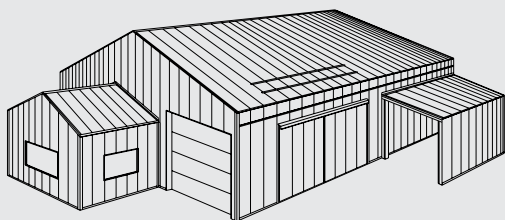
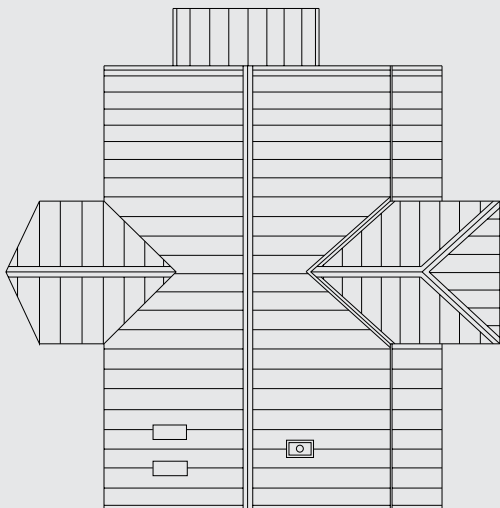


APPLICATION MANUAL FOR METAL ROOFING AND SIDING



metal sales
manufacturing corporation



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GENERAL INFORMATION

This manual provides recommended installation procedures to assist you in the proper installation of metal roofing and wall panels on your house, shop, garage, or other building. Specific applications procedures may vary based on application conditions. This information provided is for general application information only. Check with your builder, project architect, or local building code authority regarding specific requirements.

Required Tools:

- Metal Shears, nibblers, power shears or circular saw with metal-cutting abrasive blade or metal cutting blade.
- Safety goggles and ear plugs
- Tape measure and chalk line
- Screw gun or drill (adjustable clutch recommended)
- 1/4" and 5/16" magnetic drill bits, phillips bits
- Gloves and protective clothing
- Saw horses
- Pop rivet gun
- Hammer
- Marking Pencils

GETTING STARTED

1. Calculate length and quantities of panels using either two or three foot wide panels.
2. Calculate the lineal feet of trim required and divide by 11.75 (using 12' trims) to get the quantity of trims. This will give you a three inch overlap. If you are using 10' 6" trim, divide lineal footage by 10.25.
3. Take the square footage of roofing or siding and multiply by 1 to get the number of screws required.
4. Take the lineal footage of trims to get the number of stitch screws required. Stitch screws are required 12" on center. Example: 100' of trim = 100 stitch screws.
5. Always use 30# roofing felt (or a synthetic underlayment approved for roofing applications) on both new and re-roof projects. We strongly recommend the use of ms-HT (ice and water shield) at valleys, skylight, chimneys, and pitch breaks. In heavy snow country, take an extra step to add ms-HT (ice and water shield) at the ridge/hips, eaves, gables, endwall/sidewalls, and prow flashings.
6. Tape sealant (butyl or neoprene) mastic should be used on Delta Rib panels in roof applications.
7. It is recommended that ms-HT is used on roof surfaces with a slope less than 3:12.
8. Formed closures should be used at eave, ridge, end wall, and pitch breaks. Hip and valley closure should be used at hips, valleys, and other conditions where formed closures will not fit properly.
9. When panel endlapping is required, overlap panels 6" and use either butyl or neoprene tape sealant or silicone caulk between panels.

IMPORTANT NOTES

1. Order roof and wall panels along with the trims and accessories when you are ready for them. It is not recommended that panels be stored for long periods of time. Storing for too long can void the warranty on both the painted and galvalume finishes. If it is necessary to store the panels, raise panels off the ground and elevate one end to allow water to drain. Cover the panels and trims with a tarp.

Do not use tight fitting plastic-type tarps as panel bundle covers. While they may provide protection from the elements, they can also retard necessary ventilation and trap heat and moisture that may accelerate metal corrosion. If panels are to be stored during bad weather, we suggest that they be stored inside. Do not store near or in contact with salt, salt water, corrosive chemicals, ash, fumes, nearby plants, foundries, plating works, kilns, fertilizer, or wet/green lumber.

2. During installation, keep foot traffic over panels to a minimum. Wear non-marking rubber soled shoes to keep from scuffing material while walking on the roof.

3. Trim lengths: 12'-0" (Kent, WA) and 10'-6" (Spokane, WA).

SAFETY PRECAUTIONS

1. When working with metal roofing and siding, be sure to wear protective clothing that will help prevent cuts and scrapes. This includes long sleeve shirts, full length pants, and gloves. Protective eye wear should be worn while cutting and installing both panels and trims.

2. Metal panels can become very slippery from frost, mist, rain, dust, and other elements. Be sure to know the condition of the roof prior to getting on it. Though the plywood or roofing felt may provide traction, the metal roofing may not.

3. Do not walk on unsecured or partially fastened metal panels. They can easily slide off the roof. Caution is suggested.

4. Avoid working with metal panels on windy days. Wind can quickly blow around trims and panels which can create a dangerous situation. Be sure to secure panels once bundles are broken, to keep the stack from scattering.

5. Hot weather conditions can increase temperatures on the roof over that on the ground. Be sure to know your own physical limits.

6. Be aware of all electrical power cords and equipment on and around the roof at all times. Be careful not to allow yourself or materials to come in contact with the cords.

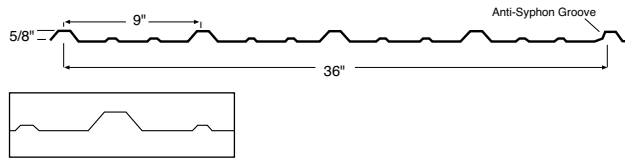
7. Know where you are on the roof at all times. Constantly monitor locations of roof openings and roof edges to prevent falls. Watch for others on the roof to keep from inadvertently pushing them off as well.

8. On steeper roofs, you may need to or be required to use a lifeline system for safety. This can be done several ways. Information on this can be acquired through OSHA and other workplace safety organizations.

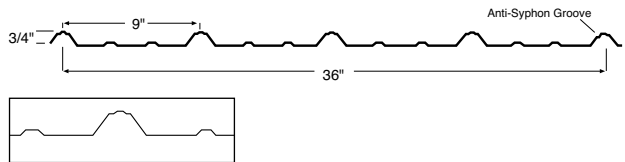
PLEASE BE SAFE!

PANEL PROFILES

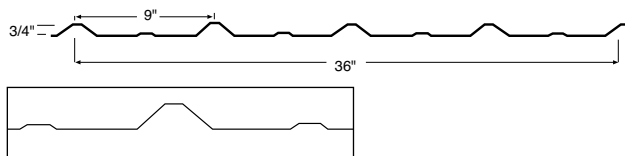
Pro-Panel II



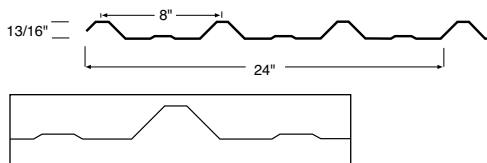
Classic Rib



Delta Rib 3'

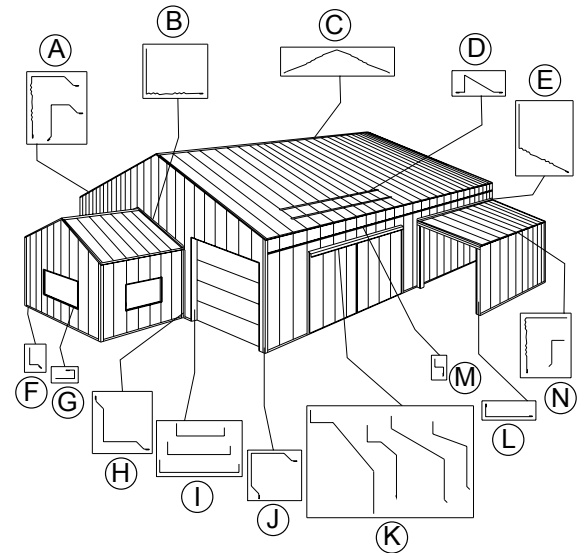


Delta Rib 2'



BUILDING PRODUCT FLASHINGS

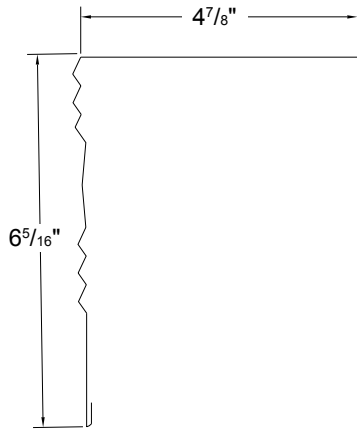
- A. Gable or Mini-Gable Flashing (see page 11)
- B. Universal Sidewall Flashing (see page 13)
- C. Universal Ridge or Vented Ridge Flashing (see page 13)
- D. Snow Guard Flashing (see page 14)
- E. Universal Endwall Flashing (see page 12)



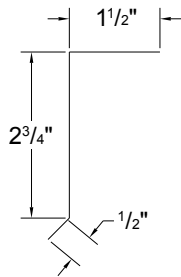
- F. Base/Header Flashing (see page 18)
- G. C-Metal Flashing (see page 14)
- H. Inside Corner Flashing (see page 15)
- I. Jamb Flashings (see page 18)
- J. Outside Corner Flashing (see page 15)
- K. Track Cover Flashings (see pages 16-17)
- L. Post Trim Flashing (see page 18)
- M. Wall Lite Flashing (see page 15)
- N. Eave or Mini-Eave Flashing (see page 10)

FLASHING PROFILES

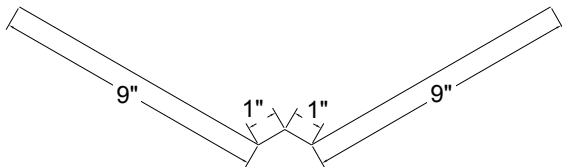
EAVE FLASHING



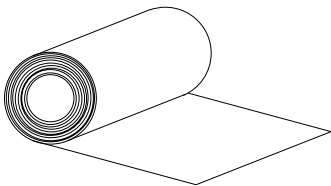
MINI-EAVE FLASHING



W-VALLEY

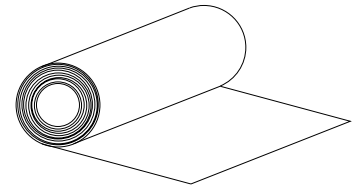


28" x 50'-0" ROLL VALLEY

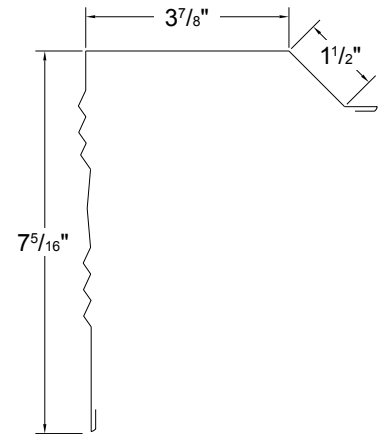


FLASHING PROFILES (CONT.)

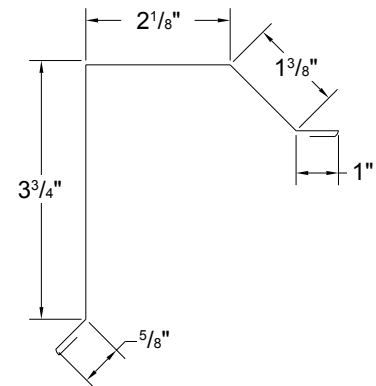
40⁵/₈" x 30'-0" 29 GAUGE ROLL VALLEY



GABLE FLASHING

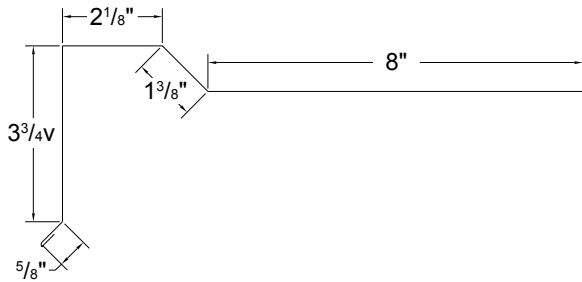


MINI-GABLE FLASHING

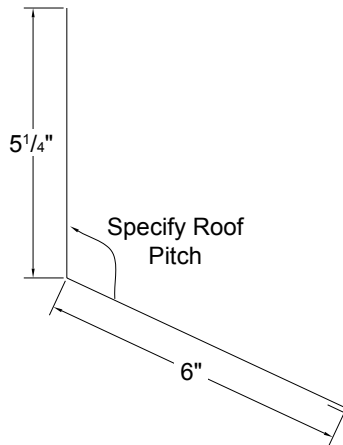


FLASHING PROFILES (CONT.)

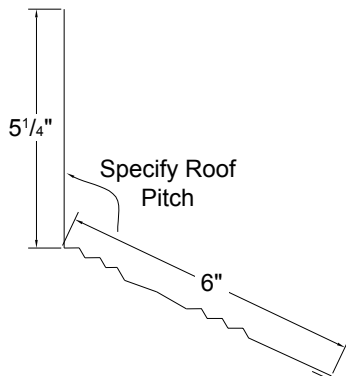
PROW FLASHING



PITCH BREAK

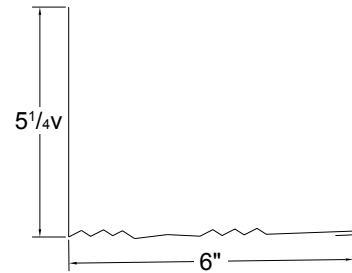


UNIVERSAL ENDWALL

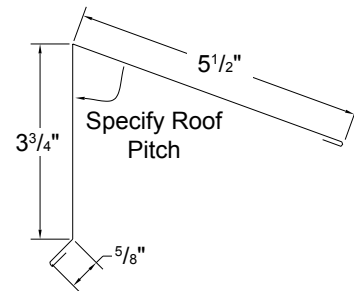


FLASHING PROFILES (CONT.)

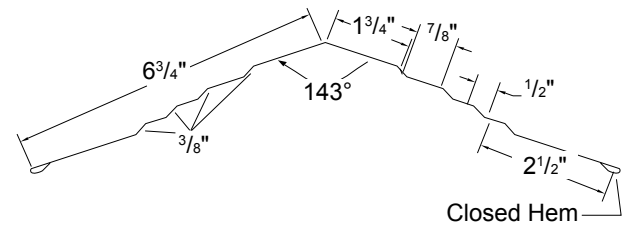
UNIVERSAL SIDEWALL



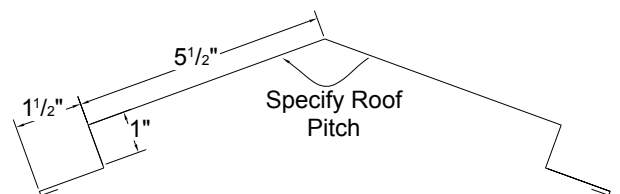
PEAK FLASHING



UNIVERSAL RIDGE

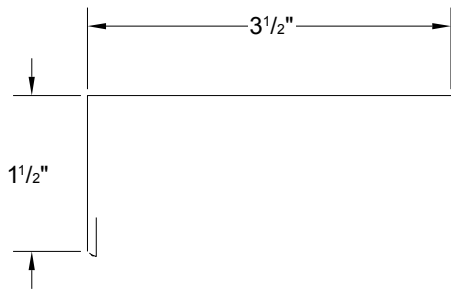


VENTED RIDGE

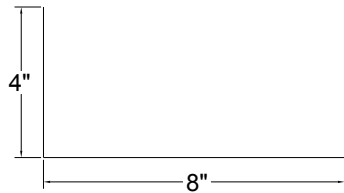


FLASHING PROFILES (CONT.)

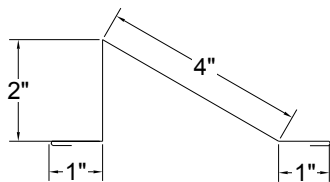
2" x 4" FASCIA TRIM



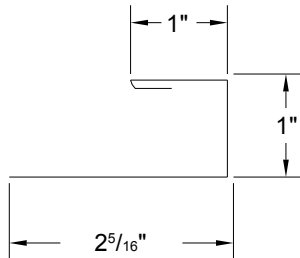
SKYLIGHT FLASHING



SNOW GUARD

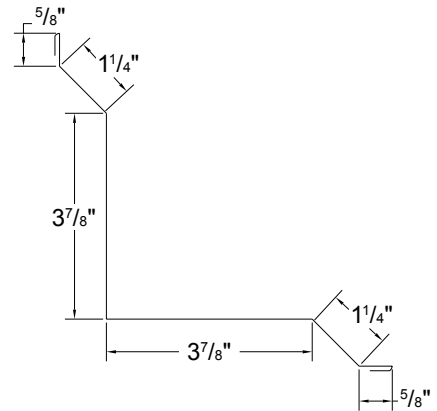


C-METAL

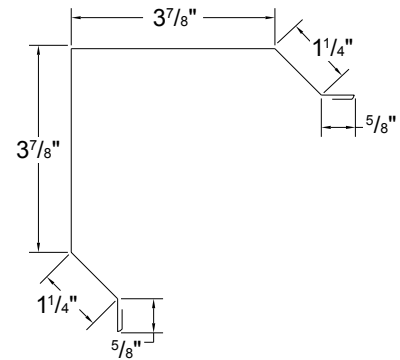


FLASHING PROFILES (CONT.)

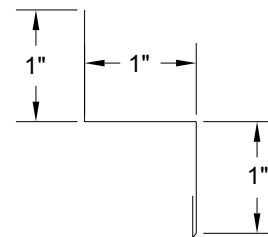
INSIDE CORNER



OUTSIDE CORNER

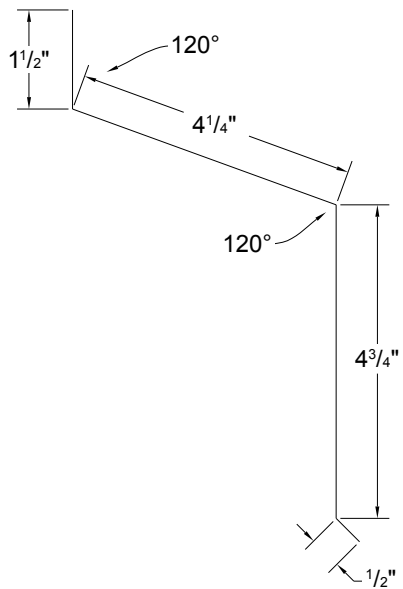


WALL LITE FLASHING

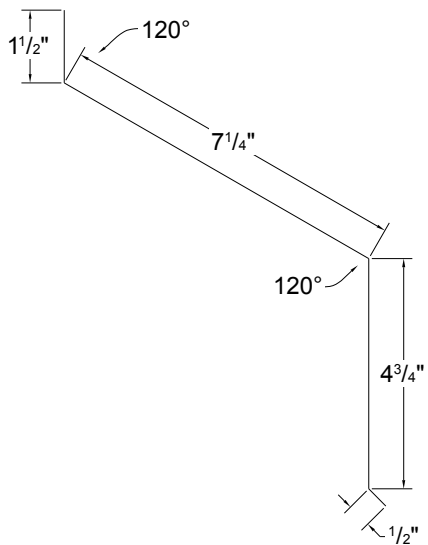


FLASHING PROFILES (CONT.)

SINGLE TRACK COVER NATIONAL

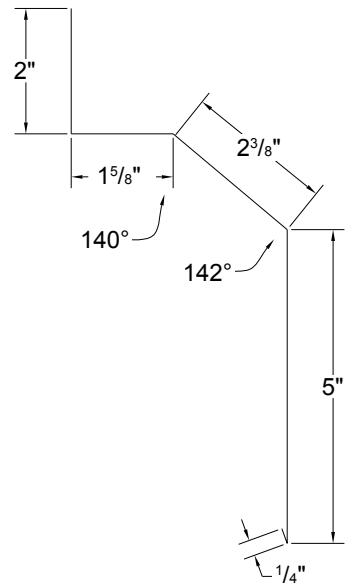


DOUBLE TRACK COVER NATIONAL

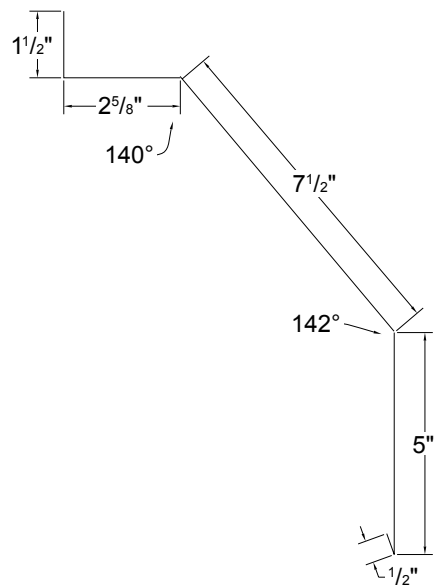


FLASHING PROFILES (CONT.)

SINGLE TRACK COVER COMBO

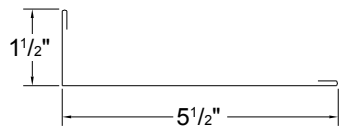


DOUBLE TRACK COVER COMBO

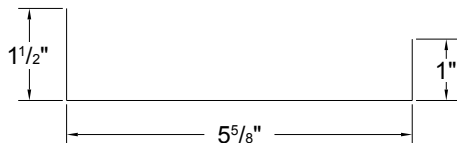


FLASHING PROFILES (CONT.)

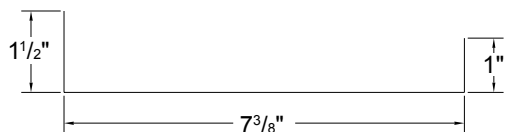
POST TRIM



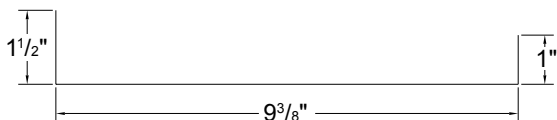
2" x 6" JAMB TRIM



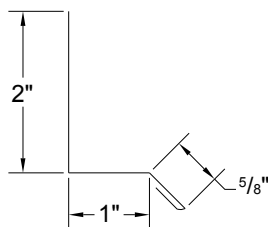
2" x 8" JAMB TRIM



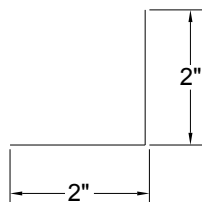
2" x 10" JAMB TRIM



BASE/HEADER

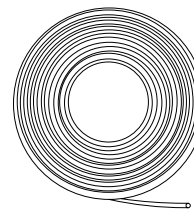


UNIVERSAL FLASHING



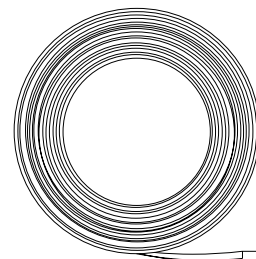
ACCESSORIES

7/8" x 3/16" BUTYL MASTIC ROLL 40'-0"



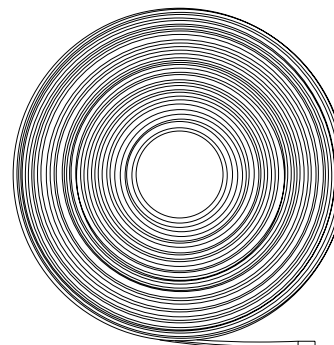
Use: Applied at panel sidelaps, top/bottom of closures, under trims and at panel endlaps.

3/16" DIAMETER BUTYL MASTIC ROLL 30'-0"



Use: Applied at panel sidelaps, top/bottom of closures, under trims and at panel endlaps.

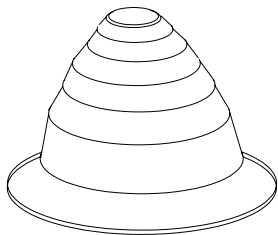
1/16" x 1/4" FOAM MASTIC ROLL 150'-0"



Use: Applied at panel sidelaps, top and bottom of closures, and under trim.

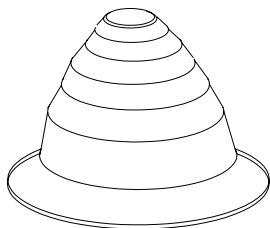
ACCESSORIES (CONT.)

STANDARD DECKTITES



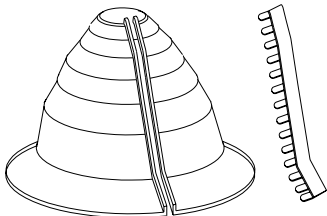
EPDM
Most commonly used.
Will perform up to roof/pipe penetrations
that do not exceed 250°.

HIGH-TEMP DECKTITES



Silicone
Will perform on roof/pipe penetrations up to 250°.

RETRO-FIT DECKTITES

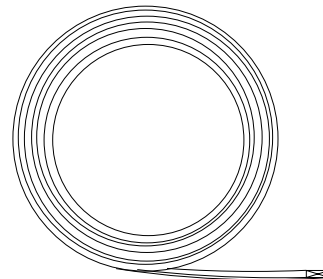


EPDM
Used where power lines or other obstructions prevent the
use of standard decktites on re-roofing projects. Will per-
form up to roof/pipe penetrations that do not exceed 250°.

ACCESSORIES (CONT.)

HIP/VALLEY CLOSURE

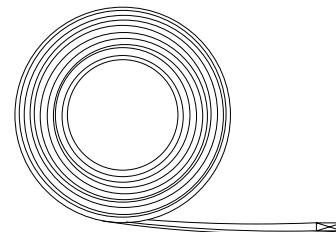
Uncompressed size: 1" x 3/4" x 19' Roll



Use: Applied at Hips and Valleys.
Expanding foam closure that will form to the shape of
the panel ribs. This size is used on panels that have a rib
height of less than one inch.

HIP/VALLEY CLOSURE

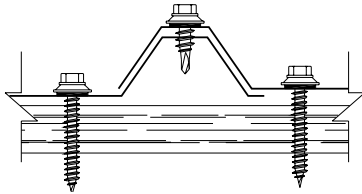
Uncompressed size: 1 1/2" x 3/4" x 13' Roll



Use: Applied at Hips and Valleys.
Expanding foam closure that will form to the shape of
the panel ribs. This size is used on panels that have a rib
height of more than one inch.

FASTENING GUIDELINES

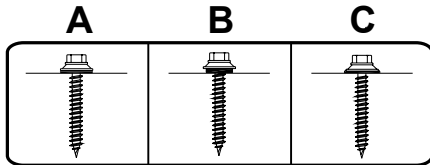
If screws are used as a fastening method, it is best to use a painted or plated screw, Type A or driller tip with a flat rubber washer. The correct screw gun is also important for the proper installation of self-drilling or self-tapping screws. A tool with the appropriate speed and torque setting (as recommended by the fastener manufacturer) will help prevent fastener thread strip-out and possible damage to the panel or its coating. Typically 40 screws should be used per square for 2' wide panels and 80 screws should be used per square for 3' wide panels.



Seating the Washer - Apply sufficient torque to seat the washer - do not overdrive the fastener.

To Prevent Wobbling - Make sure fastener head is completely engaged in the socket. If the head does not go all the way in the socket - tap the magnet deeper into the socket to allow full head engagement. Metal chips will build up from drilling and should be removed from time to time.

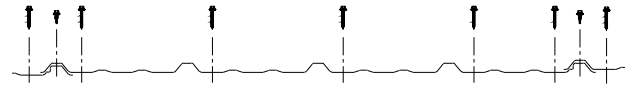
Protect Drill Point - Push only hard enough on the screw gun to engage clutch. This prevents excess friction and burn out of the drill point. Correct pressure will allow screw to drill and tap without binding.



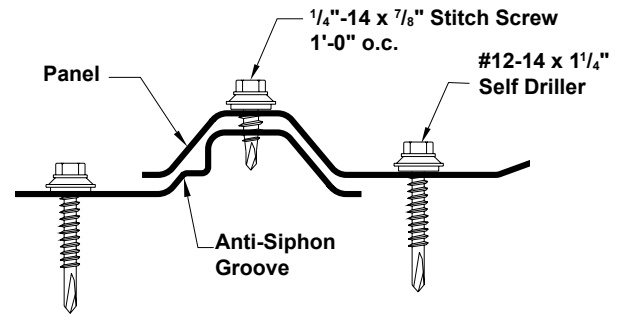
- A) CORRECT:** Sealing material slightly visible at edge of washer. Assembly is water tight.
- B) TOO LOOSE:** Sealing material is not visible; not enough compression to seal.
- C) TOO TIGHT:** Washer is deformed; sealing material pressed beyond fastener edge.

FASTENING GUIDELINES (CONT.)

PRO-PANEL II

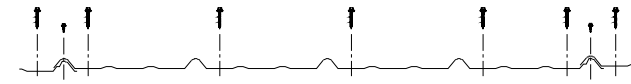


Typical Screw Fastening Pattern

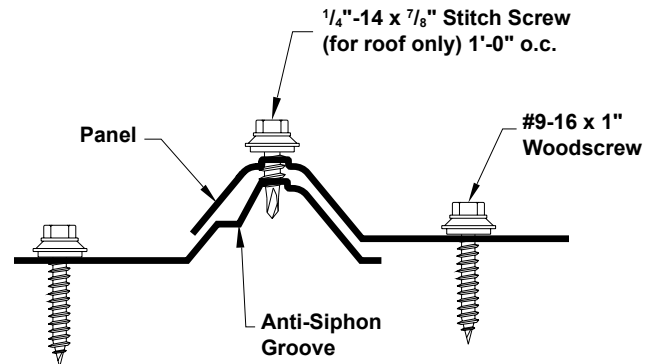


Sidelap Fastening Pattern

CLASSIC RIB



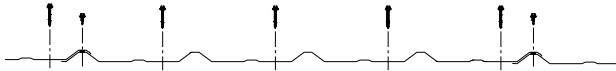
Typical Screw Fastening Pattern



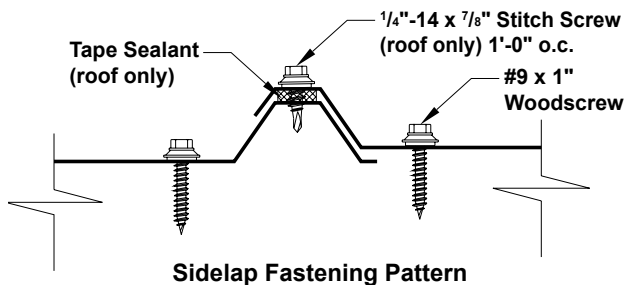
Sidelap Fastening Pattern

FASTENING GUIDELINES (CONT.)

DELTA RIB 3'



Typical Screw Fastening Pattern

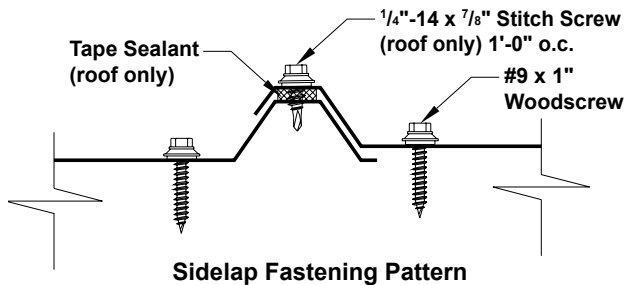


Sidelap Fastening Pattern

DELTA RIB 2'



Typical Screw Fastening Pattern



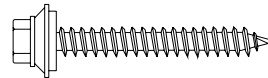
Sidelap Fastening Pattern

FASTENERS

#9 WOODGRIP

Available Sizes:

- #9 x 1"
- #9 x 1-1/2"
- #9 x 2"
- #9 x 2-1/2"
- #9 x 3"

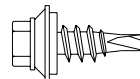


Used to attach metal to dimensional lumber.

STITCH SCREW

Available Sizes:

- #10 x 3/4"

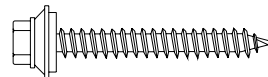


Used at 29 gauge sidelaps and attachment of 29 gauge trims.

METALWOOD

Available Sizes:

- #14 x 1"
- #14 1-1/2"

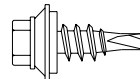


Used to attach metal to wood or waterboard.

STITCH SELF DRILLER

Available Sizes:

- #14 x 7/8"



Used at sidelaps and to attach trims (26 gauge and heavier).

SELF DRILLER

Available Sizes:

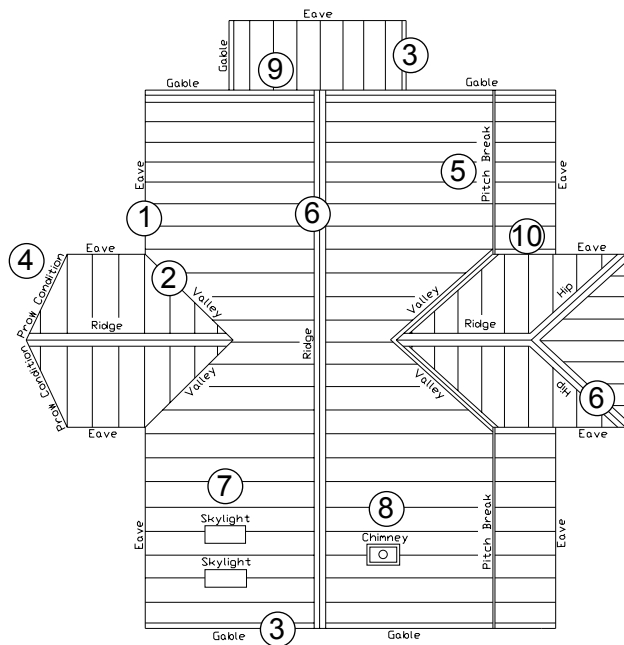
- #12 x 1"



Used to attach metal to metal framing.

TYPICAL ROOF CONDITION DETAILS

1. Eave Detail (see page 27)
2. Valley Detail (see page 27)
3. Gable Trim Detail (see page 28)
4. Prow Detail (see page 28)
5. Pitch Break Details (see page 29)
6. Ridge/Hip Detail (see pages 31-33)
7. Skylight Detail (see pages 34-37)
8. Chimney Details (see pages 34-37)
9. Endwall Detail (see pages 30)
10. Sidewall Detail (see pages 31)

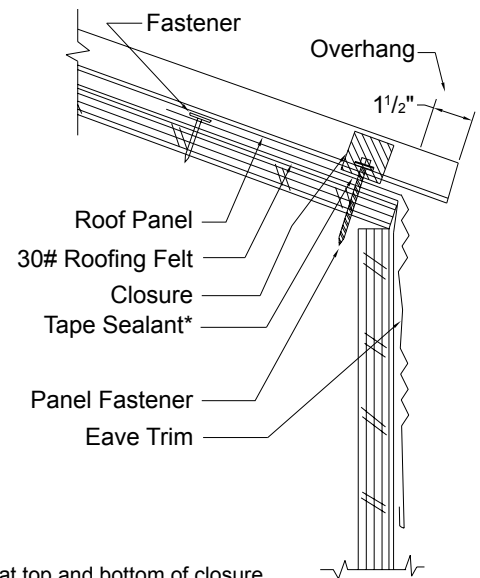


(not shown)

11. Outside Corner Details (see page 33)
12. Wall Lite Detail (see page 38)
13. Snow Guard Detail (see page 38)

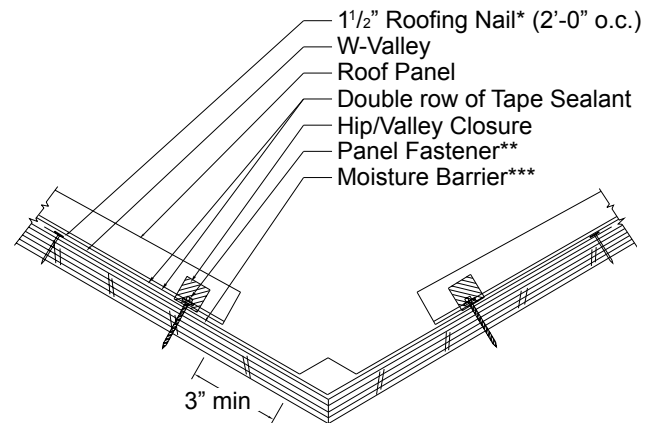
CONDITION DETAILS

EAVE FLASHING DETAIL



*Tape Sealant at top and bottom of closure

W-VALLEY DETAIL



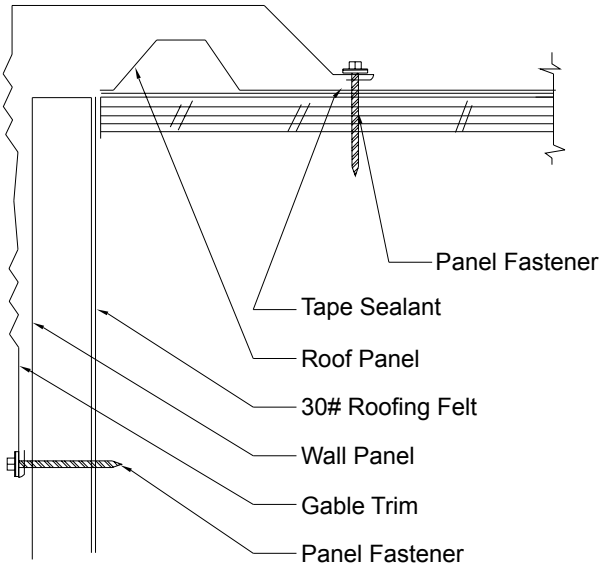
*Roof nail is used to hold the valley in place until roof panels are installed and fastened.

**Use (9) screws at each 3'-0" panel, and (6) screws at each 2'-0" panel at Valleys.

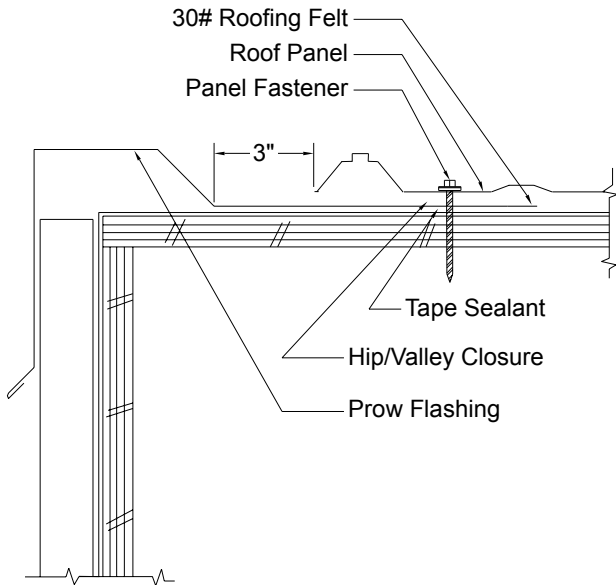
***Ice and water shield is recommended at valleys on top of 30# roofing felt.

CONDITION DETAILS (CONT.)

GABLE TRIM DETAIL

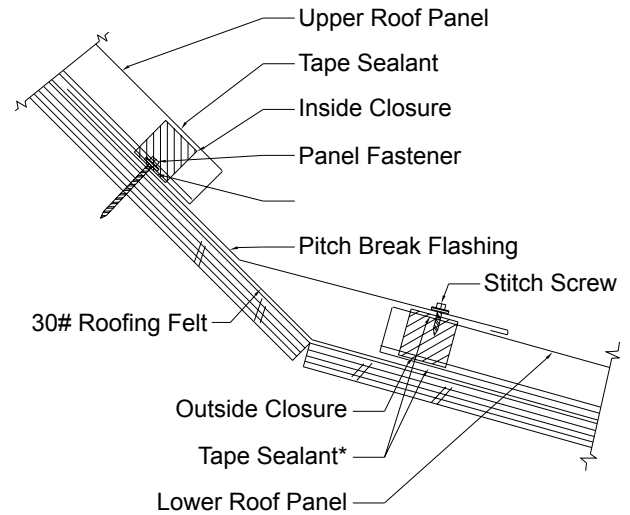


PROW DETAIL



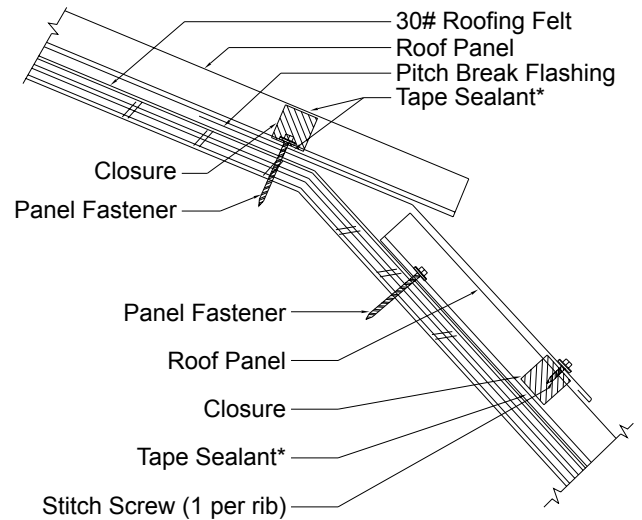
CONDITION DETAILS (CONT.)

PITCH BREAK DETAIL



*Tape Sealant at top and bottom of closure

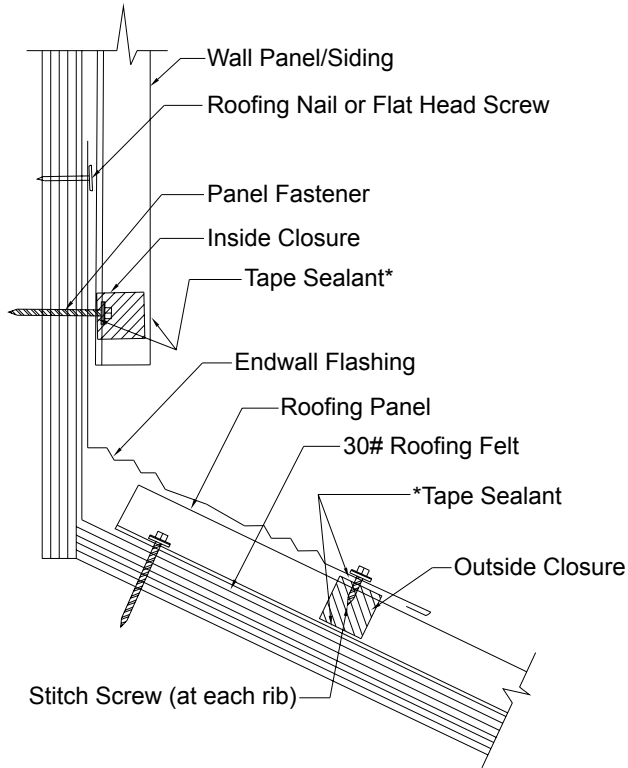
PITCH BREAK - GAMBREL DETAIL



*Tape Sealant at top and bottom of closure

CONDITION DETAILS (CONT.)

ENDWALL DETAIL



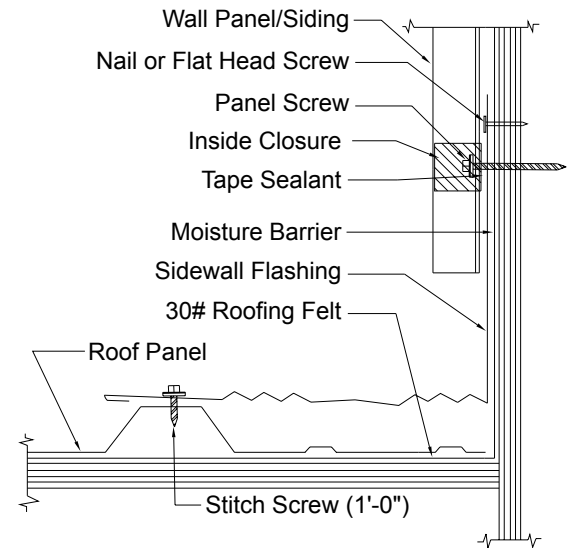
*Tape Sealant at top and bottom of closure

Notes:

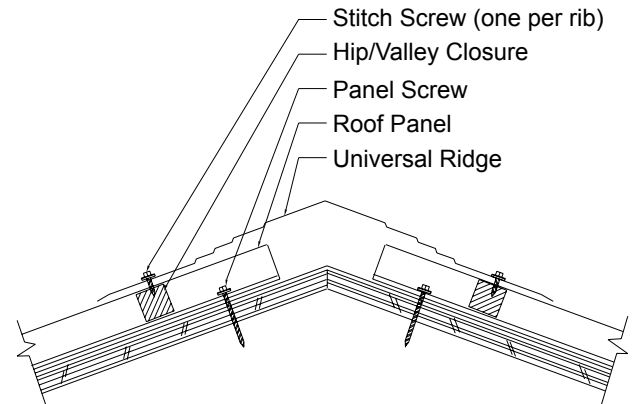
W-Valley, Gable, Hip, Sidewall, Prow, Jamb, and Corner trims should all be started at the bottom of the roof or wall with the next (upper) trim overlapping the lower trim. All trims should be lapped a minimum of 3" with a continuous bead of sealant between trims. Then attach the trims with a pop rivet or stitch screw.

CONDITION DETAILS (CONT.)

SIDEWALL DETAIL



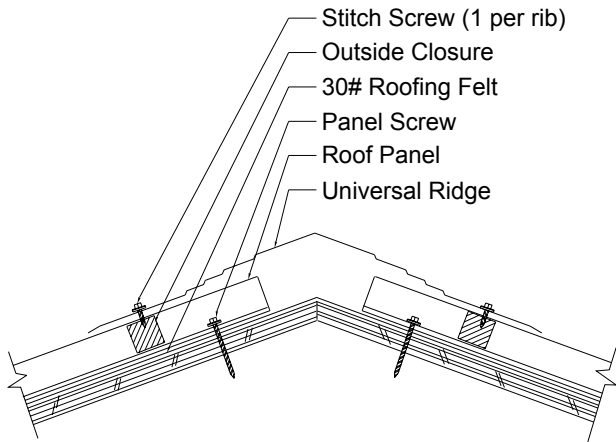
HIP DETAIL



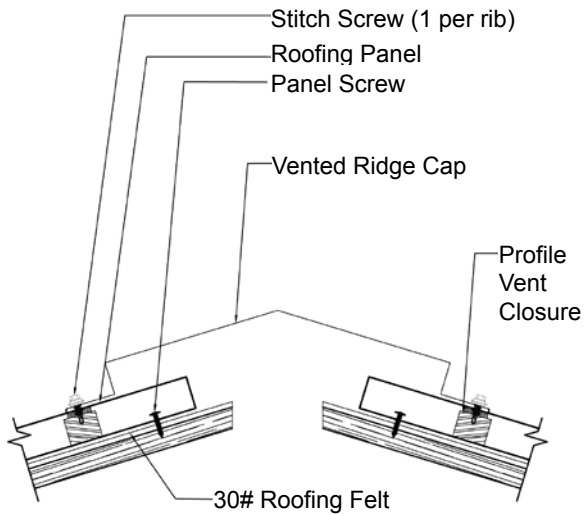
Cut roofing panels to match the angle of the hip. Be sure to file/remove all metal shavings and burrs off the panels. Then clear them off the roof. Failure to do so can cause rust spots which could create serious problems with the roof. If you need to install a vented hip, follow the "Vented Ridge Detail" with the exception of cutting the panels to match the angle of the hip and would require the use of Hip and Valley Closure rather than the formed closure.

CONDITION DETAILS (CONT.)

RIDGE DETAIL

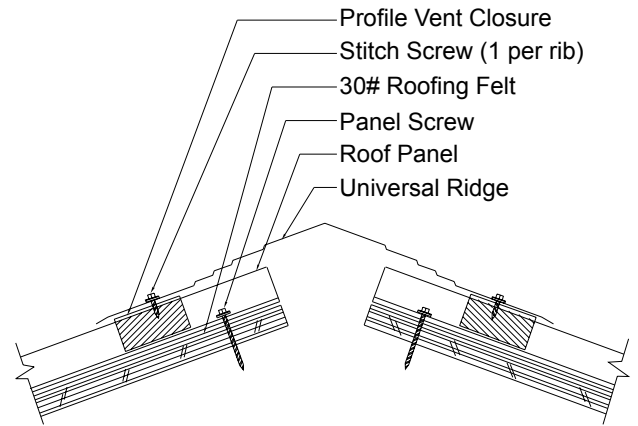


VENTED RIDGE DETAIL

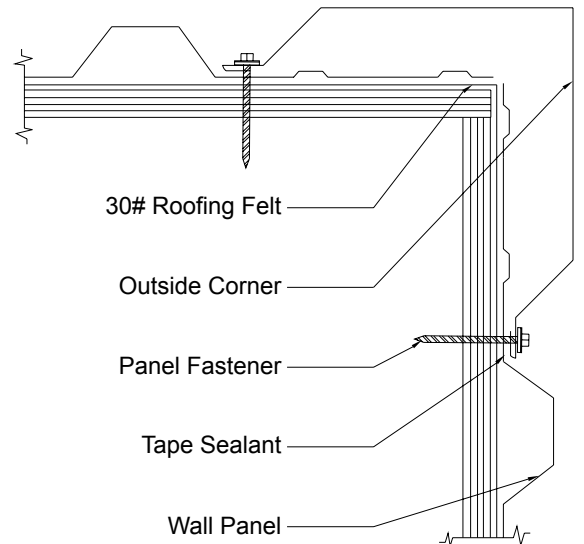


CONDITION DETAILS (CONT.)

VENTED RIDGE - PROFILE VENT DETAIL

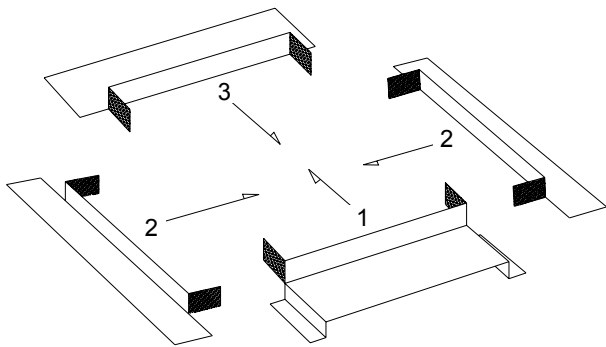
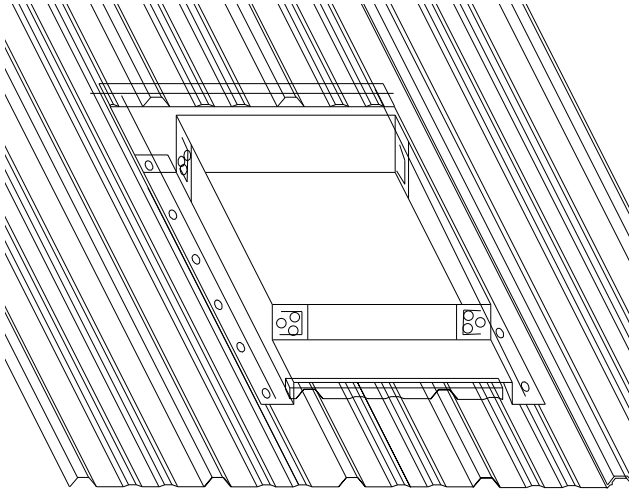


OUTSIDE CORNER DETAIL



CONDITION DETAILS (CONT.)

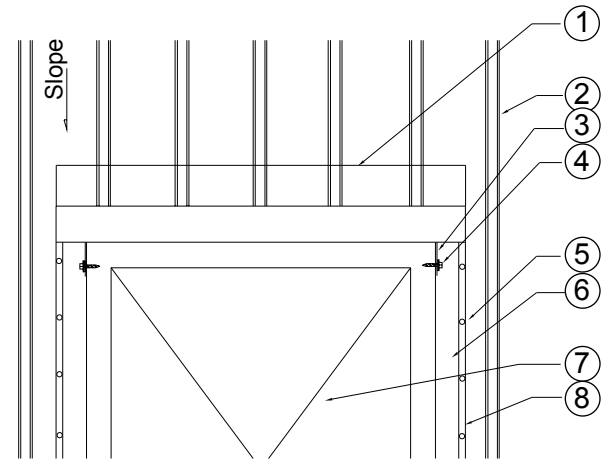
SKYLIGHT/CHIMNEY DETAIL



Flashing Chimneys and Skylights properly is vital to a roofing systems ability to resist water penetration. The flashing required for this task is the skylight flashing which will require some field cutting and bending as shown in these diagrams. The cutting can be by using standard metal shears and the bends can be done using wide "duck bill" locking pliers or on a break press. Using a fabricated cricket as shown on pages 36-37 can provide added resistance to water penetration.

CONDITION DETAILS (CONT.)

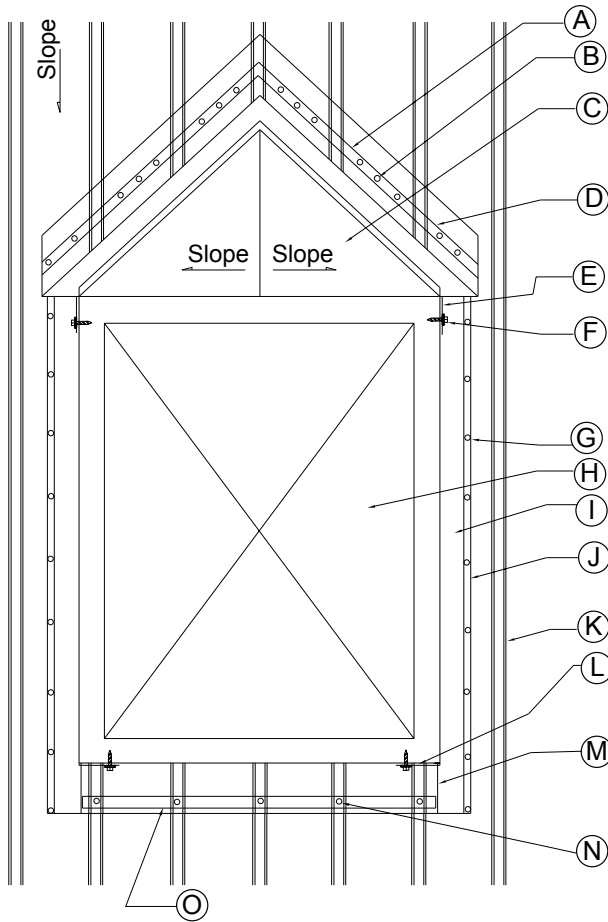
SKYLIGHT/CHIMNEY DETAIL



1. Skylight/Chimney Flashing (field cut and bend)
2. Roof Panel
3. Field cut and bend
4. Fastener (type depends on Skylight/Chimney material)
5. Panel Fastener
6. Skylight/Chimney Flashing (field cut and bend)
7. Skylight/Chimney
8. Tape Sealant (between panel and trim)

CONDITION DETAILS (CONT.)

SKYLIGHT/CHIMNEY DETAIL



See page 37 for call-outs.

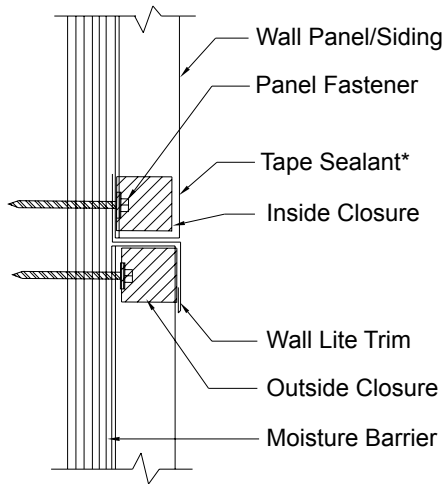
CONDITION DETAILS (CONT.)

SKYLIGHT/CHIMNEY DETAIL CALL-OUTS

- A. Hip and Valley Closure
- B. Panel Fastener (3 per panel flat)
- C. Cricket (field or shop fabricated - not by Metal Sales)
- D. Tape Sealant (at top and bottom of Closure)
- E. Cut, Bend, and Fasten (at both sides)
- F. Fastener (type depends on Skylight/Chimney material)
- G. Panel Fastener
- H. Skylight/Chimney
- I. Skylight/Chimney Flashing
- J. Tape Sealant (between roof panel and trim)
- K. Roof Panel
- L. Cut, Bend, and Fasten (at both sides)
- M. Skylight/Chimney Flashing (specify angle if not 90°)
- N. Panel Fastener (1) per rib.
- O. Outside Closure with Tape Sealant (at top and bottom)

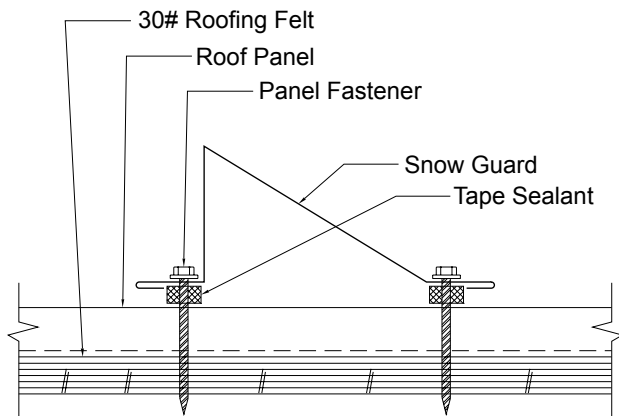
CONDITION DETAILS (CONT.)

WALL LITE DETAIL



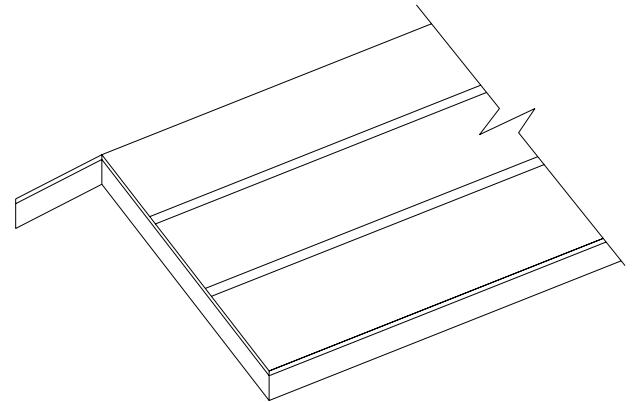
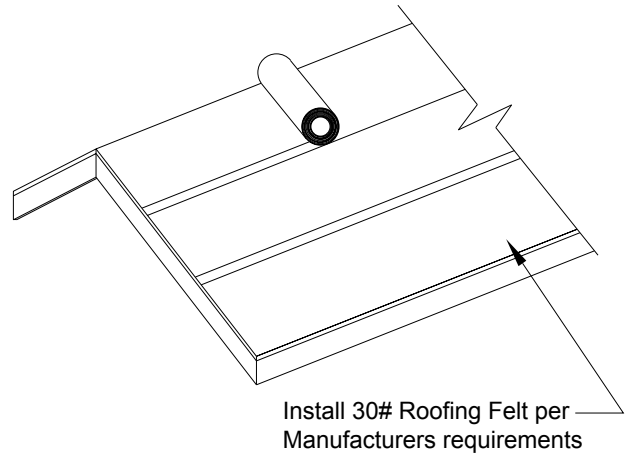
*Tape Sealant at top and bottom of closure

SNOW GUARD DETAIL



CONDITION DETAILS (CONT.)

FELT INSTALLATION DETAILS



AUTHORIZED DEALER:

metal sales
manufacturing corporation



Spokane, Washington: 800.572.6565
Kent, Washington: 800.431.3470
www.metalsales.us.com