INSPIRE®
ROOFING PRODUCTS

The Tapco GROUP
A HEADWATERS COMPANY

Application Guidelines - SHAKE
General Information

No Special Tools Required

- hand fastened or fastened with a pneumatic nail gun
- utility knife or a standard circular saw
- tape measure, pry bar, tin snips
- chalk line with blue chalk (do not use red chalk)

Storing the Product

For proper installation, the shakes need to be stored on the original pallet on a flat surface. Proper storage of the product at the jobsite is important. The shakes are cambered to ensure that maximum pressure is transferred to the leading edge of the shake during installation. **Do not double stack pallets**.

Conditions: Perform work when existing and forecasted weather permits. Work should be performed in a safe and professional manner and when ambient weather conditions are within the limits established by In-Spire Roofing Products.

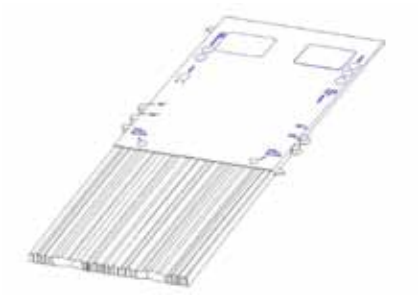
Storage: InSpire shake should not be stored on roof decks in such a manner as to over-stress and/or damage the deck and supporting structure.

Cold Weather Installation: Shakes should be stored in original packaging in a storage facility where the temperature meets or exceeds 45°F. Use protective coverage over all pallets while being temporarily stored on-site. Roof shakes must be conditioned at a temperature no lower than 45°F for twenty-four (24) hours prior to use. Shakes may be installed at temperatures as low as 32°F but must be hand fastened, the use of a pneumatic gun below 45°F will result in cracking and webbing in the fastened area. Be sure to follow the manufacturer's installation requirements for all underlayment and any other applications. Comply with any and all local building code requirements. **Note of Caution**: The shakes can be slippery under certain conditions and jobsite safety procedures should be enforced.

Product Description

The shakes are manufactured from multiple natural patterns. The shakes measures nominally 24" in height with 10", 7.5" and 5" in width.

InSpire Shake



Starter Piece
Height: 14"
Width: 12.5"

Hip and Ridge
Width: 12"–Height: 24"
Exposure: 10.25"
Pre-formed Pitch: 4/12 - 8/12
9/12 - 14/12

Class A or Class C

10.25"	lbs	pieces	bundles	squares	pallets
bundle	28.64	24			
square	215	180	7.32		
pallet	1,375	1,152	48	6.55	
truck	30,244	25,344	1056	144.26	22

InSpire Shake Hip & Ridge	
Lbs. per piece	1.7
Lbs. per bundle	17
Pieces per bundle	10
Lineal feet per bundle	8.33

InSpire Starter	
Lbs. per piece	1.53
Lbs. per bundle	36.72
Pieces per bundle	24
Lineal feet per bundle	25

Accessory Items	
Original Snow Guard	100 per 40 lb per box
1½" Stainless Steel Ring Shank Coil Nails	7,200 pcs. per 50 lb box
1½" Stainless Steel Ring Shank Hand Nails	3,475 pcs. per 25 lb box
Class A Roofing Underlayment	Layfast TU35 (2 square coverage roll)
RidgeMaster Plus 11"	40 lf per box 10 pcs. per box, 4 ft per piece

Exposure Requirements

Roof Slope	InSpire Exposure
5:12 and above	10.25"
Below 5/12-3/12	9.25"

Product Ratings and Certifications

- Hail Rating – UL2218 Class IV
- Fire Rating – Class A or Class C
- Miami Dade TAS-100 (110 mph wind driven rain)

Fastener Recommendations

Shakes and starters should be applied using two 2 ring shank fasteners (stainless steel or copper are recommended) with a minimum 3/8" diameter head and minimum length of 1½". Corrosion resistant fasteners are required in coastal areas. The length of the Hip & Ridge fastener should be a minimum length of 2" over field shakes and 3" over ridge vent.

Note: Caution should always be used to ensure against over/under penetration of the fastener. **Do not over drive the fastener.**

The fastener head should be contacting the shake within the center of the nailing target circle.

All shakes will be attached with two fasteners, as per these instructions.

Improper fastening can compromise the roof system and voids the manufacturer warranty.

Roof Decking Materials

- Minimum of 15/32" plywood decking
- Minimum 15/16" solid wood decking
- Minimum 7/16" oriented strand board (OSB)

Metals

Minimum recommendations for valleys, eave drip starter strips, gable edge strips and flashing material:

- 16 oz. Copper
- 26 gauge corrosion Resistant Metal (Stainless Steel, Color Clad Steel, Color Clad Aluminum)

Note: The choice of metals and fasteners should be consistent in material. Extended-life type materials should always be used for longevity of the roof system.

InSpire Roofing Products does not warranty metal components and accessories.

Roof Venting

Roof ventilation is necessary for the longevity of the roof system. Having a cool attic in the summer and a dry attic in the winter helps prevent damage to building materials, reduce energy consumption, and prevent ice damming. During hot months, an un-vented roof system will maintain a higher surface temperature, thus shortening the life of any roof system.

During winter months ventilation is a key factor to remove moisture from the attic. Warm moist air inside a building travels up toward the attic in winter months. Problems occur when water vapor comes in contact with cold building materials and condensates. The structural elements of the attic will absorb moisture and over time may lead to rotting wood and/or mold.

With a balanced ventilation system split between the ridge and soffit, 1 square foot of net free area is required for every 300 square feet of attic floor space.

It is required to have 1 square foot of ventilation for every 150 square feet of attic floor space if this balance cannot be achieved. Ventilation is necessary for extended life of the roof system. InSpire Roofing Products will not warranty an un-vented roof and/or improperly vented roof system.

Ventilation Requirements for a Balanced Ventilation System

1. Determine the square footage of the attic floor space; ex. Attic is 45'x100'=4,500 square feet
2. If you will be able to equally balance your ventilation system, divide the attic floor space by 300. (4500÷300=15.) The amount of Net Free Ventilation Area (NFVA) required in this example is 15 square feet.
3. Convert this to square inches by multiplying the NFVA by 144. (15 x 144=2,160 square inches NFVA.)
4. Divide the total NFVA by 2 to determine how much ventilation is required in the upper and lower portions of the attic (2,160÷2=1,080 square inches of NFVA.)
5. Now determine how many intake and exhaust units are required, for example soffit vent and ridge vent.
6. It is permitted to use the 1/300 ratio when at least 50 percent but not more than 80 percent of the ventilated area is located in the upper portion of the attic. If this ratio cannot be achieved, a ratio of 1 square foot NFVA for every 150 square feet of attic floor space must be used.

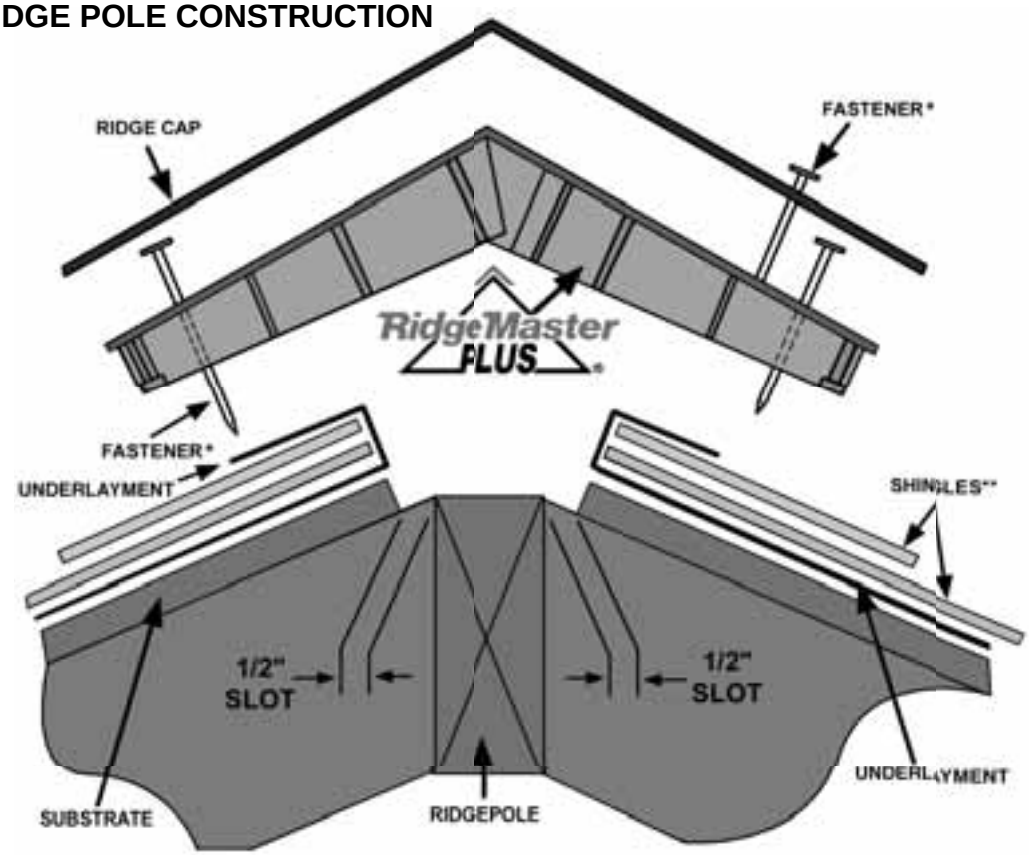
RidgeMaster Plus Installation Guidelines

We recommend RidgeMaster Plus 11" to meet your ventilation requirements. Make sure to follow the steps below when installing InSpire shake and RidgeMaster Plus

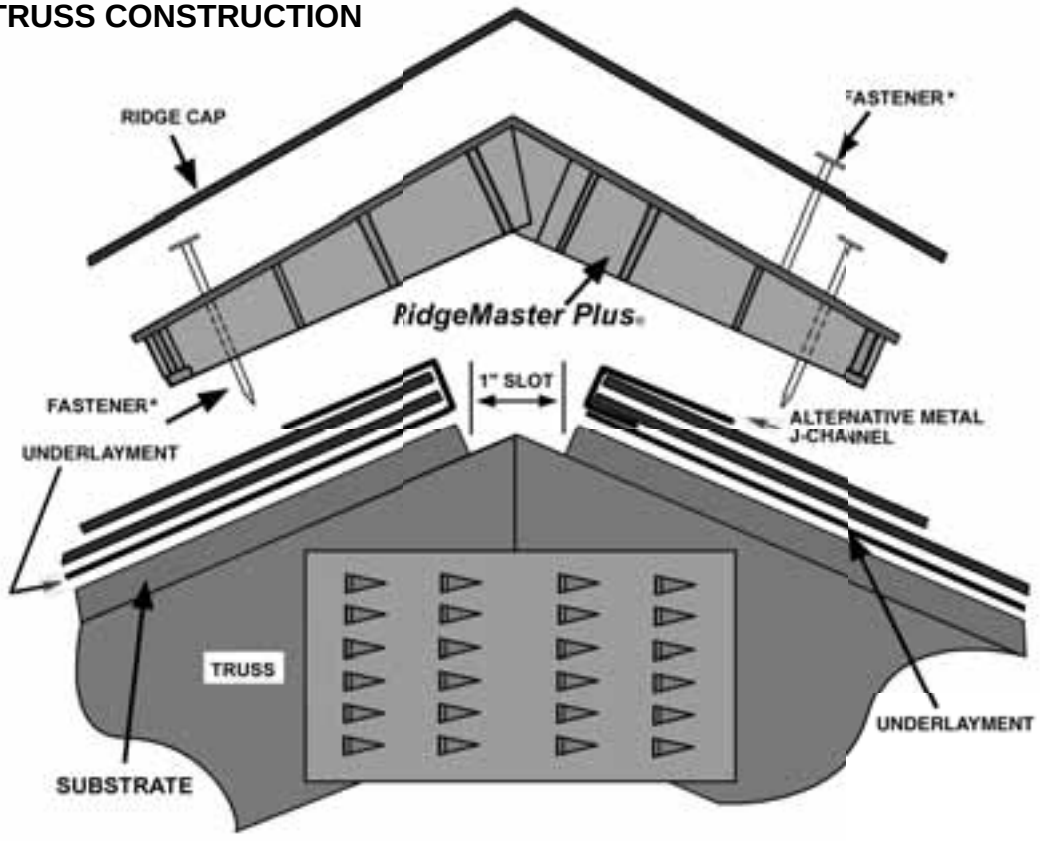
1. Cut a 1" opening in the ridge of the roof, end all cuts 12" from outside walls, chimneys, ridge corners or hip joints.
2. Install shakes up to the opening,
3. Fold felt over last course of field shakes or install metal J channel to prevent the infiltration of fine powder snow between keyways.
4. Install RidgeMaster Plus using 3" roofing nails. RidgeMaster Plus should be installed 12" beyond the slot opening. For best appearance install RidgeMaster Plus along the entire length of the ridge.
5. Install InSpire Ridge Cap pieces over the RidgeMaster Plus, nailing in the designated RidgeMaster Plus nail target area. Use 3" long Stainless steel nails.
6. RidgeMaster Plus has an overlap and an under lap end that interlock when laid end to end in proper orientation. This unites the 4 foot sections into a single structural integrated, weather tight system. Always install RidgeMaster Plus with overlap end on outside terminal end of ridge. You should also complete your ridge vent with factory end on the opposite terminal end of the ridge.

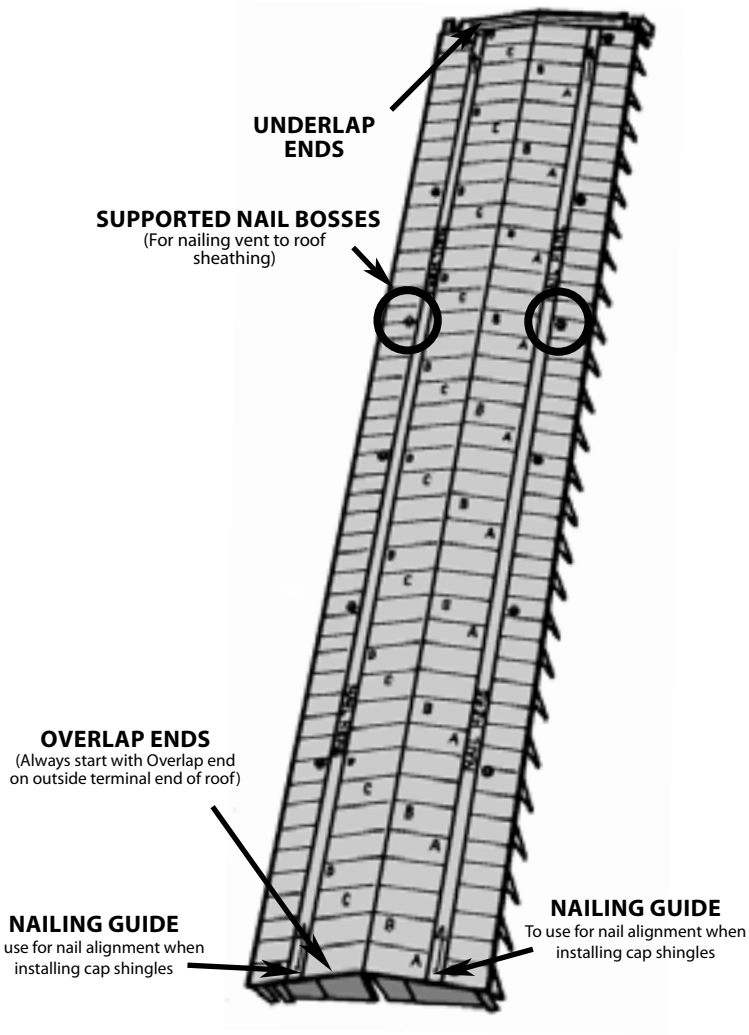
RidgeMaster Plus will provide 12.228 square inches of NFVA per lineal foot.

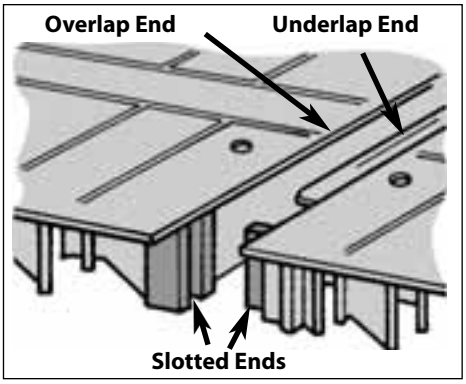
RIDGE POLE CONSTRUCTION

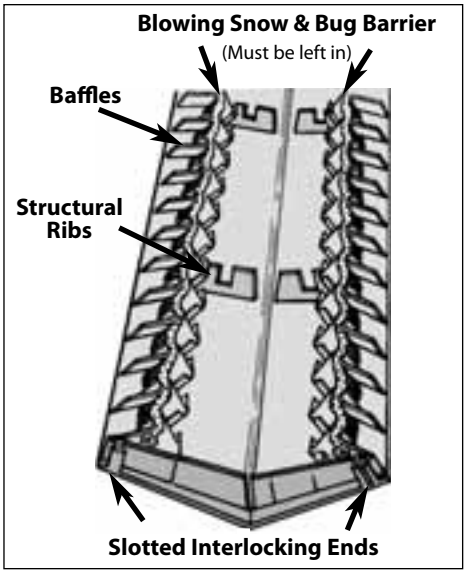


TRUSS CONSTRUCTION




UNDERLAP ENDS
SUPPORTED NAIL BOSSES
(For nailing vent to roof sheathing)
OVERLAP ENDS
(Always start with Overlap end on outside terminal end of roof)
NAILING GUIDE
To use for nail alignment when installing cap shingles
NAILING GUIDE
To use for nail alignment when installing cap shingles


Overlap End
Underlap End
Slotted Ends


Blowing Snow & Bug Barrier
(Must be left in)
Baffles
Structural Ribs
Slotted Interlocking Ends

Spacing Between the Shakes

1/2" spacer tabs are provided on every shake and starter shake to aid in maintaining consistent shake spacing.

The spacers will allow for any movement of the roof deck and expansion/contraction of the shake.

Roof Staging/Roof Brackets

Roof pitches with severe slopes require additional preparation or staging in order to provide a safe and functional work area while installing the shake. The staging of the roof will require the use of roof brackets and these brackets should be installed according to the instructions provided by the roof bracket manufacturer.

When using roof brackets while installing shakes, observe the following guidelines:

1. Locate the nail targets on the shake and place the roof bracket fastener through the shake to either the far right or the far left of the shake, on a plane even with the nail targets.
2. Install the roof bracket and toe board in a safe and secure manner and in accordance with the roof bracket manufacturer's instructions.
3. Removal
4. Lift the shake that overlays on the roof bracket fastener.
5. Remove the roof bracket from the fastener and lay it on top of the roof bracket fastener.
6. Lay the overlay shake on top of the bracket and place a piece of wood blocking on the top overlay shake.
7. Ensuring that the roof bracket is positioned over the roof bracket fastener, hammer the wood blocking and drive the roof bracket fastener flush with the surface of the shake.
8. Follow the instructions and proceed to the next staging area.

Roof Clean Up

In areas of hips and valleys where there will be an increased cutting of the shakes, it is recommended that these areas are swept daily and the cuttings removed from the roof surface. This is not only for safety, but also to prevent any trimmings from clogging the gutters and down spouts.

Application Guidelines
SHAKE Installation

Preparation

Inspect all areas of the roof surface to be covered.

1. Under all circumstances, existing roofing materials must be removed down to the substrate prior to installation.
2. The surface area must be uniformly flat, smooth, sound, clean and free of irregularities.
3. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking and/or metal clips.
4. Verify that substrate is sloped for drainage and completely anchored to sound framing. Any foreign particles shall be cleaned from interlocking areas to ensure proper seating and to prevent moisture intrusion and ice damming. Proper provisions must be made for flashings and roof penetrations.
5. Even though metal flashing and other specialty flashings may not be the responsibility of the roofing contractor, these items must be in place prior to shake installation. Work by other trades which penetrate the roof plane must be completed.
6. Product handling and storage on a flat surface is very important. The shakes have a cambered design to ensure that the maximum pressure is transferred to the leading edge of the shake during the installation process. **Do not double stack pallets**.
7. Technical Bulletins are available to address specific aspects and/or requirements as they relate to certain applications. Please consult the website or contact InSpire Roofing Products for this information.

Tear off and Reroof

In the event of a roof tear off, it is imperative that the building materials will last the lifetime of the roofing material.

Carefully inspect decking material to ensure it will last the life of the roof shake. Roofing over compromised decking material will void the InSpire Roofing Products manufacturer warranty.

Underlayment

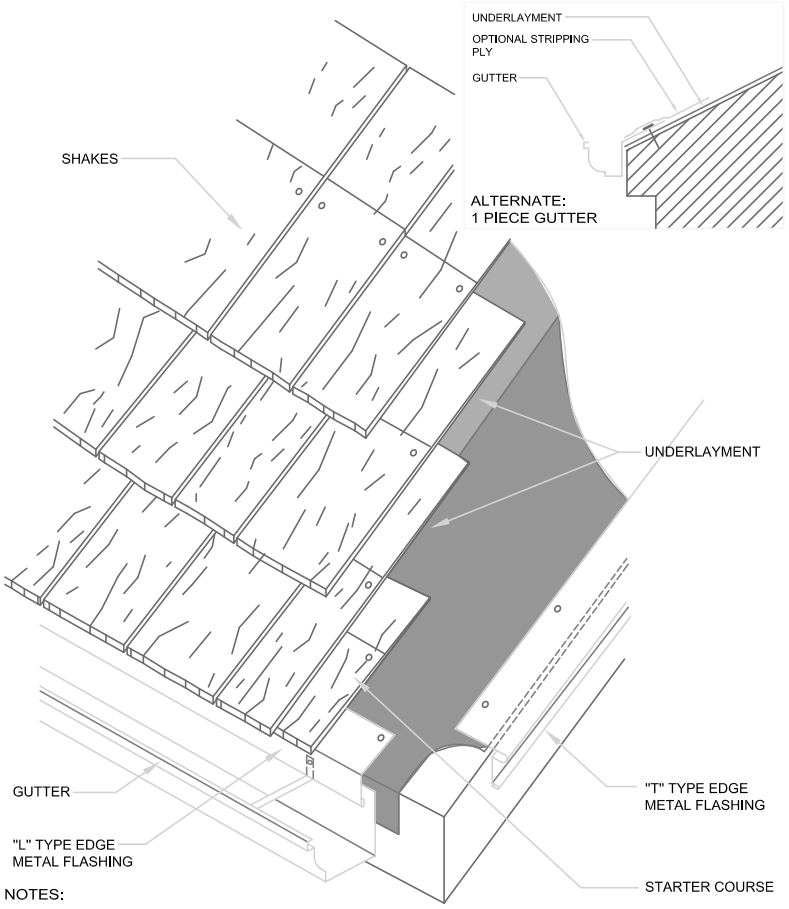
1. Ice and water barrier – Is highly recommended in cold climate areas where winter temperature can average below 25° F to protect against ice dams. Ice shield at eaves should extend 2' beyond the interior wall and in all valleys, rakes and around all roof penetrations. Be sure to follow underlayment manufacturer installation recommendations and observe your local building codes. For a Class C System – Single-layer ASTM D-228 30# Felt Underlayment: Felt should be preserved unbroken, tight and whole. Install perpendicular to roof slope in parallel courses. Lap sides of successive courses a minimum of 3" over each underlying course. Lap ends a minimum of 6".

Stagger end laps between succeeding courses at least 72". Fasten with felt underlayment nails or equivalent. Observe local building codes.

a) Install felt underlayment on roof deck not covered by self-adhering moisture barrier membrane. Lap edges of felt over self-adhering membrane not less than 3" in direction to shed water. Lap ends of felt not less than 6" over self-adhering membrane

Felt underlayment should not be placed under the self-adhering moisture barrier membrane, but should overlap the membrane no less than 3". Side laps should be no less than 6".

2. In order to achieve a Class A Fire Rating the following is required:
   a) One Layer MB Technologies Layfast TU 35 underlayment to cover the entire roof deck. TU 35 should be installed following the manufacturer's instructions. Additional peel and stick underlayment should be applied according to your local building codes prior to installing the TU 35. Please note that all other materials have their own manufacturer's instructions that must be followed.



General Installation

After installing the underlayment and before installing the InSpire roof shakes, clean the surface of debris and dirt. Foreign particles shall be cleaned and removed from interlocking areas to ensure proper seating of the product and to prevent moisture intrusion and ice damming. All roof penetrations shall be properly flashed and secured into position with deck and underlayment fasteners properly driven and not protruding prior to installing InSpire Roofing Products.

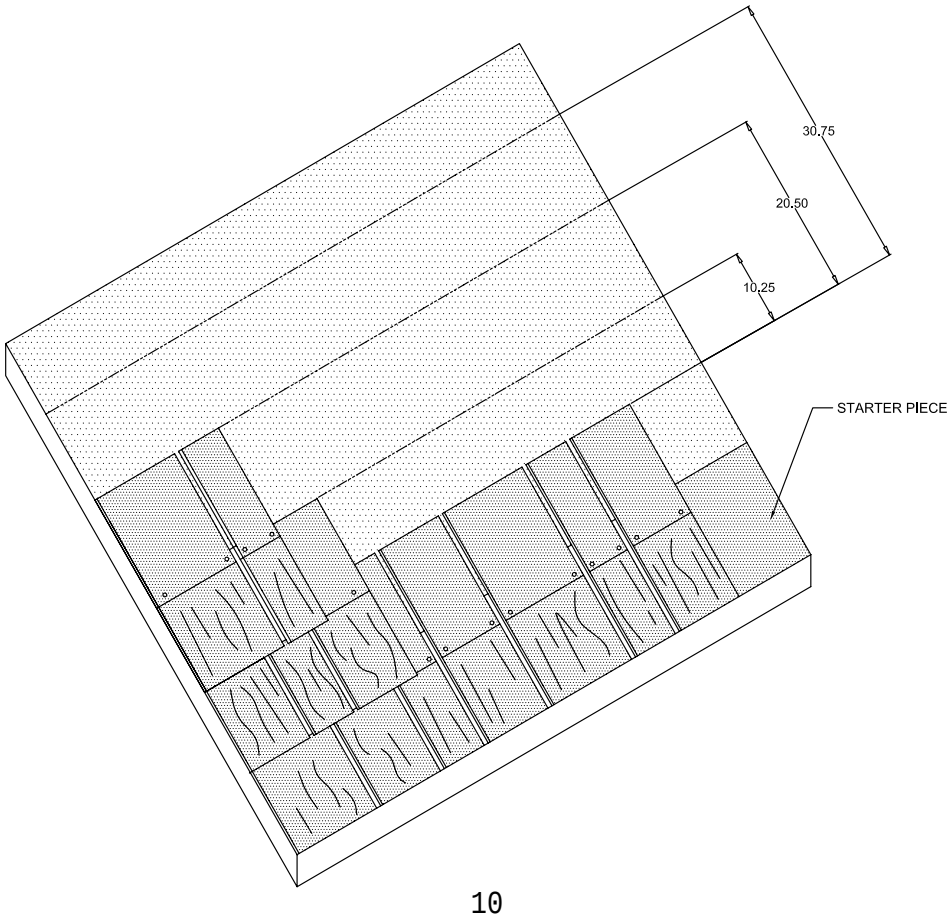
Each shake shall be fastened with a minimum of two ring shank roofing fasteners. The fasteners must be a minimum of 1½" long and 1/8" in diameter with a 3/8" diameter head. Copper, stainless steel, or hot-dipped galvanized fasteners are recommended. It is required that the fasteners be placed within the nailing target as provided in 2 places on each shake. Fastener must penetrate decking at least 3/4

Starter and First Course

Starter tiles should hang past eve drip edge no more than 1-1/2" and should be fastened in the target areas provided. Gap between starter tiles should be approximately 1/2". The first course of shake should be installed even with the butt edge of the starter course. Gap between starter and first course and all succeeding courses should be a minimum of 2". This ensures that nails are covered by the next course and no through joints from roof surface to underlayment are exposed.

Straight Courses

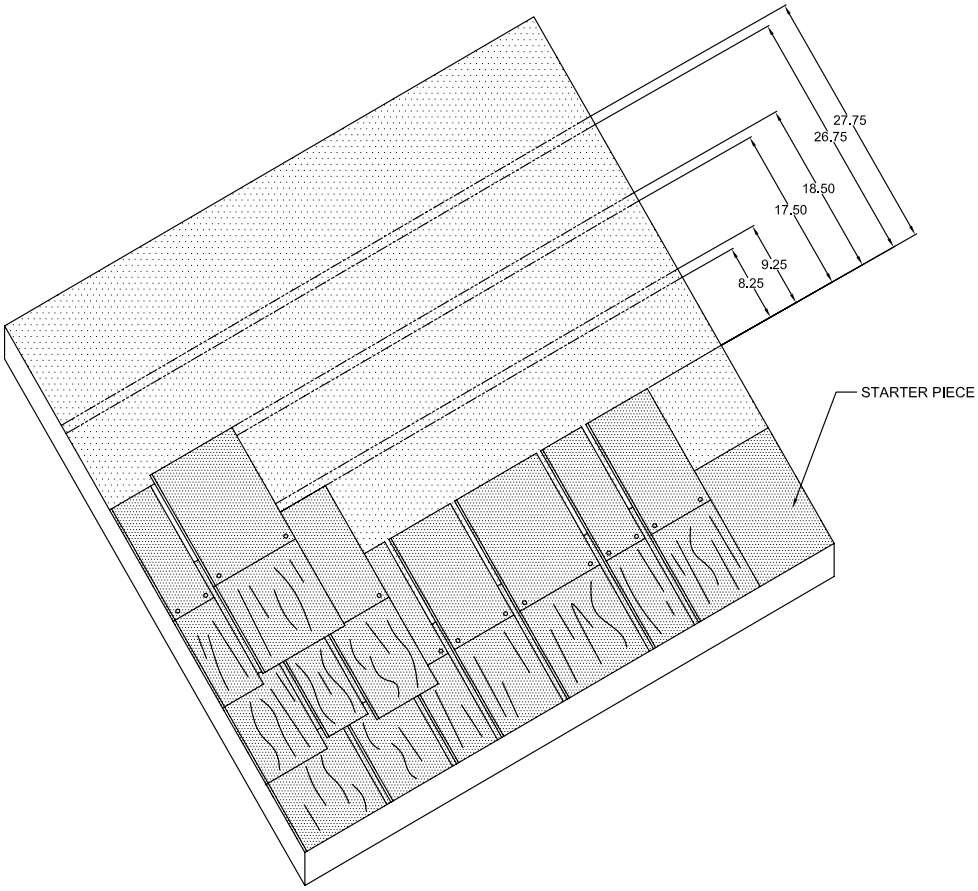
Strike the chalk lines horizontally at the exposure level desired to ensure that the shakes are installed straight and uniform. 9 .25 or 10.25 exposures are acceptable when installing straight courses for roof pitches 4/12 and above.



Staggered Courses

A staggered roof pattern may be more visually pleasing. If the roof pitch is 4/12 or less you must use a 9.25" exposure.

1. It is recommended that you chalk every course when applying this method.
2. The first course should be installed directly over the starter course. The first Chalk line should be 9.25" from the top of the first course, or 33" from the butt edge.
3. The top of the first shake should be placed on the chalk line. Then next shake should be placed 1" be low the chalk line. The locating tabs will assist in this process.

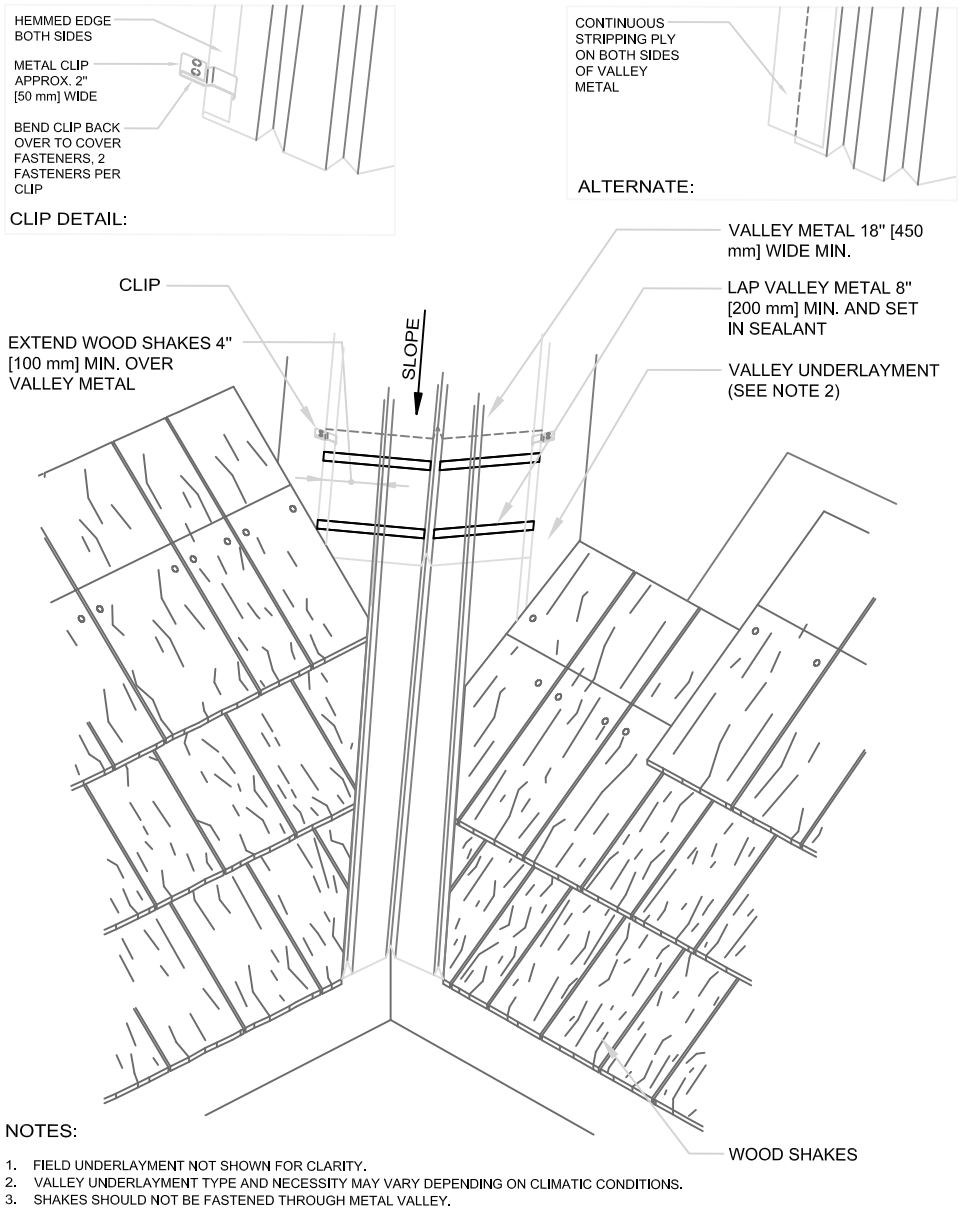


Valleys

1. Install a full 36" piece of ice and water shield centered thru the entire valley
2. Fasten the valley every 2' using metal cleats
3. Shake over valley by covering flashing by a minimum of 4". Make sure not to drive fasteners from shakes into the valley flashing

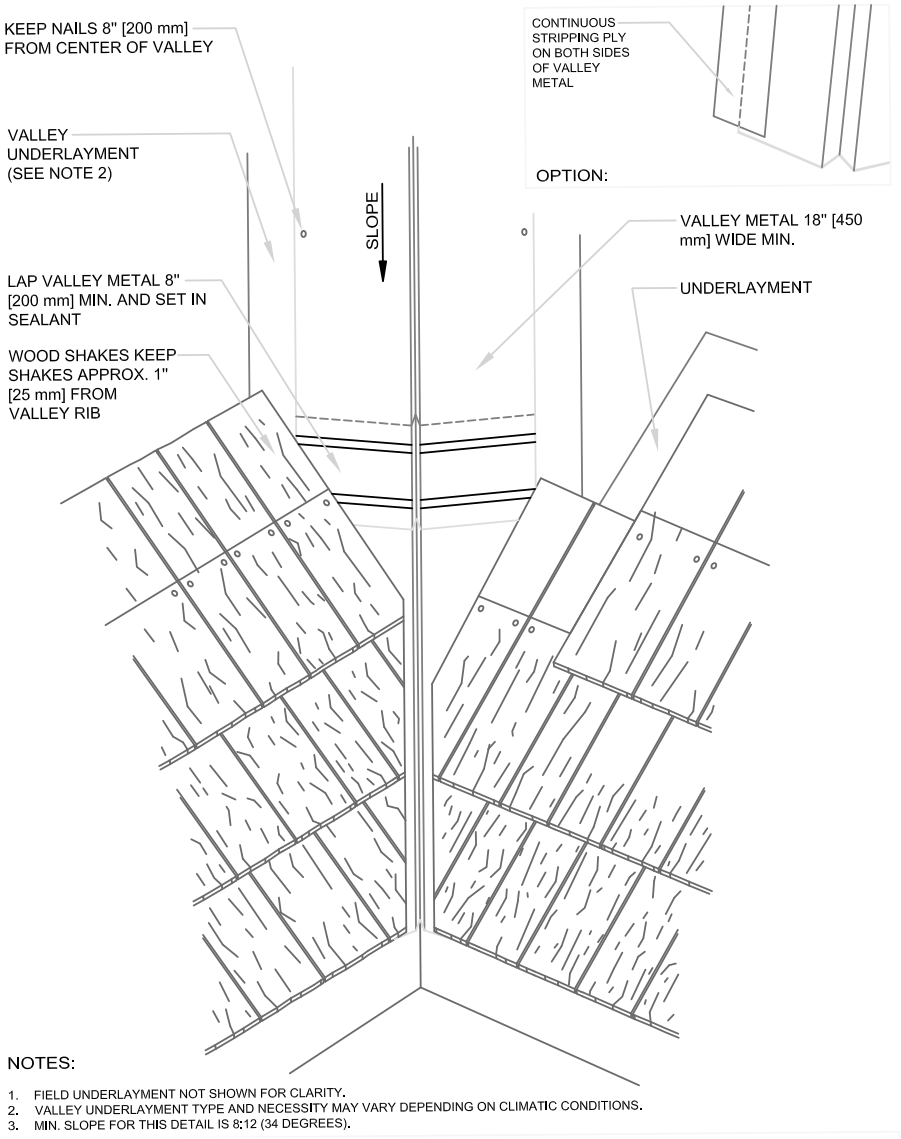
Open Valley Design

For an open Valley Design a double “W" Valley is recommended to avoid seeing he structural ribbing.



Closed Valley Design

For a closed Valley, a Single Diverter “W" Valley or Standing I Seam valley should be used. Shakes should be butted next to the diverter.



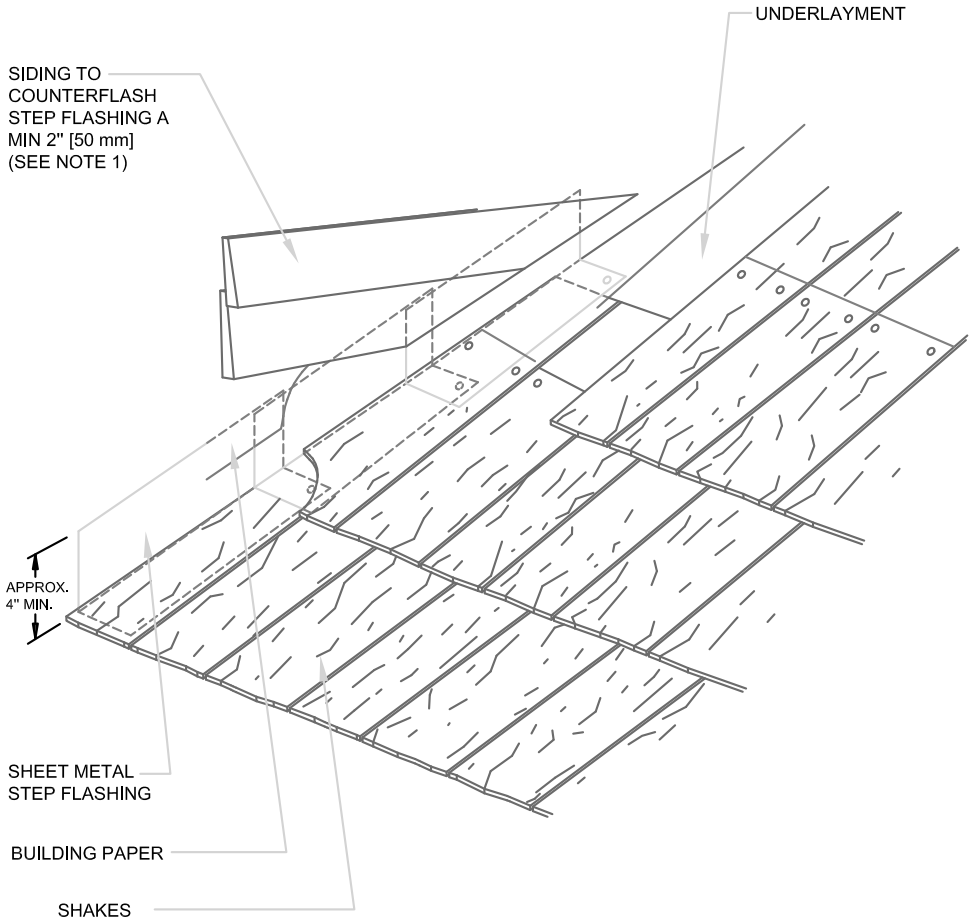
Flashings

Flashings should be used around all roof penetrations, such as walls, chimneys, dormers, parapets, vent pipes, skylights, etc. Proven extended life materials are copper, lead, and stainless steel.

NOTE: When dissimilar metals are placed in contact with one another, galvanic corrosion will result which can cause electropositive metals to deteriorate. One way this can be avoided is by placing strips of sheet lead between the two metals. InSpire Roofing Products does not warranty metal components and accessories.

Step Flashings

Step flashings are used over or under the roof coverings and are turned up on the vertical surface. Step flashings should extend under the uppermost row of the roof shake the full depth of the roof shake or at least 4" over the shake immediately below the metal. The vertical leg of the metal should be turned up a minimum of 4" and extend 4" on the shake with a 3/4" hem. Flashings should have a minimum length of 12" and must overlap a minimum of 2".

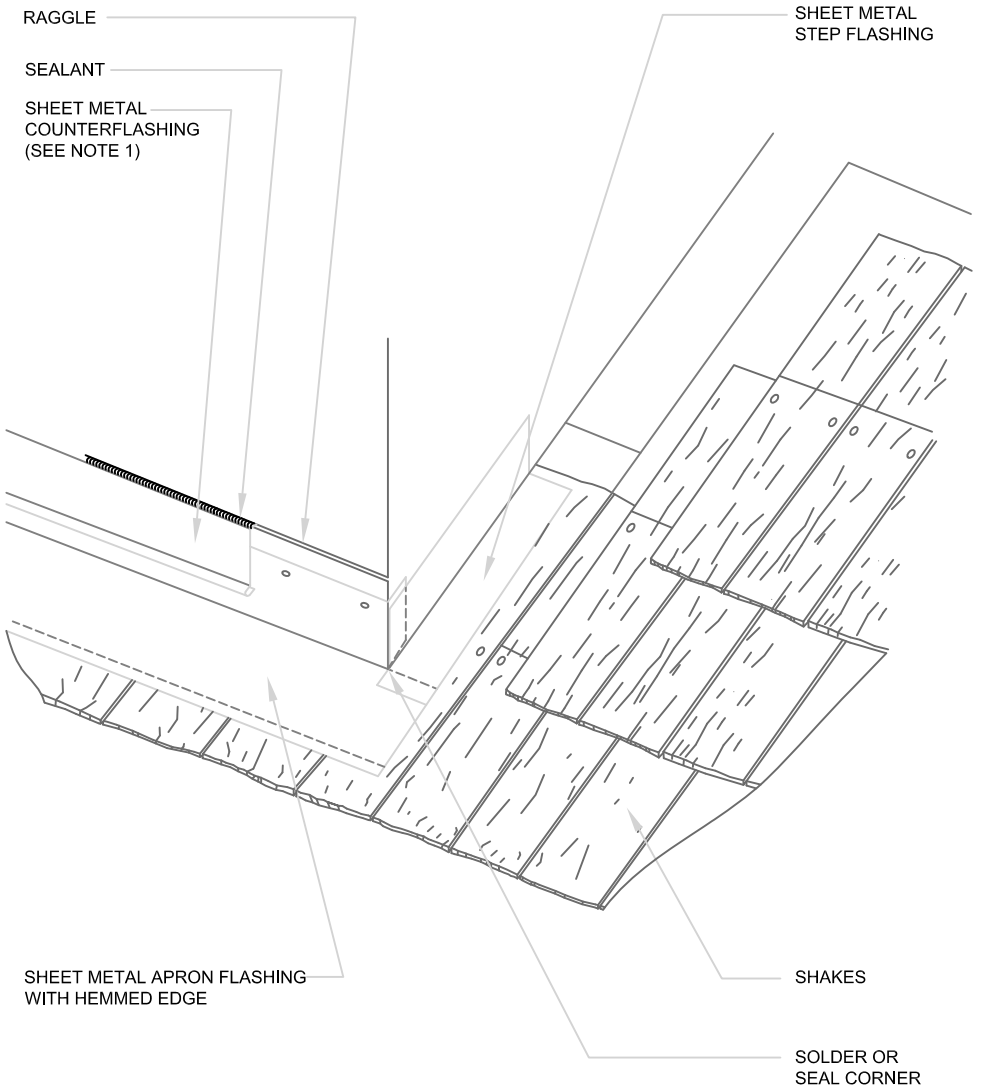


NOTES:

1. ALTERNATE COUNTERFLASHING PROFILES CAN BE USED.

Apron (Roof to Wall) Flashing

Apron flashing is used when a roof terminates to a wall causing a course to be cut and face nailed. It is installed over the shakes and behind siding or counter/cap flashing.

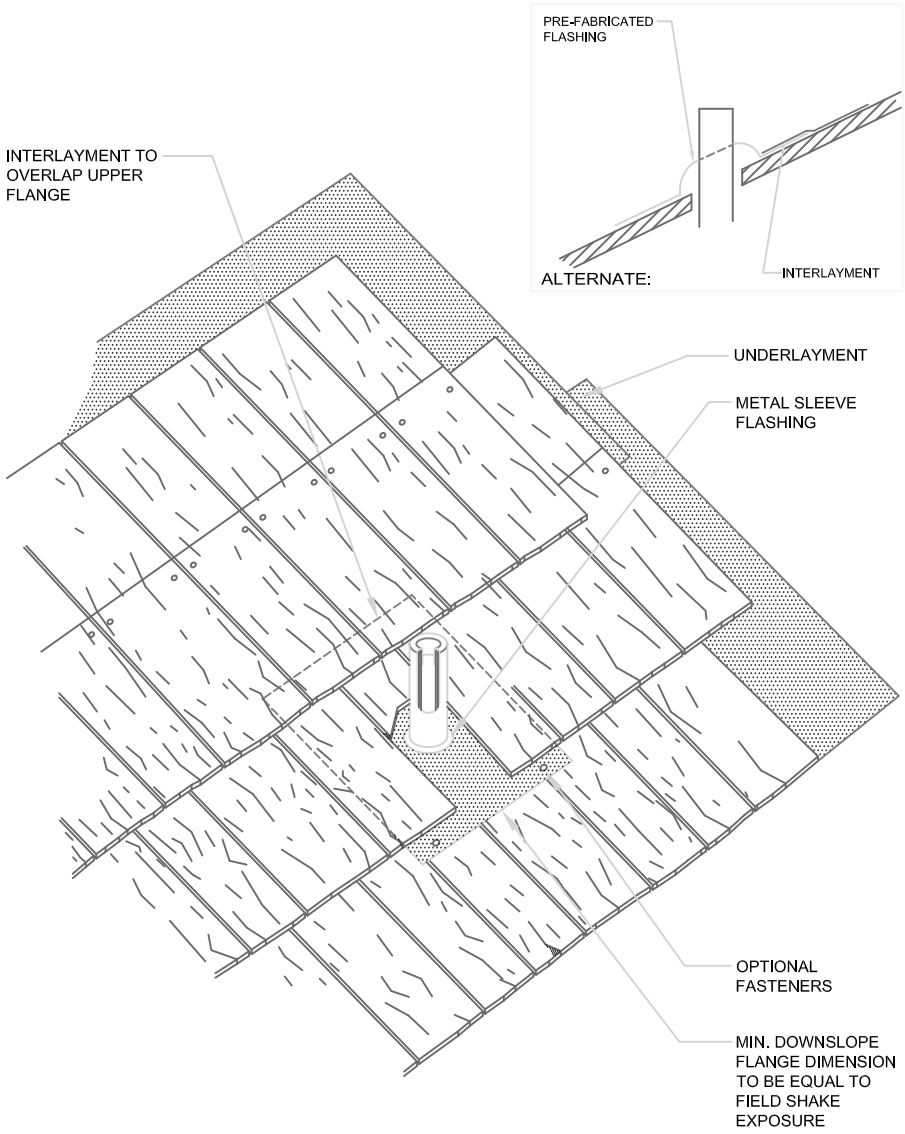


NOTES:

1. ALTERNATE COUNTERFLASHING PROFILES CAN BE USED.
2. REFER TO THE SHEET METAL SECTION OF THE METAL ROOFING MANUAL FOR SECUREMENT AND JOINERY OPTIONS FOR SHEET METAL.

Vent Flashings

Normal type of roof vents or flashings can be used. A lead stack for plumbing pipes is recommended. Extended- life materials should always be used.



Hip & Ridge Detail

When pre-formed hip & ridge shakes are used, place fastener at fastener guides targets. Fasten hip shakes with 2 fasteners (one on each side). Maintain a maximum 10.25" exposure.

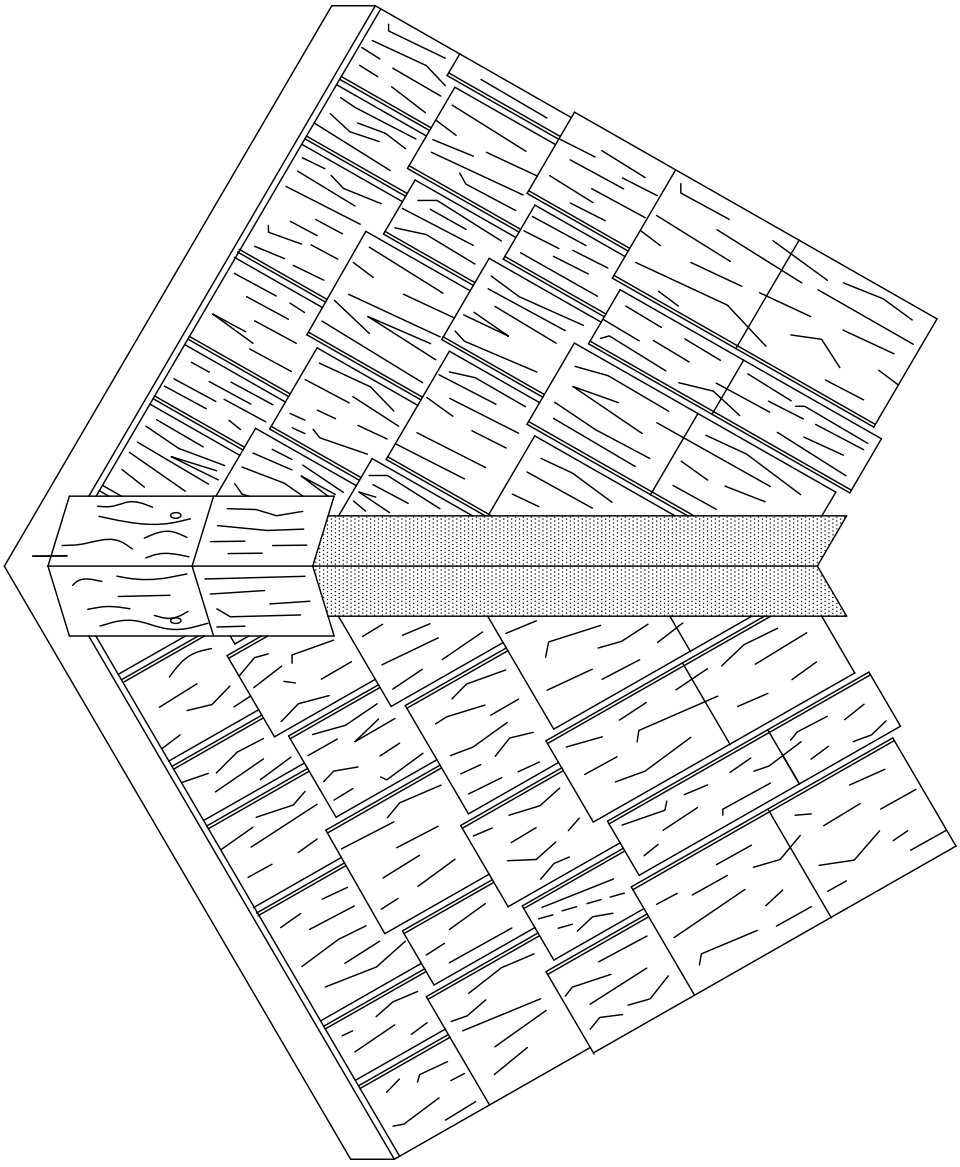
1) Hip & ridge roof shake installation requires the shake to be nailed in place.

   a) Chalk a straight line by placing one piece of hip at the eave and one near the peak, hold the chalk line at the edge of the shake on the top and bottom pieces. This will help keep the hip straight in the event of a crooked hip.

   b) Cover exposed heads of fasteners with an adhesive sealant compatible with the shake.

   c) Preformed Ridge Roof Shakes require 10.25" exposure and require 3" length fasteners.

   d) Fastener deck penetration must be a minimum of 3/4" in depth.



Application Guidelines
Installation Tips

Technical Bulletins .....The Application Guidelines address the general procedures for the installation of this product. Technical Bulletins are available to address specific aspects and/or requirements as they relate to certain applications. Please consult the website, www.inspireroofingproducts.com, or contact Matt Michalski at 248-668-6215 for this information.

Temperature .....To avoid cracking or webbing when fastening pneumatically, the recommended ambient temperature of shake tiles should not be lower than 45°F, however hand nailing is required between 32° and 45°.

Decking.....Minimum 15/32" plywood, 7/16" OSB, or 15/16" minimum solid wood is required.

Underlayment .....A minimum of one layer of Type II (No. 30) Asphalt-saturated Organic Felt, complying with ASTM D226 should be used on the decking surface along with standard self-adhering moisture barrier membrane at the hip, ridge, valley, eaves, and rake areas and in accordance with local building codes. For a Class A fire rating Layfast TU-35 SBS by MB Technologies underlayment must be used in place of 30 lb felt.

Chalk Lines.....Chalk lines should be snapped horizontally at the exposure line for each row course to ensure that the tiles are straight and uniform. **Do not use red chalk**.

Bending & Blending.....No need to bend or blend InSpire shake due to the camber of the tile and our color process.

Starters / Overhang.....Starter pieces should be used along eaves with the butts extending up to1½" beyond drip edge.

Fasteners.....Ring Shank Stainless Steel or Copper Fasteners are recommended due to the extended life of the product. Ring Shank Galvanized fasteners are acceptable when the galvanized fasteners do not make contact with any extended-life metals that may be used in the valley or flashing areas. Corrosion resistant fasteners are always recommended, especially in coastal areas.

Fastener Lengths .....Shakes should be fastened with a minimum of 1½" length long fasteners with a minimum 3/8" diameter head. Ridge Cap pieces should be fastened with 3" long fasteners and with a minimum head diameter of 3/8".

Roof Tiles.....Flatten the camber of the shake to the deck. Install fastener centered within the nail target area. Fastener head should lay on top of the tile in the nail target area to avoid tile lift. **Do not over penetrate the fastener!**

Scrap .....Up to a 10% scrap factor should be considered when estimating your project and considering the overall field of the roof and the total roof cuts required.