

RESIDENTIAL ROOFING

GENERAL REQUIREMENTS - All code references are from the 2015 Minnesota State Residential Building Code. Roofing work requires a building permit which can be acquired at Coon Rapids City Hall. The City will then inspect the work to verify code compliance and proper material use and installation. Roofing materials are to be installed in accordance with the manufacturer's written installation instructions and the Minnesota State Building Code and must be present at all inspections.

PREPARATION - R907.3 Recovering versus replacement.

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 boards 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.
4. For asphalt shingles, when the building is located in an area subject to moderate or severe hail exposure according to Figure R903.5.

UNDERLAYMENT - Table 301.2(1) See footnote h. on ice barrier.

All dwellings, structures attached to dwellings, and all conditioned (heated and/or cooled) structures, require eave flashing to be installed at the eaves and extending on the roof to a point even with 24" past the inside wall line. This barrier shall consist of at least two layers of underlayment cemented together, or be a self-adhering polymer modified bitumen sheet (many times referred to as ice darn protection or ice and water shield). It must be installed the full length of all valleys. On roof slopes of 2/12 to 4/12 the remainder of the roof shall be two layers of 15# felt (applied in shingle fashion), or 1 layer of ice dam protection. On 4/12 or greater slopes, the balance of the roof shall be one layer of 15# felt.

VENTILATION - R806.2 Minimum vent area.

A roof requires ventilation to prevent attic heat build-up, attic moisture and condensation, weather infiltration, and ice dam build up. One square foot of net free ventilation area for each 300 square feet of attic space must be provided where roof and soffit vents are used together. The venting *should* be equally divided between roof vents and soffit vents.

APPLICATION - R905.1 Roof covering application.

All roofing materials must be installed per the manufacturer's instructions. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, each shingle strip shall have a minimum of four fasteners. Fasteners shall be of galvanized steel, stainless steel, aluminum, or copper roofing nails. The nails shall have a minimum 12 gage shank and a 3/8" diameter head. Fasteners must penetrate through the roofing material and a minimum of 3/4" into the roof sheathing. They must penetrate through the sheathing if the sheathing is less than 3/4". Fasteners shall be perpendicular and not penetrate the shingle surface.

FLASHING - 905.2.8 Flashing.

Flashing shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction, and around all roof openings. Flashing shall be provided per roofing manufacturer's instructions. Metal flashing shall be of not less than .019 inch (No. 26 galvanized sheet gage) corrosion resistant metal. Open valleys shall have a corrosion resistant metal liner at least 24 inches wide. Flashing against a vertical side wall shall be installed by the step flashing method. Kick-out flashing shall be used where the lower portion of a sloped roof stops within the plane of an intersecting wall cladding. A cricket or saddle shall be installed on the ridge side of any chimney greater than 30 inches wide.

INSPECTIONS

Typically, two inspections are required for a roof application: An eave flashing inspection to observe the placement of the ice dam protection and a final inspection. However, if there is a gap between the roof decking and the fascia that needs to be spanned, than this will need to be inspected as well. Call the Inspections Department to schedule your required inspections.

See Page 2 for illustrations.

CALCULATING THE PROPER NUMBER OF ROOF VENTS

ROOF VENTING WITH ADEQUATE SOFFIT VENTING

1. Determine the square foot imprint of the structure by multiplying length x width.
ie. $40' \times 24' = 960 \text{ sq. ft.}$
2. Multiply this number by .24 to get the number of square inches of required venting.
ie. $96 \text{ sq. ft.} \times .24 = 230 \text{ sq. in.}$
3. Divide the total required roof venting by the amount of venting (in sq. inches) provided by the type of vents you are using.
ie. $230 \text{ sq. inches} / 50 \text{ sq. inches (roof louvers)} = 4.6 \text{ vents.}$ Always "round up" your number to determine the final amount of vents needed.
 $4.6 = 5 \text{ total louver vents required.}$

ROOF VENTING WITHOUT SOFFIT VENTING or SOFFIT VENTING WITHOUT ROOF VENTING

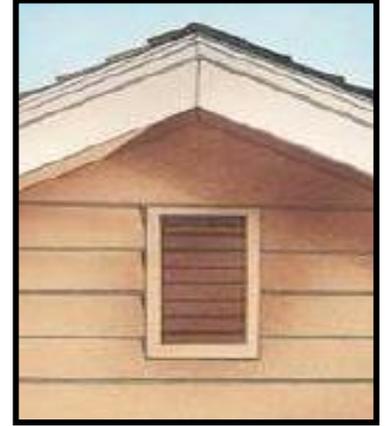
Follow the same formula; only multiply the square footage of the structure by .96 to get the number of square inches of required venting for the roof.

NOTE: IT IS 4 TIMES THE AMOUNT OF VENTING!



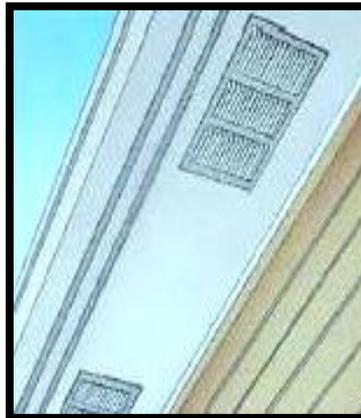
Wind turbine or "Whirlybird"

Typically sized at 12" circle or 122 sq. in.



Gable Vent

Typically sized adequately for the structure, but be sure the vents fully functioning



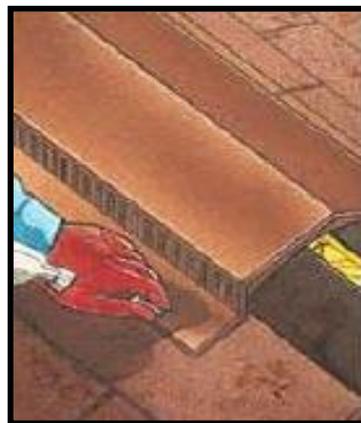
Soffit Vent

Commonly found now with 2 sizes of openings 3" x 14" & 7" x 14"



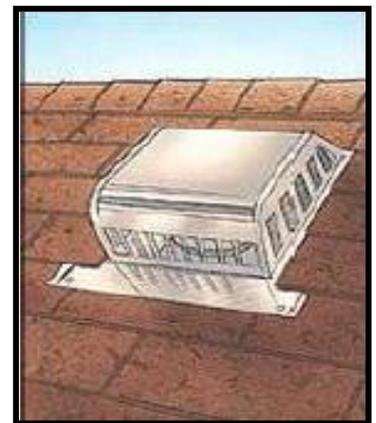
Continuous Soffit Vent

Like the ridge vent, if the opening is large enough, the venting may be more than required.



Ridge Vent

Depending on the size of the opening at the ridge and its length, this can provide 3 to 4 times the required venting.



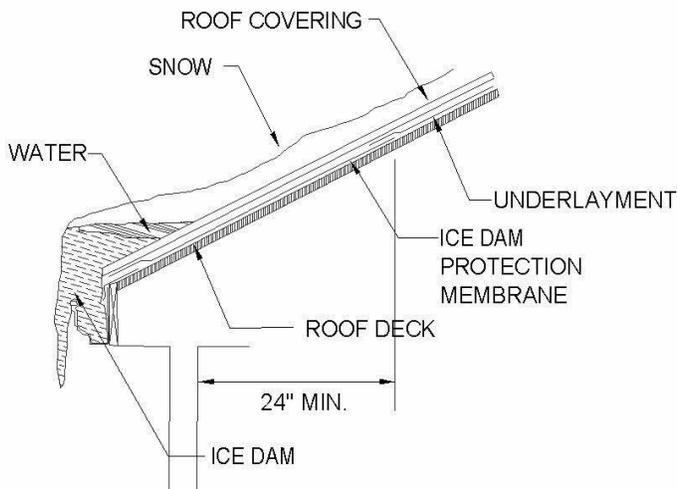
Roof Louvers or Slant Vent

Also known as "750" or "Turtle vent"
Typically sized at 50 sq. in.

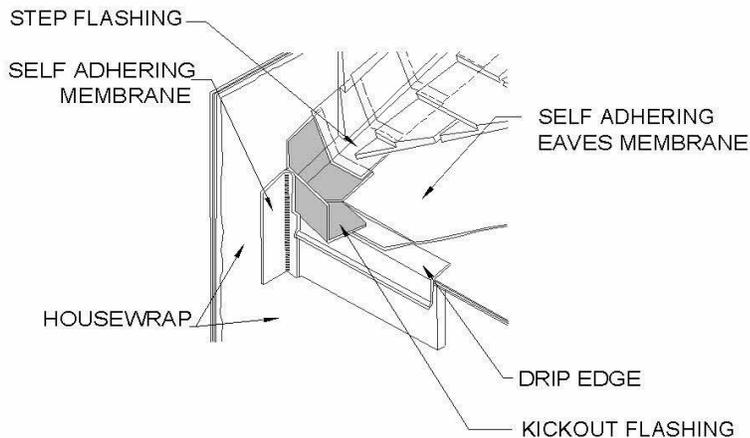
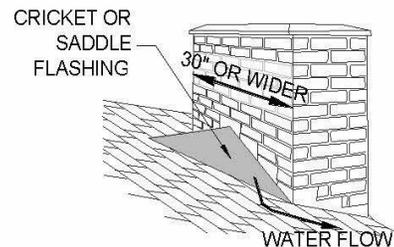
Ice and Water Shield (I & W)

Application Guide

Depth of Overhang	Horiz. Distance of area to be covered	4/12 pitch		5/12 pitch		6/12 pitch		8/12 pitch		10/12 pitch		12/12 pitch	
		Distance on roof of required protection	# of 36" Rows	Distance on roof of required protection	# of 36" Rows	Distance on roof of required protection	# of 36" Rows	Distance on roof of required protection	# of 36" Rows	Distance on roof of required protection	# of 36" Rows	Distance on roof of required protection	# of 36" Rows
1'	(3.5')	3' 8"	1.2	3' 10"	1.3	3' 11"	1.3	4' 2"	1.4	4' 6"	1.5	4' 11"	1.6
2'	(4.5')	4' 8"	1.5	4' 11"	1.6	5'	1.7	5' 5"	1.8	5' 10"	1.9	6' 5"	2.1
3'	(5.5')	5' 10"	1.9	5' 11"	2.0	6' 1"	2.0	6' 7"	2.2	7' 2"	2.4	7' 10"	2.6
4'	(6.5')	6' 10"	2.3	7'	2.3	7' 3"	2.4	7' 10"	2.6	8' 5"	2.8	9' 2"	3.1
5'	(7.5')	7' 11"	2.6	8' 1"	2.7	8' 2"	2.7	8' 7"	2.9	9' 8"	3.3	10' 7"	3.5
6'	(8.5')	8' 11"	3.0	9' 2"	3.1	9' 6"	3.2	10' 2"	3.4	11' 1"	3.7	12'	4.0
7'	(9.5')	10'	3.3	10' 4"	3.4	10' 7"	3.5	11' 5"	3.8	12' 5"	4.1	13' 5"	4.5
8'	(10.5')	11' 1"	3.7	11' 5"	3.8	11' 8"	3.9	12' 7"	4.2	13' 7"	4.5	14' 10"	4.9
9'	(11.5')	12' 1"	4.0	12' 5"	4.1	12' 10"	4.3	12' 10"	4.6	13' 10"	5.0	16' 2"	5.4
10'	(12.5')	13' 1"	4.4	13' 6"	4.5	14'	4.6	15'	5.0	16' 4"	5.4	17' 7"	5.9
12'	(14.5')	15' 4"	5.1	15' 8"	5.2	16' 2"	5.4	17' 5"	5.8	18' 11"	6.3	20' 6"	6.8
14'	(16.5')	17' 5"	5.8	17' 11"	5.9	18' 5"	6.1	19' 10"	6.6	21' 5"	7.1	23' 4"	7.8
16'	(18.5')	19' 6"	6.5	20'	6.7	20' 8"	6.9	22' 2"	7.4	24' 1"	8.0	26' 2"	8.7



CHIMNEYS REQUIRE A SADDLE FLASHING (CRICKET) WHEN THEIR WIDTH IS 30" OR MORE. THE SADDLE FLASHING CAN BE METAL OR BE COVERED WITH ROOFING MATERIAL



DAMPED VENTS ARE REQUIRED ON ALL KITCHEN AND BATHROOM FAN ROOF EXHAUSTS