Johnson County Building Codes

Effective 5/1/2011

Requirements for Roof Coverings

Roof coverings shall be applied in accordance with the applicable provisions of the 2006 IRC and 2006 IBC and the manufacturer's installation instructions.

Commercial roofing and re-roofing Requirements

• All Submittals shall be reviewed, sealed, and signed by a design professional registered in state of Kansas. (Drawings, cut sheet, manufacture specifications, product listing, etc)

• Description of the work and method of application for new roofing or, re-roofing shall be written clearly in detail for installation and inspection by the jurisdiction.

• Type of the construction and type of the occupancy and minimum roof covering fire classification in accordance with 2006 IBC chapter 15 shall be clarified and verified on the submittals.

• Foam plastic insulation used in roofing assembly shall meet 2006 IBC chapter 26.

• Fire resistance roof construction shall meet 2006 IBC Table 601. (note: By definition roof assembly consists of roof deck and roof covering, as defined in 2006 IBC section 1502)

• Combustible materials shall be permitted in buildings of type I, and II construction per 2006 IBC section 603.

• Proposed roof covering assembly shall be listed and listing design # by UL, FM, or any other approved agency shall be part of the submittals.

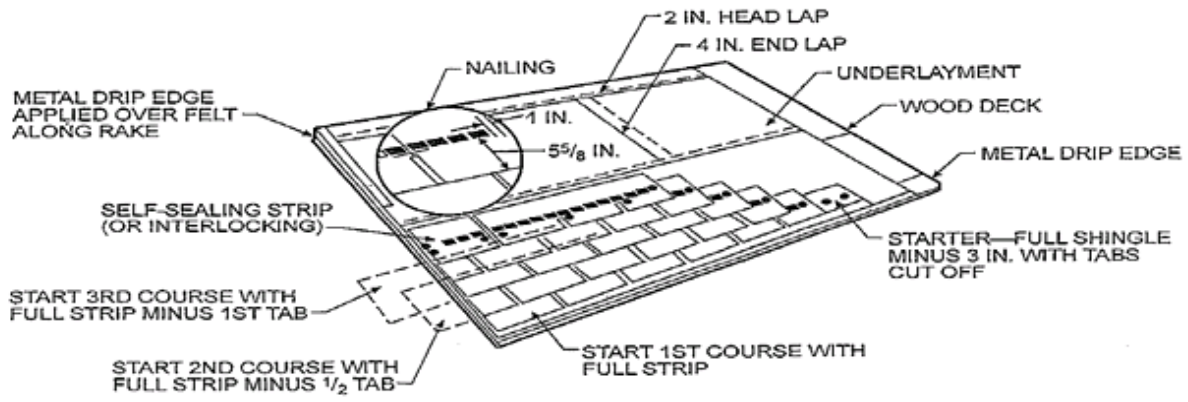
• All individual membrane in the roof covering assembly shall be listed and approved individually, by any approved agency (UL, FM, etc).

• Contractors may not create their own custom roof assembly using various individual component materials of their own choosing. Contractors may only submit full assemblies approved by UL, FM, or similar authorities for review and approval by a design professional registered in the State of KS. Final, sealed, submissions are then transmitted to the Johnson County Planning and Codes Office for final review and approval before roof construction begins.

Residential

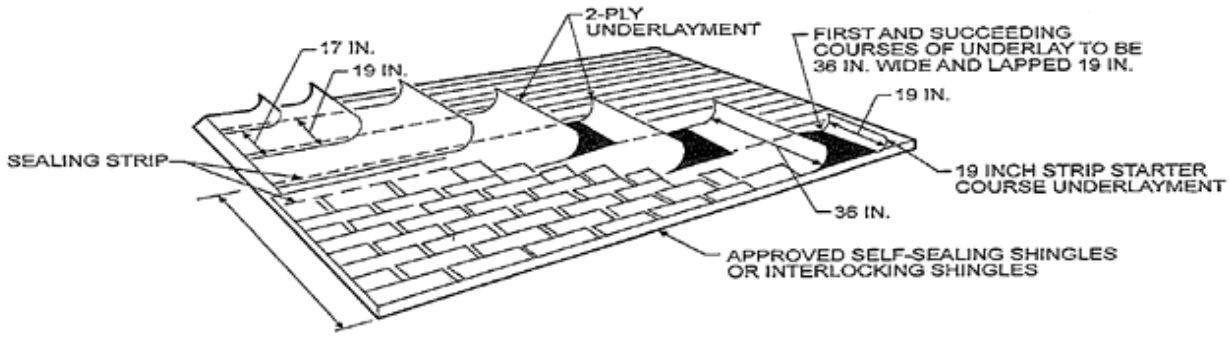
Ice barrier. An ice barrier (ice dam membrane) that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24" inside the exterior wall line of the building.

***Exception:** Detached accessory structures that contain no conditioned floor area.



For SI: 1 inch = 25.4 mm.

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

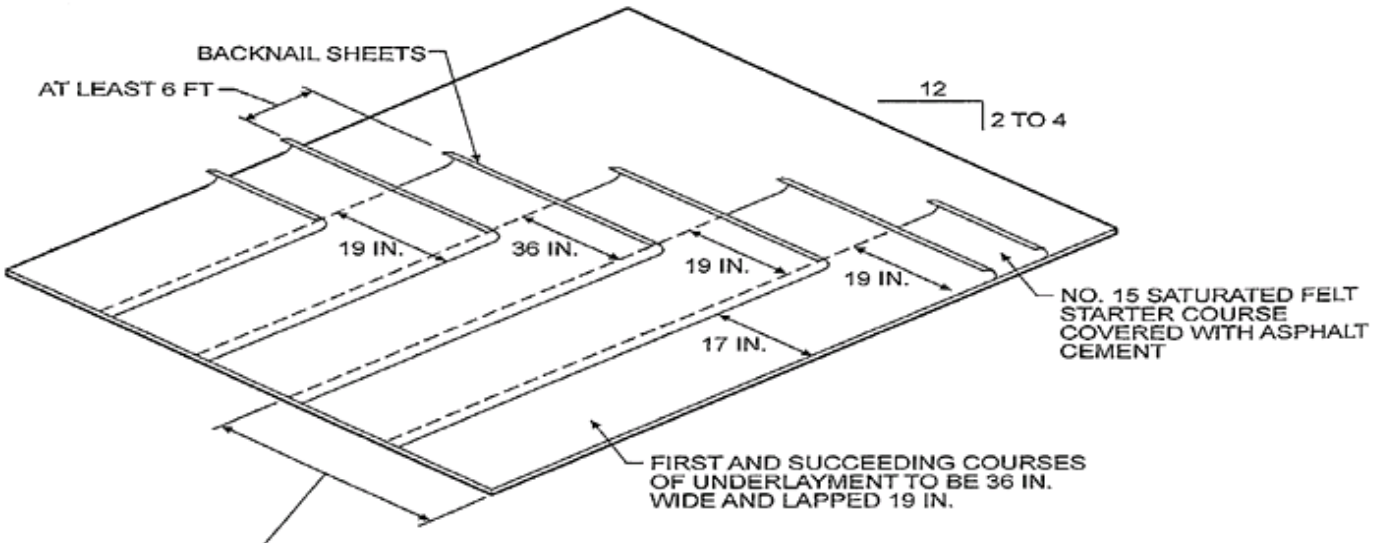


NOTE: IN AREAS WHERE AN ICE BARRIER IS REQUIRED, FELT PLIES OF UNDERLAYMENT SHOULD BE CEMENTED UP FROM THE LOWEST EDGE OF THE ROOF, FAR ENOUGH TO OVERLIE A POINT 24 IN. INSIDE WALL LINE OF THE BUILDING.

SOURCE NRCA

For SI: 1 inch = 25.4 mm.

Figure R905.2.2(2)
APPLICATION OF ASPHALT SHINGLE SLOPES BETWEEN 2:12 AND 4:12



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, °C = [(°F) - 32/1.8]

Figure R905.2.7
LOW-SLOPE DOUBLE-PLY UNDERLAYMENT APPLICATION

An ice dam protection membrane should be applied starting at a roof's eaves and extending upslope a minimum of 24 inches from the exterior wall line of a building. For slopes less than 4:12 (18 degrees), a minimum of 36 inches is recommended. See Figure 1.

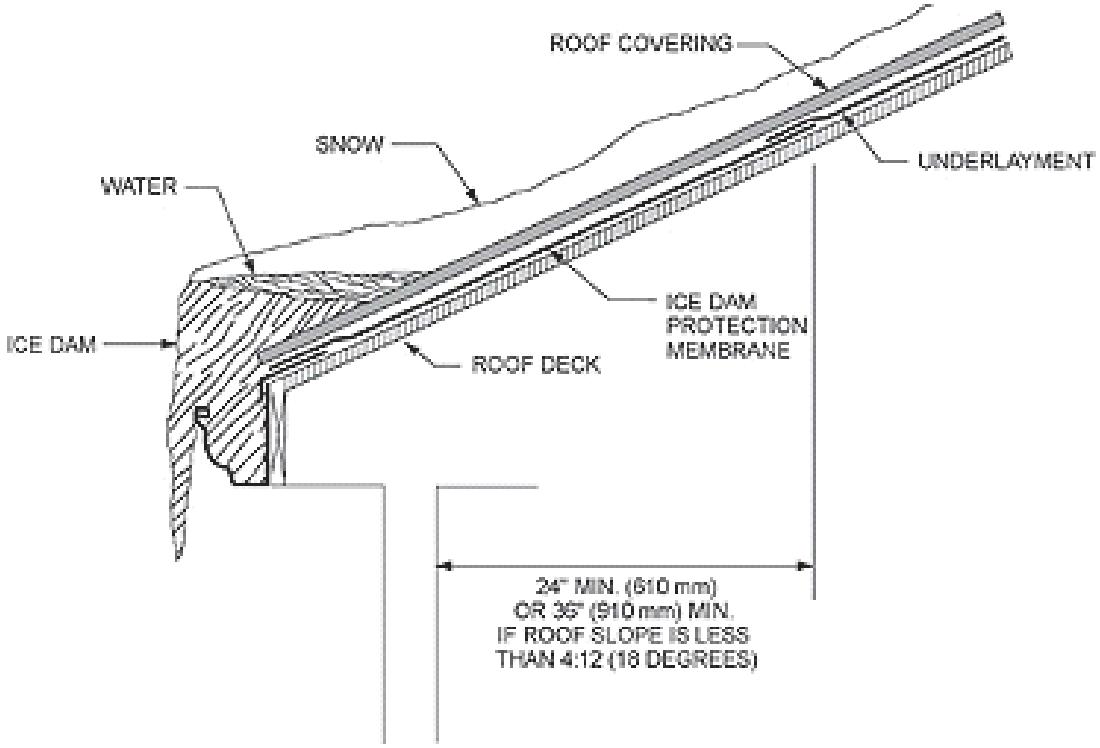


Figure 1 - Example of ice damming

SECTION R806

ROOF VENTILATION

R806.1 Ventilation required.

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. Ventilating openings shall be provided with corrosion-resistant wire mesh, with 1/8 inch (3.2 mm) minimum to ¼ inch (6 mm) maximum openings.

R806.2 Minimum area.

The total net free ventilating area shall not be less than 1/150 of the area of the space ventilated except that reduction of the total area to 1/300 is permitted, provided that at least 50 percent and not more than 80 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents. As an alternative, the net free cross-ventilation area may be reduced to 1/300 when a vapor barrier having a transmission rate not exceeding 1 perm (5.7 ´ 10-11 kg/s × m2 × Pa) is installed on the warm-in-winter side of the ceiling.

R806.3 Vent and insulation clearance.

Where eave or cornice vents are installed, insulation shall not block the free flow of air. A minimum of a 1-inch (25 mm) space shall be provided between the insulation and the roof sheathing and at the location of the vent.

R806.4 Conditioned attic assemblies.

Unvented conditioned attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) are permitted under the following conditions:

1. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.

2. An air-impermeable insulation is applied in direct contact to the underside/interior of the structural roof deck. “Air-impermeable” shall be defined by ASTM E 283.

Exception: In Zones 2B and 3B, insulation is not required to be air impermeable.

3. In the warm humid locations as defined in Section N1101.2.1:

3.1. For asphalt roofing shingles: A 1-perm (5.7 ´ 10-11 kg/s × m2 × Pa) or less vapor retarder (determined using Procedure B of ASTM E 96) is placed to the exterior of the structural roof deck; that is, just above the roof structural sheathing.

3.2. For wood shingles and shakes: a minimum continuous ¼-inch (6 mm) vented air space separates the shingles/shakes and the roofing felt placed over the structural sheathing.

4. In Zones 3 through 8 as defined in Section N1101.2, sufficient insulation is installed to maintain the monthly average temperature of the condensing surface above 45°F (7°C). The condensing surface is defined as either the structural roof deck or the interior surface of an air-impermeable insulation applied in direct contact with the underside/interior of the structural roof deck. “Air-impermeable” is quantitatively

defined by ASTM E 283. For calculation purposes, an interior temperature of 68°F (20°C) is assumed. The exterior temperature is assumed to be the monthly average outside temperature.

R905.2.8 Flashing.

Flashing for asphalt shingles shall comply with this section.

R905.2.8.1 Base and cap flashing.

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 (0.5 mm) thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (4 kg/m2). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.5 mm) thickness.

R905.2.8.2 Valleys.

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 valley (valley lining exposed) lined with metal, the valley lining shall be **at least 24 inches (610 mm) 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 (457mm) and the top layer a minimum of 36 inches (914 mm) wide.

3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 6380 Class S Type III, Class M Type II, or ASTM D 3909 and at least 36 inches wide (914 mm) or valley lining as described in Items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D 1970 may be used in lieu of the lining material.

TABLE R905.2.8.2

VALLEY LINING MATERIAL

MATERIAL	**MINIMUM THICKNESS (inches)**	**GAGE**	**WEIGHT** (pounds)
Cold–rolled copper oz. per square foot	0.0216 nominal	—	ASTM B 370, 16
Lead–coated copper oz. per square foot	0.0216 nominal	—	ASTM B 101, 16
High–yield copper oz. per square foot	0.0162 nominal	—	ASTM B 370, 12
Lead–coated high–yield copper oz. per square foot	0.0162 nominal	—	ASTM B 101, 12
Aluminum	0.024	—	—
Stainless steel —	—	28	
Galvanized steel	0.0179	26 (zinc coated G90)	—
Zinc alloy	0.027	—	—
Lead 21/2		—	—
Painted terne 20		—	—

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

R905.2.8.3 Crickets and saddles.

A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

R905.2.8.4 Sidewall flashing.

Flashing against a vertical sidewall shall be by the step-flashing method.

R905.2.8.5 Other flashing.

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.