

Roofing at single-family and two-family dwellings

Roofing and re-roofing with asphalt shingles

The information in this handout is intended for use as a reference when performing roofing and re-roofing work using asphalt-based shingles on one-family and two-family residential structures with sloped roofs. In addition to the information in this handout, refer to the shingle manufacturer's installation instructions which must also be followed. If there is a discrepancy between the code and the manufacturer's installation instructions, the more restrictive provisions will apply.

The code requirements for roofing of one-family and two-family dwellings can be found in Chapter 9 of the 2015 Minnesota Residential Code (hereafter referred to as "the code") which adopts and amends the 2012 International Residential Code. This handout is a summary and is not intended as a complete list of all code requirements.

Roof slope

The code requires a roof slope (rise divided by run) of 2:12 or greater for asphalt shingles. However, asphalt roofs sloped between 2:12 and 4:12 will require double-underlayment protection (see Underlayment section below).

Roof sheathing/decking

The code requires that asphalt shingles be fastened to solidly sheathed decks or 1-inch-thick nominal (3/4" actual) wood boards. The code does not define "solidly sheathed" but most shingle manufacturers have requirements that allow for the use of plywood, OSB and the wood boards mentioned above. However, many don't allow their shingles to be installed on wood boards wider than 6" nominal (5 1/2" actual) due to excessive splitting that can occur which reduces nail holding capability. Also, many require maximum board spacing between the seams to be 1/8" to ensure the shingle nails don't miss the boards. Always refer to the shingle manufacturer's installation instructions for these requirements.

Recovering (overlays) vs. replacement

The code allows for roof overlays over one existing layer of roof covering under the following conditions:

- The existing roof or roof covering is not water-soaked or deteriorated to the point that it does not provide an adequate base for additional roofing.
- No overlays allowed over existing wood shakes, slate, clay, and cement or asbestos-cement tiles.
- The installation is acceptable by and completed according to the shingle manufacturer's instructions, which often require shingles to be installed over relatively smooth, even surfaces.

Underlayment

Underlayment (also known as roofing felt or tar paper) provides secondary protection to the roof deck and is typically an asphalt-saturated felt that is placed on the roof sheathing before installing shingles. The code requires the underlayment to meet specifications established by the American Society of Testing and Materials (ASTM):

- ASTM D 226 Type I (No. 15 asphalt felt), or
- ASTM D 4869 Type I (organic asphalt felt used on steep slope roofs), or
- ASTM D 6757 (inorganic asphalt felt used on steep slope roofs)

Underlayment may also be a self-adhering polymer modified bitumen sheet (also known as ice and water barrier). This type of underlayment is often used (and required, see below) at the roof eaves and in valleys to help minimize damage from ice dams. Many shingle manufacturers require their own type of self-adhering underlayment and specify where it should be used. It must comply with ASTM D 1970.

Ice barrier

Minnesota's climate is considered severe with respect to underlayment requirements. Therefore, ice barrier protection is required except in detached accessory buildings that have no conditioned floor area:

- The ice barrier shall consist of two layers of underlayment (approved felt) cemented together or a single layer of self-adhering polymer modified bitumen sheet (ice/water barrier). Whichever product is used, it must be installed parallel to and extend from the eave edge to a point at least 24 inches inside the exterior wall line.
- After installation of the ice barrier, install remaining underlayment as follows:
 - For roof slopes of 2:12 up to 4:12, the underlayment shall be two layers of approved felt. Apply the first course of underlayment by lapping over the ice barrier a minimum of 19" and install successive courses with a minimum 19" lap over the previous course. End laps shall be offset a minimum of 6 feet.
 - For roof slopes of 4:12 or greater, the underlayment shall be one layer of approved felt. Apply the first course of underlayment by lapping over the ice barrier a minimum of 2" and install successive courses with a minimum 2" lap over the previous course. End laps shall be offset a minimum of 6 feet.

Flashing

Existing flashing shall be replaced when rusted, damaged or deteriorated. Base and cap (counter) flashings shall be installed according to the shingle manufacturer's instructions.

Roofing tar or asphalt shall not be used in lieu of approved flashing

Some locations where flashing must be installed are around roof penetrations such as vent pipes and chimneys, in valleys, and at wall and roof intersections. A kick-out or diverter flashing shall be installed to divert the water away from where the eave of a sloped roof intersects a vertical sidewall. The kick-out flashing is only required for new construction and when simultaneously re-roofing and re-siding the building, but not when only re-roofing.

Drip Edge

Drip edge is not required by code unless specifically required by the shingle manufacturer's installation instructions.

Chimney Crickets

Chimneys shall be provided with crickets when the dimension of the chimney parallel to the ridgeline of the roof exceeds 30" and the chimney does not intersect the ridgeline. The intersection of the cricket and the chimney shall be flashed in the same manner as normal roof-chimney intersections.

Fasteners

Fasteners shall be of corrosion resistant roofing nails and long enough to penetrate the roof sheathing a minimum of ¾" or through the thickness of the sheathing. Fasteners shall comply with ASTM F 1667.

Attachment

Asphalt shingles shall have the minimum number fasteners required by the manufacturer, but not less than four fasteners per strip shingle.

Roof/Attic Ventilation

Attics should be vented to allow heat and moisture to escape the attic space and may help to reduce the formation of ice dams and buckling of shingles. There are specific code requirements for attic ventilation in new construction that this handout does not address. Some existing homes may not have adequate ventilation to meet the new construction requirement, however it is not required to add more ventilation to an existing home when re-roofing.

Permits and Inspections

A building permit is required for all re-roofing work, except repairs involving less than one bundle of shingles (33 1/3 square feet of roof area).

If repairs are needed to the roof framing system (rafters or trusses), an additional permit and a framing inspection are required.

An underlayment and/or ice barrier inspection is not required. Photos may be taken by the installer but are not required to be submitted or posted for inspection purposes.

An additional inspection may be requested when re-sheathing but is not required and is based on the inspector's availability.

A final inspection is required when the work is complete. The name and telephone number of the area building inspector is on the building permit; call the inspector with questions not addressed on this handout or to schedule an inspection.

For information regarding obtaining a permit or to print a permit application, visit our web site at: www.ci.minneapolis.mn.us/mdr or call Minneapolis 311 (if outside the Minneapolis city limits call 612- 673-3000).