



# RESIDENTIAL ROOFS

REVISION DATE: JANUARY 2017

A residential roof permit is required for new roofs and for replacement roofs when the replacement area is equal or greater than 50% of the total roof size. Permits and approved plans are required for residential roofs involving structural elements including, but not limited to, additions or modifications, roof sheathing, skylights, change in roof pitch, addition or relocation of mechanical units or the installation of heavier materials than were previously installed.



**Recovering versus replacement (2012 IRC Section R907.3):** New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions exist:

- 1) Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
- 2) Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
- 3) Where the existing roof has two or more applications of any type of roof covering.

## Exceptions:

- 1) Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
- 2) Installation of metal panel, metal shingle and concrete and clay tile roof coverings over existing wood shake roofs shall be permitted when the application is in accordance with Section R907.4.
- 3) The application of new protective coating over existing spray polyurethane foam roofing systems shall be permitted without tear-off of existing roof coverings.
- 4) Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section R905.

**Roof recovering (2012 IRC Section R907.4):** Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

**Reinstallation of materials (2012 IRC Section R907.5):** Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Any existing flashings, edgings, outlets, vents or similar devices that are a part of the assembly shall be replaced when rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

**Flashings (2012 IRC Section R907.6):** Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.

**Slope (2012 IRC Section R905.2.2):** Asphalt shingles shall be used only on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.2.7.

**Fasteners (2012 IRC Section R905.2.5):** Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage shank with a minimum  $\frac{3}{8}$ -inch diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of  $\frac{3}{4}$  inch into the roof sheathing. Where the roof sheathing is less than  $\frac{3}{4}$  inch thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

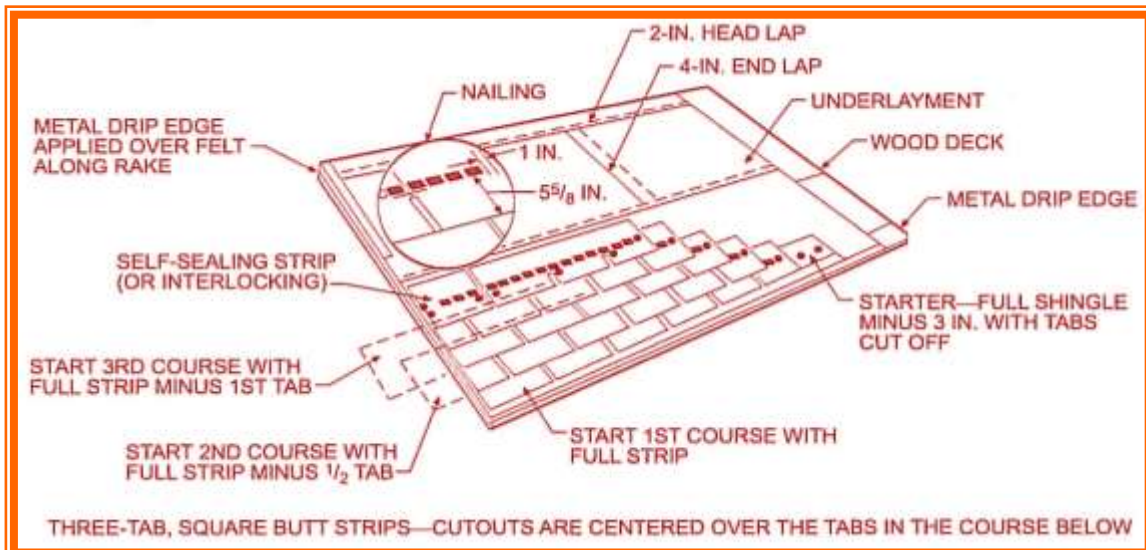


FIGURE R905.2.2(1): ASPHALT ROOFING SHINGLES APPLICATION HIGH SLOPE (4:12 MINIMUM)

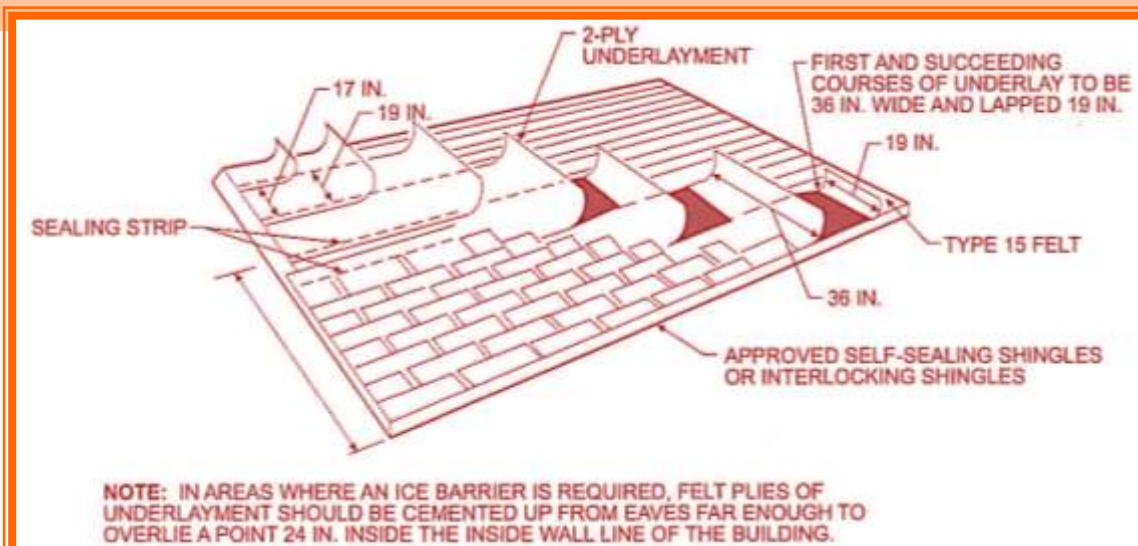
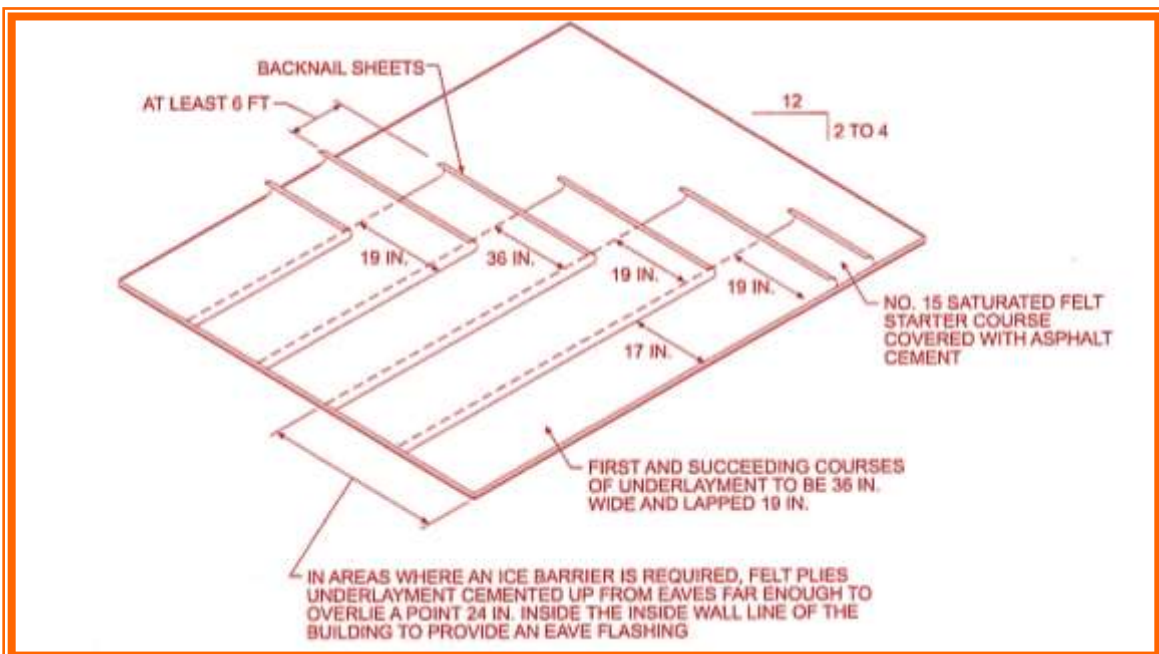


Figure R905.2.2(2): Application of Asphalt Shingle Slopes Between 2:12 and 4:12

**Attachment (2012 IRC Section R905.2.6):** Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12, 175-percent slope), shingles shall be installed as required by the manufacturer.

**Underlayment application (2012 IRC Section R905.2.7):** For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches, and fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be offset by 6 feet.



**Figure R905.2.7: Low Slope Double Ply Underlayment Application**

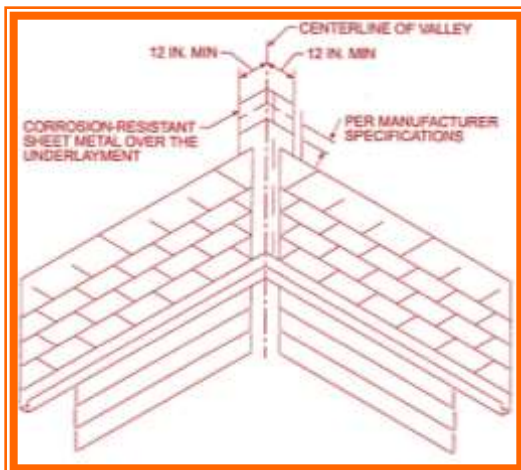
**Base and cap flashing (2012 IRC Section R905.2.8.1):** Base and cap flashing shall be installed in accordance with manufacturer's installation instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet. Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch thickness.

**Valleys (2012 IRC Section R905.2.8.2):** Valley linings shall be installed in accordance with the manufacturer's installation instructions before applying shingles. Valley linings of the following types shall be permitted:

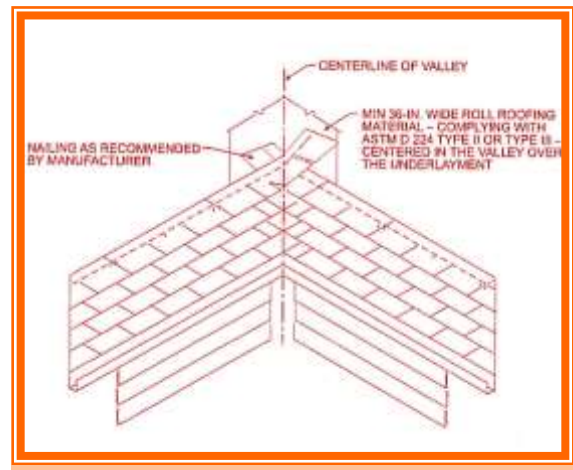
- 1) For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches wide and of any of the corrosion-resistant metals in Table R905.2.8.2.
- 2) For open valleys, valley lining of two plies of mineral surfaced roll roofing, complying with ASTM D 3909 or ASTM D 6380 Class M, shall be permitted. The bottom layer shall be 18 inches and the top layer a minimum of 36 inches wide.
- 3) For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 6380 and at least 36 inches wide or valley lining as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D 1970 shall be permitted in lieu of the lining material.

**Sidewall flashing (2012 IRC Section R905.2.8.3):** Base flashing against a vertical sidewall shall be continuous or step flashing and shall be a minimum of 4 inches in height and 4 inches in width and shall direct water away from the vertical sidewall onto the roof and/or into the gutter. Where siding is provided on the vertical sidewall, the vertical leg of the flashing shall be continuous under the siding. Where anchored masonry veneer is provided on the vertical sidewall, the base flashing shall be provided in accordance with this section and counter-flashing shall be provided in accordance with Section R703.7.2.2. Where exterior plaster or adhered masonry veneer is provided on the vertical sidewall, the base flashing shall be provided in accordance with this section and Section R703.6.3.

**Other flashing (2012 IRC Section R905.2.8.4):** Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing, shall be applied according to the asphalt shingle manufacturer's printed instructions.



**Figure R905.2.8.2(1):** Flashing for Open Roof Valley



**Figure R905.2.8.2(2):** Flashing for Woven Valley

**Drip edge (2012 IRC Section R905.2.8.5):** A drip edge shall be provided at eaves and gables of shingle roofs. Adjacent pieces of drip edge shall be overlapped a minimum of 2 inches. Drip edges shall extend a minimum of  $\frac{1}{4}$  inch below the roof sheathing and extend up the roof deck a minimum of 2 inches. Drip edges shall be mechanically fastened to the roof deck at a maximum of 12 inches on center with fasteners as specified in Section R905.2.5. Underlayment shall be installed over the drip edge along eaves and under the underlayment on gables. Unless specified differently by the shingle manufacturer, shingles are permitted to be flush with the drip edge.

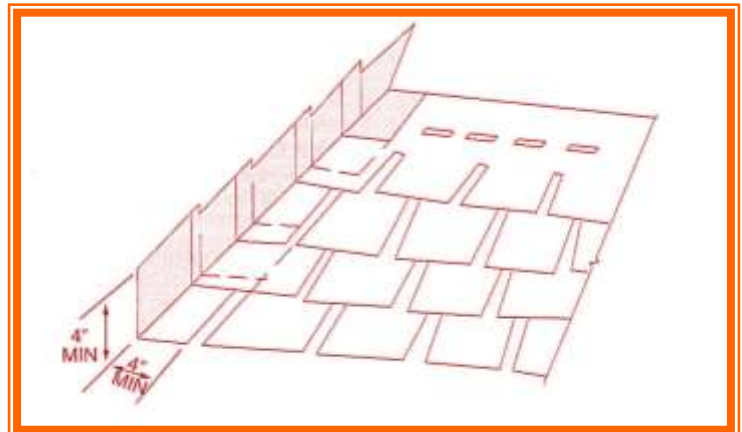


Figure R905.2.8.3: Flashing at Side Wall

**Ventilation required (2012 IRC Section R806.1):** Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain or snow. Ventilation openings shall have a least dimension of  $\frac{1}{16}$  inch minimum and  $\frac{1}{4}$  inch maximum. Ventilation openings having a least dimension larger than  $\frac{1}{4}$  inch shall be provided with corrosion-resistant wire cloth screening, hardware cloth, or similar material with openings having a least dimension of  $\frac{1}{16}$  inch minimum and  $\frac{1}{4}$  inch maximum.

Openings in roof framing members shall conform to the requirements of Section R802.7. Required ventilation openings shall open directly to the outside air.

**Exception:** Attic ventilation shall not be required when determined not necessary by the code official due to atmospheric or climatic conditions.

**Minimum vent area (2012 IRC Section R806.2):** The minimum net free ventilating area shall be 1/150 of the area of the vented space.

**Exception:** The minimum net free ventilation area shall be 1/300 of the vented space provided one or more of the following conditions are met:

- 1) In Climate Zones 6, 7 and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.
- 2) At least 40 percent and not more than 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located no more than 3 feet below the ridge or highest point of the space, measured vertically, with the balance of the required ventilation provided by eave or cornice vents. Where the location of wall or roof framing members conflicts with the installation of upper ventilators, installation more than 3 feet below the ridge or highest point of the space shall be permitted.

**Vent and insulation clearance (2012 IRC Section R806.3):** Where eave or cornice vents are installed, insulation shall not block the free flow of air. A minimum of a 1-inch space shall be provided between the insulation and the roof sheathing and at the location of the vent.

## CITY OF REPUBLIC

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*The City of Republic is located in Greene County in the southwest corner of the State of Missouri approximately ten miles from the City of Springfield, forty-five miles from Branson, and within a two-hour drive to the states of Oklahoma, Kansas, and Arkansas.*

*Republic began its existence in 1871 and soon thrived due in large part to the Frisco Railroad, which ran through town. Early accounts of the City indicate the existence of grain elevators within the City, a blacksmith shop and livery stable, as well as a tomato factory and cheese factory. A flourmill was built in 1890 and soon became the largest in the Middle West and carried the slogan "The World is our Field." It is unknown how the City achieved the name "Republic" but it is believed the first postmaster may have named the town. During 1904 and 1905, iron ore was mined and shipped from Republic's limekiln located south of town. Due to the fertile, gentle rolling land of this area, Republic became known as one of the major fruit producers in the Midwest, producing apples, peaches, grapes, strawberries, and tomatoes. As was common in southwest Missouri, many early citizens worked as strawberry pickers and shipped the fruit by railcar every season.*

*The City of Republic is fortunate to have a broad economic base. The City has several retail shops, grocery stores, factories, etc. Republic is a great place for locating a business due to the strong residential base, which provides a large pool of qualified, available work force. Republic is a pleasant place to work without the difficulties of traffic jams and limited parking. The City has no earnings tax and has ample quality office and retail space available. The City's close proximity to Springfield makes it desirable for many.*

*The City of Republic has an excellent school system that believes all students should be able to manage change, become lifelong learners, and participate in the democratic process. The City has been fortunate enough to strive toward a progressive future while at the same time keeping some of its traditional characteristics. While the City has seen extensive growth over the last few years, city officials are anticipating a steady, continued increase in its development.*

## COMMUNITY DEVELOPMENT DEPARTMENT

