle can run continuously through the valley and 12 inches past the centerline. In many cases, the closed valley is lined with metal instead of rolled roofing.




The shingles from the other side (preferably the larger or steeper side of the roof) overlap the shingles that have already been laid. These shingles are then cut off so that they form a straight line running down the valley. The shingles are usually cut back 2 inches from the center point of the valley. The corners should be clipped, and the shingles should be embedded in a 3 inch wide band of asphalt cement.

When installing the shingles through the valley, there should be no nails within 6 inches of the centerline of the valley.

FULLY WOVEN

The fully woven valley is similar to the closed cut, except that shingles from both sides extend past the centerline of the valley by at least 12 inches. The shingles are laid alternately or are woven up through the valley.

**Fully woven closed valley**