



ASPHALT SHINGLE ROOFING

GENERAL REQUIREMENTS

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 manufacture's written installation instructions and the Minnesota State Building Code.

PREPARATION

It is **required** that existing roofing be removed prior to any re-roof. **LAYOVER – RE-ROOFING IS NO LONGER ALLOWED.** Missing, rusted or damaged flashing, vent caps and metal edging shall be replaced with new material. Roof decks, (or sheathing), should be inspected for damage or deterioration prior to the application of the new roofing materials.

UNDERLAYMENT

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 dam 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

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

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 four fasteners, and two fasteners per individual shingle. **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

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**. Call the Inspections Department to schedule your required inspections.

See other sides for Illustrations

ROOF VENTING

To provide proper venting: know how to calculate the amount of venting required, and the amount of venting provided by the vents you are using.

ROOF VENTING WITH ADEQUATE SOFFIT VENTING

1. Determine the square foot imprint of the structure. (Multiply 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. $960 \text{ sq. ft.} \times .24 = 230 \text{ sq. in.}$
3. Divide the total required roof venting by the amount of venting (in square inches) provided by the type of vents you are using. ie. $230 \text{ sq. in.} / 50 \text{ sq. in. (roof louvers)} = 4.6 \text{ vents.}$ Always “round-up”. Therefore 5 roof louver vents are required.

ROOF VENTING WITHOUT SOFFIT VENTING (OR SOFFIT VENTING WITHOUT ROOF VENTING)

Follow the same procedure; 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!**



Roof Louvers or Slant Vents
Also “750” or “Turtle”
Typically - 50 sq. in.



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



Wind Turbine or “Whirlybird”
Typically – 12” circle or 122 sq. in.



Gable Vents
Typically sized adequately for the structure, but be sure the vents function fully.



Soffit Vents
Commonly found now with 2 sizes of openings: 3” x 14” & 7” x 14”



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

Ice and Water Shield Requirements

Ice and Water shield: The Minnesota State Building Code requires:

*For roofs with a pitch of 4/12 or greater:

Ice and water shield applied to a distance on the roof decking that equals 2' past the interior side of the exterior wall beneath it.

*For roofs with a pitch of 2/12 to less than 4/12:

Ice and water shield applied to the entire roof decking or 2 layers of underlayment felt applied as described in the code.

*For roofs with a pitch less than 2/12: Asphalt shingles may not be used. See the code for further requirements.

Venting

Venting for most house attics is provided by the combined use of both soffit and roof vents.

The code calls for this level of venting;

1. When **roof** vents are used **alone**: the code requires **1 square foot of venting for each 150 square feet** of building imprint. Be sure to know the level of venting provided by the vents you are using.
2. When **roof** vents are used **with soffit** venting: the code requires **1 square foot of venting for each 300 square feet** of building imprint with the roof venting providing at least 50%, but no more than 80%, of the venting. Remember, if more soffit venting is required, it is the responsibility of the contractor to provide it at the soffit area or provide more venting on the roof.
3. Determining level of venting: To determine the structure imprint, simply measure the width and length of the structure and multiply the 2 measurements.

Example:

A structure having a width of 24' and a length of 40' would have an imprint of: 24' X 40' = 960 square feet, and would require:

With 50% Soffit Venting

Roof Louver or "750" or "Turtle" vents: **5 vents**

Wind Turbines or "Whirlybirds": **2 vents**

Ridge Vent: (with 2" opening on both sides of the ridge): Would provide **5 times the required venting.**

With No Soffit Venting

Roof Louver or "750" or "Turtle" vents: **19 vents**

Wind Turbines or "Whirlybirds": **8 vents**

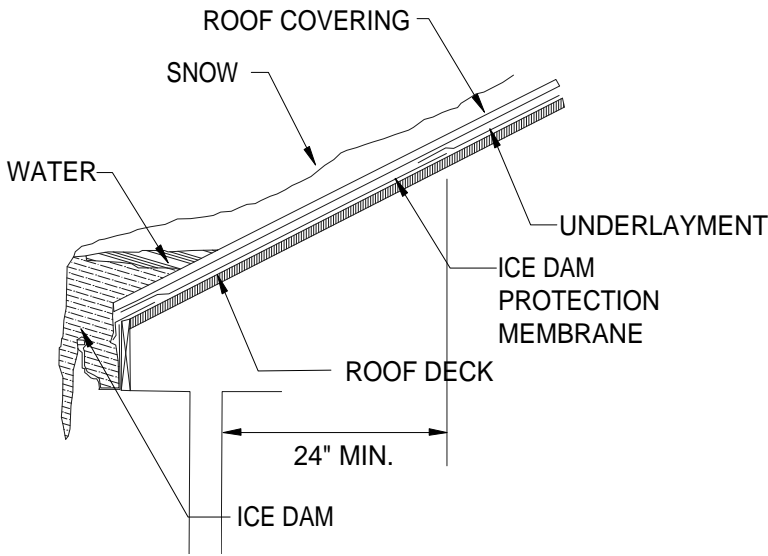
Ridge Vent: (with 2" on both sides of the ridge): Would provide **1.2 times the required venting.**

Remember: All roofs located over enclosed spaces (ie. any roof with a ceiling beneath it) **shall have cross ventilation for each separate space. Check to see if the garage has a ceiling.**

Ice and Water Shield (I & W)

Application Guide

| Depth of Overhang | Horiz. Distance of area to be covered | 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 |
|-------------------|---------------------------------------|---|---------------|---|---------------|---|---------------|---|---------------|---|---------------|---|---------------|
| | | 4/12 pitch | | 5/12 pitch | | 6/12 pitch | | 8/12 pitch | | 10/12 pitch | | 12/12 pitch | |
| 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

