Guidelines

General Flashing Guidelines for Steep-Sloped Roofs
General Flashing Guidelines for Steep-Sloped Roofs

Flashings are used to weatherproof or seal roof system edges at perimeters, penetrations, walls, expansion joints, valleys, drains, and other places where the roof covering is interrupted or terminated. Install flashings in a manner that will prevent moisture from entering the wall or roof, or through moisture-permeable materials at intersections or other penetrations through the roof plane.

The flashing installation requirements found in the local building code, product manufacturer’s installation instructions, and the applicable FORTIFIED Home standards serve as primary compliance methods. The use of FORTIFIED-approved supplemental standards for conditions other than those found in primary standards is permitted. (See page 9.) In all cases, use the more restrictive installation methods for all roof-related flashing, including any associated counter-flashing.

- Use corrosion-resistant metal flashing with a thickness of not less than designated in local building code or the metal flashing material table. (See Table 1.)
- Unless otherwise noted to be more restrictive, fasten all metal flashing at a maximum of 6 in. on center at the edges with approved compatible corrosion-resistant fasteners. (See Table 2.)
- Prime metal surfaces receiving approved flashing cement with ASTM D41 primer.
- Use approved flashing cement in compliance with roof system manufacturer’s installation instructions.

Exception: Fasten edge metal in hurricane-prone areas with fasteners spaced no more than 4 in. on center.

### Table 1. Metal Flashing Material

<table>
<thead>
<tr>
<th>Material</th>
<th>Gauge Minimum Thickness (in.)</th>
<th>Gauge</th>
<th>Weight (lb per sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>0.0216</td>
<td>N/A</td>
<td>1 (16 oz)</td>
</tr>
<tr>
<td>Aluminum</td>
<td>0.032</td>
<td>N/A</td>
<td>.0451</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>0.0188</td>
<td>26</td>
<td>0.79</td>
</tr>
<tr>
<td>Galvanized steel</td>
<td>0.0179</td>
<td>26</td>
<td>1.66</td>
</tr>
<tr>
<td>(zinc coated G90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum zinc coated steel</td>
<td>0.0179</td>
<td>26</td>
<td>1.15</td>
</tr>
<tr>
<td>(AZ50 aluminum zinc)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Metal Base Flashing
When discontinuous roof systems require the use of metal base flashing at roof intersection to a vertical wall, one option is continuous L-metal. (See Figure 1.)

Installation Guidelines for Continuous L-Metal
Unless otherwise noted, use a minimum 4-in. x 4-in. continuous L-metal with the following instructions:

- Set continuous metal base flashing in a 1/8-in.-thick bed of approved flashing cement. Start installation at the lower portion of the roof to ensure water-shedding capabilities of all metal laps. Overlap metal sections a minimum of 3 in., set in approved flashing cement.
- Attach vertical and horizontal flanges with approved fasteners within 1 in. of the edge, spaced out a maximum of 6 in. on center.
- Seal vertical flange top edge and fasteners with an approved flashing cement and membrane, ASTM D1970 peel-and-stick membrane, or another approved sealant prior to reinstalling any wall cladding. (See Figure 2.)

Counter-Flashing
Unless otherwise noted, use counter-flashing and extend the counter-flashing a minimum of 2 in. below the top of any base flashing. Hold the bottom edge of the counter-flashing at least 1 in. above the top of the finished roof surface. Cladding material, preformed metal, and approved sealant are examples of counter-flashing. (See Figure 3 for example of preformed metal.)

Wall Cladding Used for Counter-Flashing
Seal the continuous metal base flashing top edge and fasteners to the vertical surface prior to reinstalling any wall cladding. (See Figure 2.) Do not drive cladding fasteners through the continuous metal base flashing.

Metal Counter-Flashing
- Set metal counter-flashing (stucco stop) in an approved sealant and install directly to a structural vertical surface. Attach the top flange with approved fasteners within 1 in. of the edge, spaced out a maximum of 6 in. on center. Seal the top flange and fasteners with an approved flashing cement and membrane, ASTM D1970 peel-and-stick membrane, or other approved sealant prior to reinstalling any stucco or cladding material. (See Figures 4A and 4B.)
- Set surface-type counter-flashing in an approved sealant and install over existing cladding. Seal the counter-flashing top edge and fasteners with an approved waterproof sealant and membrane. If caulk receiver is provided at top edge, fill receiver void with approved sealant. Use self-sealing fasteners if fasteners are exposed. (See Figure 5.)
- Install reglet-type counter-flashing into a minimum continuous groove cut into stucco surface or mortar joint. Fabricate top edge of flashing with a return to create tension.
when installed into groove. Use compatible metal wedges and approved sealant to secure and seal top edge. (See Figures 6A & 6B.)

- Install manufactured counter-flashing in compliance with manufacturer’s installation specifications.

### Table 2. Minimum Fastener Corrosion Protection Requirements for FORTIFIED Home

<table>
<thead>
<tr>
<th>Fasteners</th>
<th>Structures within 300 ft of saltwater</th>
<th>Structures more than 300 ft but less than 1,000 ft from saltwater</th>
<th>Structures more than 1,000 ft but less than 3,000 ft from saltwater</th>
<th>Structures more than 3,000 ft from saltwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roofing Nails for Shingles</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Hot-Dip Galvanized</td>
<td>Corrosion Resistant</td>
</tr>
<tr>
<td>Concrete and Clay Roof Tile Fasteners</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Hot-Dip Galvanized</td>
<td>Corrosion Resistant</td>
</tr>
<tr>
<td>Metal Roof Clips and Fasteners Exposed</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Corrosion Resistant</td>
</tr>
<tr>
<td>Fasteners used for Attachment of Underlayment to Roof Deck</td>
<td>Hot-Dip Galvanized</td>
<td>Hot-Dip Galvanized</td>
<td>Hot-Dip Galvanized</td>
<td>Corrosion Resistant</td>
</tr>
<tr>
<td>Roof Vent Fasteners</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Corrosion Resistant</td>
</tr>
</tbody>
</table>

1Buildings on open, elevated foundations within 1,000 ft of saltwater shall follow the requirements of structures within 300 ft of saltwater.

2Hot-dip galvanized shall meet the requirements of ASTM A153 Class D for nails and screws.

3Corrosion-resistant nails and screws shall meet the requirements of ASTM A641 Class 1 or an equal corrosion resistance by coating, galvanization, stainless steel, or other suitable corrosion-resistant material.

4Clips shall be corrosion-resistant clips. The corrosion resistance shall meet 0.90 oz per sq ft (0.458 kg/m2) measured according to ASTM A90/A90M, TAS 114 Appendix E, or an equal corrosion-resistant coating, electro galvanization, mechanical galvanization, hot-dipped galvanization, stainless steel, nonferrous metals and alloys or other suitable corrosion-resistant material. Stainless steel clips shall conform to ASTM A167 Type 304.
Figures

Figure 1

Figure 2

1) Manufactured starter strip or 3 Tab strip shingle with tabs removed set in 8" wide, 1/8" thick bed of roof cement over primed eave drip.
2) Peel & stick manufactured starter strip over primed eave drip.
Figure 3

Figure 4A
Figure 4B

Figure 5
STUCCO SURFACE OVER CMU/FRAIME WALL

PEEL & STICK OR ROOF CEMENT + MEMBRANE OVER TOP EDGE OF BASE FLASHING

BASE FLASHING FASTENED TO WALL + ROOF 6" ON CENTER

BASE FLASHING

4'

4'

REGLET TYPE METAL COUNTER FLASHING

1/2" LG

SAW CUT OF STUCCO OR MORTAR JOINT OF BRICK.

BEND TO CREATE TENSION INSIDE OPENING, WEDGE AND SEAL.

CLOSE-UP OF FIGURE 6A

Figure 6A

Figure 6B
Suggested Resources
The following sites provide additional information on the standards referenced below.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Roofing Manufacturers Association (ARMA)</td>
<td><a href="http://www.asphaltroofing.org">www.asphaltroofing.org</a></td>
</tr>
<tr>
<td>National Roofing Contractors Association (NRCA)</td>
<td><a href="http://www.nrca.net">www.nrca.net</a></td>
</tr>
<tr>
<td>Florida Building Code (FBC)</td>
<td><a href="http://www.floridabuilding.org">www.floridabuilding.org</a></td>
</tr>
<tr>
<td>Florida Roofing and Sheet Metal Contractors Association (FRSA)</td>
<td><a href="http://www.floridaroof.com">www.floridaroof.com</a></td>
</tr>
<tr>
<td>Tile Roof Institute (TRI)</td>
<td>tileroofing.org</td>
</tr>
<tr>
<td>Cedar Shake and Shingle Bureau (CSSB)</td>
<td><a href="http://www.cedarbureau.org">www.cedarbureau.org</a></td>
</tr>
</tbody>
</table>

Common Steep-Slope Roofing Systems

Asphalt Shingle Systems
The flashing installation requirements found in the local building code, shingle manufacturer’s installation instructions and the applicable FORTIFIED Home standards serve as primary compliance methods. The use of FORTIFIED-approved supplemental standards for conditions other than those found in primary standards is permitted. In all cases, use the more restrictive installation methods for all roof-related flashing, including any associated counter-flashing. The ARMA Residential Asphalt Roofing Manual; the NRCA Roofing Manual: Architectural Metal Flashing; and the FBC Roofing Application Standard (RAS) No. 115 listed in the Test Protocols for High-Velocity Hurricane Zones, 5th Edition (2014) are FORTIFIED-approved supplemental standards.

Cement and Clay Roof Tile Systems
Use the more restrictive of the following installation methods for all roof-related flashing, including any associated counter-flashing: the local building code; the tile manufacturer’s installation instructions; the FRSA/TRI Florida High Wind Concrete and Clay Tile Installation Manual; the FBC Roofing Application Standard (RAS) No. 111, 118, 119 or 120 listed in the Test Protocols for High-Velocity Hurricane Zones, 5th Edition (2014); and the applicable FORTIFIED Home standards.

Metal Roof Shingles or Panels
Install all flashing including any associated counter-flashing in compliance with the local building code and/or the metal shingle or panel manufacturer’s installation instructions.

Wood Shingles and Wood Shakes
Install all flashing including any associated counter-flashing in compliance with the local building code, the wood shingle or wood shake manufacturer’s installation instructions, and/or the CSSB New Roof Construction Manual.