Steep Slope Roofing

Rooftop Quality Assurance

8 IIBEC Continuing Educational Hours
8 AIA Learning Units and HSW Credit

Version 09.19.07
Steep Roofing

➢ Prepared Roof Coverings:
  • Factory Produced
  • Application Instructions on Wrapper
Resources:

- Manufacturers
- Trade Associations (CRCA, CASMA, NRCA)
- IIBEC
- CMHC, CCMC
- Underwriters Laboratories
- Building Codes
Steep Roofing

➢ Prepared Roof Coverings (UL®)
  • Asphalt-Organic Shingles
  • Asphalt-Glass Shingles
  • Modified Asphalt Glass Shingles
  • Wind-Resistant Organic, Glass or Modified Shingles
  • Some Roll Roofing Products, e.g., Split sheet mineral surfaced roofing
Other Prepared Roof Coverings (UL®)

- Fiber Cement
- Formed Aluminum, Steel or Copper Shingles
- Molded Reinforced Plastic Shingles
- Steel Tiles or Panels
- Photovoltaic Modules/Shingles
- Reinforced Cast Stone Shingles
Prepared Roof Coverings (ULC)
Roof Coverings - CCMC

➢ CCMC evaluates innovative products
➢ Determines their compliance with the requirements of the Code
➢ Determines if they are suitable for intended use
Other Prepared Roof Coverings

➢ Wood Shakes and Shingles
➢ Clay and Concrete Tile
➢ Slate
Fire Tests of Roof Coverings

- Class A, B, C rating required in Part 3, NBC
- Applies to buildings greater than 2 storeys in height
- Applies to buildings greater than 1000 m² (10,700 ft²)
Steep Roofing

Building Code Requirements

- NBC - Part 9, Section 9.26 - Roofing
- 9.26.2.1. – Material Standards
  - Lists 20 CGSB and/or CSA standards for different roofing materials.
  - If a product is governed by one of these standards, it must meet the standard’s requirements.
  - eg - CAN/CSA 123.5 Asphalt Shingles Made of Glass Felt
- CCMC Approvals exist for products that do not “fit” into one of the listed standards
- Most standards do not include fire resistance testing
Fire Requirements

Only rated when deck and underlay requirements are followed.
Fire Rating – Shingles

- Fiberglass usually Class A, with specified underlayment
- Organic Shingles usually Class C
- Metal Shingles or Treated Cedar with Gypsum Underlay can achieve Class A rating
Fire Rating – Shingles

- Verify that label is correct per Canadian specifications
- Verify Deck and Underlayment are in compliance with ULC approval
- Put copy of label into roof file
## Warranties

**IKO Industries Ltd.**
**Limited Warranty Information for Asphalt Shingles**

<table>
<thead>
<tr>
<th>Date of Installation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/31/2022</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status</th>
<th>причин</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td></td>
</tr>
</tbody>
</table>

Complete and return to your local IKO office by 12/31/2023.
Steep Roofing

CRCA 2000-2001 Annual Market Survey

- Organic Shingles: 43.10%
- Metal: 22.70%
- FG Shingles: 15.70%
- Other: 16.30%
- Slate: 0.40%
- Clay: 0.20%
- Concrete: 0.20%
- Wood: 1.40%
Steep Roofing

- Safety
- Codes & Insurance
- Application Procedures
- Decking
- Ventilation
Safety

➢ Fall Protection

Safety Harnesses
Toe Boards
Ladders and Scaffolding
Pressure Treated Wood

CCA (arsenic containing) treated wood no longer available.
Pressure Treated wood now treated with ACQ, which may be more corrosive
Design and Product Information

- Test Methods referenced in material specifications
- Design and Application Information available from Trade Associations and Manufacturers
Compliance

Glass Mat Shingles

Class A Asphalt Shingles

Wind Resistance of Asphalt Shingles

This product is manufactured to meet or exceed the following standards; values from subsequent testing may vary depending on storage conditions:

ASTM D3462
ASTM D3018
ASTM D3161
CSA 123.5-M90
CSA 123.5-98

ASTM and Canadian Standards
Avoid Color Variation

➢ Use same batch or lot number on single side of roof
# Underlayment Requirements

<table>
<thead>
<tr>
<th>Underlayment</th>
<th>Roof Slope 2 ½ /12 to 4 /12</th>
<th>Roof Slope 4 in 12 and up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>minimum Bakers RF 200</td>
<td>approved ice and water protection in valleys min. 1 ft. into eave heated section (usually peel &amp; stick)*</td>
</tr>
<tr>
<td></td>
<td>Baneski self seal membrane over entire roof, or fail approved low-slope roofing system installed under the tile.</td>
<td>main roof underlay: min. #30 felt as per CSA 123.3 or upgrades such as approved: polypropylene, base sheet, peel and stick, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extend underlayment 20mm (3/4&quot;) past eaves, 100mm (4&quot;) head lap, 150mm (6&quot;) side laps, 200mm (8&quot;) up abutment walls (on new construction), lap all ridges and hips min. 150mm (6&quot;).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mark location of all trusses on every membrane layer for counter-strapping.</td>
</tr>
</tbody>
</table>

## Underlayment

The use of underlayment is mandatory under tiles and Glass-based Shingles, as well as under all other shingles if you want to meet fire-resistant ratings. See Table 1 for underlayment requirements for BP Shingles.

The purpose of shingles is to shed water wind will periodically drive rain under shingles. Thus even after an underlayment is optional, its use as a complete roof deck is strongly recommended to specification. problems.

Underlayment consists of No. 15 Asphalt Felt (Palm or BP Standard Asphalt Shingles). Underlayment in the U.S.A. must be installed under the deck and must be applied over the entire roof deck. When Fano maintains a行走 or Prepaid Plan is installed, underlayment should overlap it by 4" (10 cm). Seal sufficiently to hold in place until shingles are applied. Overlap the succeeding courses 3" (5 cm). See Diagram 9. End laps should be a minimum of 4" (10 cm). End laps should be at least 6" (15 cm) from the hips, valleys or ridge.
Asphalt Shingle Standards

➢ Material Standards
  • CSA A123.1, Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules
  • CSA A123.5, Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
Asphalt Shingle Standards

- Application Standards
  - CSA Standard A123.51-M, Asphalt Shingle Application on Roof Slopes 1:3 and Steeper
  - CSA Standard A123.52, Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3
INSTALLATION OF ASPHALT SHINGLES ON LOW SLOPED ROOFS

Asphalt shingles are an effective roof covering material for sloped roofs. They can be successfully used on "low sloped" roofs as well as steeper pitches. Typically any roof slope less than 4:12 (i.e. 4" of vertical rise for every 12" of horizontal run, or 18.5°) is considered a low sloped roof. Asphalt shingles can be successfully applied to these lower slopes, providing a few special application procedures are followed. Asphalt shingles should never be applied to roof slopes below 2:12 (8.5°).

➢ Strip shingles may be used on low slope roofs if applied in accordance with CSA A123.52
Hail Ratings

➢ Hail damage to shingle roofs costs insurance companies millions $ each year
Hail Ratings

Three test methods to determine hail impact resistance

• UL Standard 2218, Impact Resistance of Prepared Roof Covering Materials
• ASTM D-3746, Standard Test Method for Impact Resistance of Bituminous Roofing Systems
• FM 4470 Approval Standard for Class 1 Roof Covers, 5.3 - Hail Resistance
Hail Ratings

- Each test method involves dropping steel missiles (balls) on to the roof cover to simulate hail.

<table>
<thead>
<tr>
<th>UL 2218</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Impact Energy (Joules)</td>
</tr>
<tr>
<td>1</td>
<td>4.6</td>
</tr>
<tr>
<td>2</td>
<td>9.8</td>
</tr>
<tr>
<td>3</td>
<td>18.3</td>
</tr>
<tr>
<td>4</td>
<td>31.2</td>
</tr>
</tbody>
</table>

50 mm (2") hailstone = 30J)
Each test method involves dropping steel missiles (balls) on to the roof cover to simulate hail.

<table>
<thead>
<tr>
<th>ASTM D-3746</th>
<th>Impact Energy (Joules)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 mm steel ball</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FM 4470</th>
<th>Impact Energy (Joules)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 - SH</td>
<td>19</td>
</tr>
<tr>
<td>Class 1 - MH</td>
<td>10.8</td>
</tr>
</tbody>
</table>
Reduction in Homeowner Insurance

➢ Discounts on insurance premiums offered in U.S.
• At least one insurance company offers discounts in Alberta

State Farm web site:
www.statefarm.com/consumer/roofinginfo/roofinginfo.htm#roofprod
Hail Resistance

➢ Some manufacturers of brittle shingles (Cement and Clay Tile) object to the use of a steel ball such as used in the UL tests. They recommend ice spheres instead.

➢ ASTM joint task force conducting round-robin tests to evaluate different hail (impact) test methods.

➢ Check with insurance and code officials for hail impact resistance requirements
Wind Resistance

- Tests are carried out on fully sealed shingles, in a carefully controlled laboratory environment
Wind Resistance

➢ For high wind areas,
  • Generally requires additional fastening, i.e., 6 nails instead of 4
  • Hand-tabbing of eave and ridge shingles, when roof is installed in autumn or winter
  • Wind velocities available from NBC, WIND RCI
Wind Resistance

• UL 2390, Test Method for Wind Resistant Asphalt Shingles with Sealed Tabs
• UL 997 Wind Resistance of Prepared Roof Covering Materials
• ASTM D7158, Standard Test Method for Wind Resistance of Sealed Asphalt Shingles
Steep Roofing

➢ Decking
➢ Underlayments
➢ Flashing
➢ Venting
Steep Roofing

➢ Decking
  • Continuous
  • Spaced Sheathing
Steep Roofing

➢ NBC 9.23.15.7 requirements for sheathing:
   • Table 9.23.14.5A for thickness - flat roofs
   • Table 9.23.15.7A for thickness - sloped roofs
   • Long dimension across supports
   • Fully supported with blocking or H-clips
Steep Roofing

➢ Spacing and Support

Warning: Roof sheathing may be extremely slippery when wet, covered with frost, snow, ice or sawdust. Installers of roof sheathing should wear rubber-soled footwear and exercise caution, especially on roof slopes exceeding 4 in 12. Based on recent studies, soles of thermoplastic rubber provide the best traction of the sole materials tested. Place screened surface of panel face up.

Note: Panels that get wet should be allowed to surface dry before applying shingles. Protect uncoated edges from direct rain exposure.
Fasteners:

- ACQ (Alkaline Copper Quaternary) - treated wood much richer in copper salts
- Recommended fasteners should be Hot-dipped galvanized or Stainless Steel, *not* electroplated fasteners.
Steep Roofing

➢ Underlayment and drip edges
Underlayments


1. When underlay is used beneath asphalt shingles
   (a) Asphalt-saturated sheathing paper weighing not less than 0.195 kg/m² (0.04 lbs/ft²)
   (b) No. 15 plain or perforated asphalt felts

2. Underlay used beneath wood shingles shall be breather type
Steep Roofing

- Overlapping underlayment
Eave Protection - Ice dams

- Caused by heat loss and/or ineffective ventilation
- Managed with eave protection membrane
Eave Protection - Ice dams

Part 9, NBCC, requires eave protection to extend up the slope a minimum of 900 mm (3 ft.) and no less than 300 mm (12”) horizontally over the inside face of the exterior wall.
Eave Protection

- **Drip edge**
- **Underlayment**
- **Deck**
- **Self-adhered eaves and flashing membrane**
- **Nails**
- **Eaves and flashing membrane applied to a point at least 600 mm beyond interior wall line**
- **Wall line**
- **Flashing membrane overhangs drip edge 6 to 19 mm**
- **50 mm top lap located in front of exterior wall line and cemented**
Self-Adhesive Eave Protection

- Conform to CSA A123.22, (adoption of ASTM 1790 with Canadian deviations)
- Glass reinforced MB with a coating of self-adhesive bitumen
  - Typically 1.5mm thick, sanded top surface
- Rubberized asphalt and polyethylene film
  - Typically 1mm thick material
- Available in high temperature grade (for use under dark metal roofs)
Eave Protection

➢ Self-adhering Modified Bituminous Underlay
➢ Conform to CSA A123.22, ASTM D 1970
Eave Protection as Underlayment
Eave Protection

Application of No. 15 Asphalt Saturated Felt Underlay as Eave Protection
(For Slopes 1:3 or greater)
Eave Protection

Application of Type M or S Roll Roofing as Eave Protection
Underlayments

➢ Synthetic underlayments
  • Various Synthetic Fiber Mats
  • No standard specifications referenced in NBCC (2005)
  • ASTM D 6757, Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing
  • May not be ULC?UL classified
  • Ask for CCMC evaluation report
Steep Roofing

- Decking
- Underlayments
- Flashing
Steep Roofing - Flashing

Proper Eaves Details for Asphalt Shingles

R. L. Corbin

Preparation of Roof Deck

It is obvious that a well constructed building begins with a good foundation. What may be less obvious is that a well constructed asphalt shingle roof begins with proper application of the deck. Waterproofing is especially important where cold weather conditions exist (January temperature of 23 degrees Fahrenheit or colder) or in warm, rainy climates where wind, rain and other forces assault along the eaves, creating a climate similar to that of ice and snow.

In order to guard against the ravages, begin by preparing the roof deck properly. To prevent moisture from entering the building, first install a drip edge along the lower leading edge of the deck. This drip edge can be made of a 1-inch diameter pipe or sheet metal. Second, install a strip of aluminum or steel flashing directly over the deck. This strip should be at least 12 inches wide, and its top edge should be at least 24 inches above the eaves. Then, install the decking, making sure it is securely fastened to the structure.
Critical Areas for Steep Roofing Systems
Valleys

Valley will have lower slope than either of the intersecting deck planes.
Valley Flashing Types

- Open Valley
  - uses metal or granule-surfaced sheet as the water channel

- Woven Valley
  - Overlaps the shingles from both intersecting planes

- Closed-Cut Valley
  - Carries shingles from one plane at least 12” beyond valley centerline and overlaps them on a cut line with the shingles from the second plane
Open Valley - Metal
Open Valley – Roll Roofing
Closed Cut Valley
Closed Cut Valley
Woven Valley

- Valley centreline
- Full width roll roofing Type S
- Underlayment
- Extend end shingle at least 300 mm beyond valley centreline
- Extra nail in end of shingle
- No nails within 150 mm of centreline
Valley Flashings

Figure 13d: Valley Product Application

1. Stop course line here.
2. Place pre-cut piece so that cut-angle is positioned on the valley guide chalk line with tip on course line.
3. Select product of the required width to complete the course of Certi-label shakes or shingles.

Text and images Copyright 2001 Cedar Shake and Shingle Bureau
# Metals used in Flashings

➢ NBCC, 9.26.4.2, flashing materials

<table>
<thead>
<tr>
<th>Type</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet Lead</td>
<td>1.73 mm</td>
</tr>
<tr>
<td>Galvanized Steel</td>
<td>0.33 mm</td>
</tr>
<tr>
<td>Copper</td>
<td>0.33 mm</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.35 mm</td>
</tr>
<tr>
<td>Aluminum</td>
<td>0.48 mm</td>
</tr>
</tbody>
</table>
Valley Flashings

Inverted Vee

.55mm (24 ga 16 oz.) Copper or .45 mm (0.018") Stainless recommended.
Saddles
Valley Metal for Cement and Clay Tile

Option #1
Horizontal Batten over Metal

Option #2
Horizontal Batten Under Metal

Blind-nail metal along upper end or use metal clip

Optional 38 mm wide metal clip
Step Flashings
Step Flashing

- Finish siding serves as counter flashing.
- 100 mm up wall.
- Step flashing (with 35 mm headlap).
- Nail.
Special Juncture at Base
Flashing at Headwall
Pipe Flashing-1

Underlayment

Shingle cut to fit over pipe and set in asphalt plastic cement
Pipe Flashing-2

Preformed flange placed over pipe and set in asphalt plastic cement

Bead of asphalt plastic cement between pipe and flange
Pipe Flashing-3

Lipper and side shingles overlap flange and are set in asphalt plastic cement.

Lower part of flange overlaps lower shingles.
Pipe Flashing – Wood Shingles

- Keep edge of flange 50 mm minimum from edge of shingle joint
- Typical Projection Flashing
- 25 mm min. clearance around projection
- Nails should not penetrate flashing flange underneath

- Counter flashing
- Jack
- Plumbing stack
- 50 mm
- 100 mm
Pipe Flashing-Concrete Tile
Check List
Concrete Tile

➢ CAN/CSA –A220.0-M91, Performance of Concrete Roof Tiles
➢ CAN/CSA-A220.1-M91, Installation of Concrete Roof Tiles
Check List
Concrete and Clay Tile

- Decking: 25 mm (1”) nominal lumber or 0.47 mm (15/32”) plywood/OSB
- Underlay: D226 Type II (30 lb) or D 4869 Type IV
- Battens: Nominal 25 mm x 50mm (1” x 2”)
- Eave Treatments: Bird Stop/Eave Riser
- Valley flashing: 26 ga G90, 600 mm (24”) wide
- Wall Trays (Pans) G90, min 150 mm (6”) trough
- Pipe flashing (profile) 2-1/2 lb lead or dead soft aluminum
Check List
Cedar Shakes and Shingles

- Spaced Strapping: 25 x 100 mm (1”x4”) or 25 mm x 150 mm (1”x6”) softwood, spaced to match exposure
- Use solid sheathing 300 to 600mm x (12” to 24”) inside wall line
- Solid Sheathing: OSB or Plywood
- Underlay: Shingles—not common, but breathing felt may be used.
- Shakes: Felt Interlay required
- Valley flashing: Center crimped, painted galvanized or aluminum
Cedar Shingles and Shakes
Fasteners for Wood Shingles and Shakes

- Nails: 2 corrosion-resistant fasteners per shingle or shake
  - (304 or 316 stainless, hot-dipped zinc coated or aluminum nails)
- Staples: aluminum or stainless
- 2 with 11mm (7/16”) min crowns, long enough to penetrate sheathing 12mm (1/2” min)

<table>
<thead>
<tr>
<th>Type of Certi-label Shake or Shingle</th>
<th>Nail Type and Minimum Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certi-Split &amp; Certi-Sawn Shakes</td>
<td></td>
</tr>
<tr>
<td>18” Straight-Split</td>
<td>5d Box 1 3/4</td>
</tr>
<tr>
<td>18” and 24” Handsplit-and-Resawn</td>
<td>6d Box 2</td>
</tr>
<tr>
<td>24” Tapersplit</td>
<td>5d Box 1 3/4</td>
</tr>
<tr>
<td>18” and 24” Tapersawn</td>
<td>6d Box 2</td>
</tr>
<tr>
<td>Certigrade Shingles</td>
<td></td>
</tr>
<tr>
<td>16” and 18” Shingles</td>
<td>3d Box 1 1/4</td>
</tr>
<tr>
<td>24” Shingles</td>
<td>4d Box 1 1/2</td>
</tr>
</tbody>
</table>
Wood Shingles and Shakes

Figure 5a: Course Alignment

Text and images Copyright 2001 Cedar Shake and Shingle Bureau
Check List: Asphalt Shingles

• Min. thickness of roof sheathing for sloping roofs:

<table>
<thead>
<tr>
<th>Max. Spacing</th>
<th>Plywood, OSB, 0-2 Grade</th>
<th>OSB, 0-1 Grade, and Waferboard, R-1 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E.S.*</td>
<td>E.U.*</td>
</tr>
<tr>
<td>300</td>
<td>7.5 mm</td>
<td>7.5 mm</td>
</tr>
<tr>
<td>400</td>
<td>7.5 mm</td>
<td>9.5 mm</td>
</tr>
<tr>
<td>600</td>
<td>9.5 mm</td>
<td>12.5 mm</td>
</tr>
</tbody>
</table>

*E.S: Edges Supported,  *E.U: Edges Unsupported
Check List: Asphalt Shingles

• Underlay: No. 15 asphalt felt
• Nails: shank thickness: 2.95 mm (12 ga), head 9.5 mm (3/8”), galvanized
• Nail Length: 12 mm (½”) through, or into the roof sheathing
• Staples not recommended but allowed by code
• Metal Flashings: 0.33 mm (28 ga) galvanized steel
• Pipe flashing: preformed flashing
Starting Application

Asphalt saturated felt underlayment

Deck

Self-adhered eave and flashing membrane

Drip edge

Adjacent strips are full length

Nails located 75 - 100 mm from eaves

Self-sealing adhesive positioned along eaves

Start 1st strip with 150 mm removed

Starter strips overhang eaves and rakes 13 mm to 19 mm
Nailing – Asphalt Shingles

‘normal’ 4-nail pattern

‘high wind’ 6-nail pattern
3-Tab Application
Proper Nail Location

Nail between top of notch and resin stripe
Proper Nail Location

- Each nail catches the underlying shingle
- Results in each shingle having 8 or 12 nails
Additional types and styles
Starting Laminated Shingle Application
Laminated Shingles

➢ One of the most critical elements of a successful roofing project is correct installation of the shingle. Market research has shown that most laminated shingles are incorrectly installed due to improper fastener placement.” (Malarkey Roofing Products)
Staples no longer recommended for asphalt shingles
Fasteners - Staples
Check List - Slate

ASTM C 406, *Standard Specification for Roofing Slate*

- Decking: 19mm (3/4”) min. wood, OSB or plywood (exterior).
- Drip edge min. 0.55mm (16 oz.) Copper or equivalent durability.
- Underlay: Min two #30 asphalt saturated felts.
➢ Fasteners: Place 75mm (3”) min. from edge of overlying edge joint
➢ Copper slating nails, 3mm (1/8”) diameter, long enough to penetrate into deck so as to be visible from the underside. Stainless, bronze or brass nails may also be used.
➢ Slating clips may also be used.

Note that nail is not tight against slate
Typical Configurations
Metal Shingles

Examples of metal shingle and panels (simulating wood shakes and shingles and tile):

- Metal simulating wood shake
- Metal simulating wood shingle
- Metal panel simulating wood shakes
- Metal panel simulating wood shingles
- Metal panel simulating clay or concrete tile
Metal Shingles & Panels

- Application requirements depend upon profile
- Water-shedding
- Rely upon underlay
- Need Manufacturer’s specific details
- SMACNA manual helpful
Metal Shingles
Steep Roofing - Ventilation
Steep Roofing - Ventilation

**VENTILATION**

All roof structures must be provided with through ventilation to prevent entrapment of moisture-laden air beneath the roof sheathing. Ventilation must meet or exceed current National and/or Local Building Code standards.

**CEMENT**

- Roof Deck - Roof deck must be constructed of tongue and groove, seasoned dry lumber not over 8" (203 mm) in width and not less than 5/8" (16 mm) in thickness. Exterior grade plywood sheathing may be used provided it is at least 15/32" (12 mm) thick and is blocked, supported and nailed according to the specifications of the American Plywood Association. Deck must be dry and free of debris before beginning application of underlayment or shingles. For application over other decks or construction conditions not shown consult the manufacturer before.
NBC Ventilation Requirements

9.19.1. Venting
- 1 in 300 rule for normal attics
- 1 in 150 rule for roofs with slopes of less than 1 in 6, or constructed with roof joists
- Uniformly on opposite sides of the roof
- Minimum 25% at or near ridge
- Minimum 25% at or near the bottom
- Meet CSA CAN3-A93-M, “Natural Airflow Ventilators for Buildings.”
Steep Roofing - Ventilation

Code requirements:
1/300 net free ventilation/attic floor space
1/150 for cathedral ceiling
and
50% venting at soffits/eaves, 50% at ridge or louver
Install Baffles to provide space between insulation and framing.
When insulation is installed over the deck, the use of strapping is recommended. This permits shorter shingle nails as well as a vented airspace.
Direct Application of Asphalt Shingles over Insulation or Insulated Decks

➢ Reasons to Vent:
  • Shingles may be damaged or punctured due to soft substrate
  • Nail-holding may be inadequate
  • Heat build-up may accelerate weathering
  • Fire ratings may be affected
  • Proper ventilation is impossible to accomplish

It is recommended that a flow-through ventilated air space be provided
Ventilation

- Lower batten acts as spacer
- Provides air flow
- Allows water to drain to gutter
Ventilation

Figure 1 Example of wood batten system.

NOTE:
1. GENERALLY FOR SLOPES 6/12 (33%), AND GREATER
2. NOMINAL 1" x 2" (25mm x 51mm) MIN. WOOD BATTENS,
   SEPARATE ENDS APPROXIMATELY 1/2" (13mm) EVERY
   4/12 (102mm) OR PROVIDE SHIMS UNDER BATTENS TO PREVENT
   TRAPPING WATER.
Steep Slope

- Deck and Underlay
- Valley Treatments
- Flashings
- Ventilation
- Fastening
- Troubleshooting
Mold and Mildew

➢ Bleach, TSP, water
➢ Apply with soft brush
➢ Rinse with fresh water
➢ Verify procedure with manufacture
Color Shading

➢ Use blends
➢ Work across and up roof
Buckled Shingles

➢ Allow decking to come to moisture equilibrium
➢ Use shingle underlayment
➢ Ensure adequate attic ventilation
Moss & Algae

- In dry weather, spray with 10% zinc sulfate.
- Caution, don’t use with copper flashings or gutters.
- Nailed strips of zinc or copper at ridge retards moss, fungus and mildew.
- Trim overhanging branches.
Moss & Algae

Wash of zinc from galvanized flashings inhibits algae growth.
Severe Humidity

Certi-Last (0.4 CCA) treated cedar recommended in moist areas—or—after 12-24 months, apply wood preservative on 5-year cycle.
Steep Roofing Resources

• Steep Roofing Manual www/nrca.net
• Concrete and Clay Roof Tile Design Criteria-Tile Institute www.rooftile.org
• Western States Roofing Contractors Assoc. www.csrca.com
• Residential Asphalt Roofing Manual www.arma.org
• Cedar Shake and Shingle Bureau www.cedarbureau.org
• Sheet Metal Manual SMACNA www.smacna.org
• Copper and Common Sense www.reverecopper.com
• Copper Development Association www.cda.org
• Metal Building Manufacturers Association www.mbma.org
• Metal Roofing Alliance www.metalroofing.com
• Canadian Asphalt Shingle Manufacturers Association www.casma.ca
• Canada Mortgage and Housing Corporation www.cmhc-schl.gc.c
• Building Codes and Individual Materials Manufacturers
  • Don’t forget the RCI-Mercury.com search engine