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TIOGA - Product Data Sheet

Designed for demanding residential, light commercial and architectural applications, Tioga is a snap-together, concealed fastener roofing panel. Installation is quick and easy using pancake head self drilling fasteners in pre-punched holes in the panel flange. Tioga should be installed over a solid substrate with an appropriate moisture barrier.
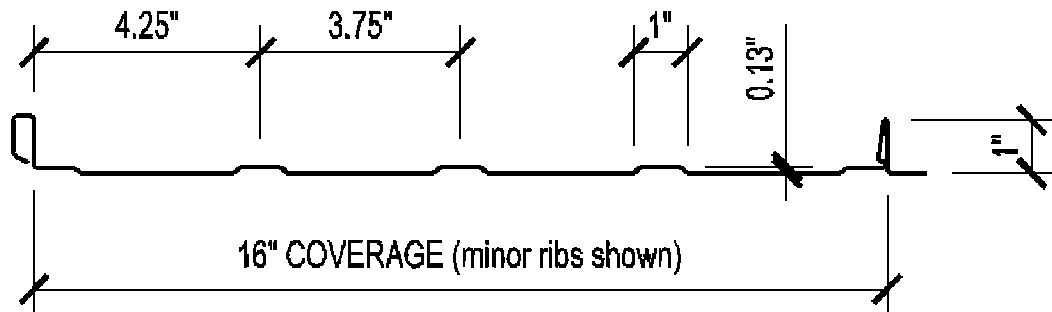

3.75"

18" COVERAGE (w/ minor ribs)

4"

16" COVERAGE (striated)

12" COVERAGE (smooth)
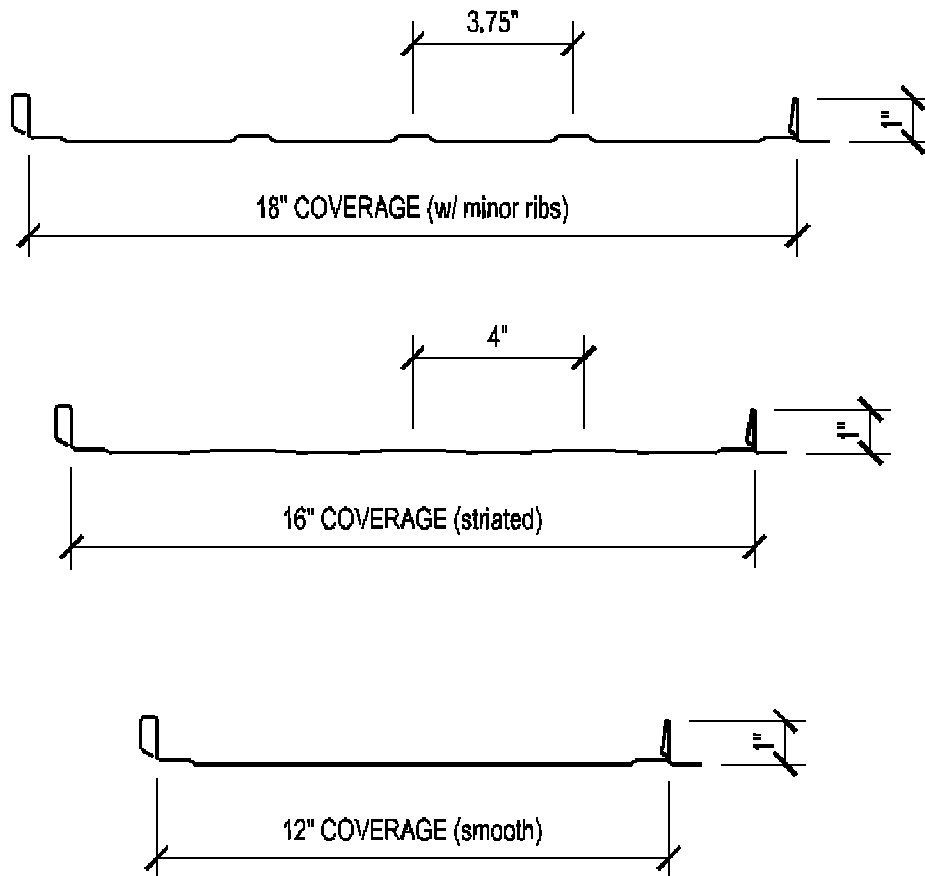
PANEL OPTIONS

Panel widths	16"; 12" and 18" available upon request
Panel configurations:	Smooth, Striated or Minor Ribs. Factory notching available
Panel lengths:	Up to 40 ft. Please inquire for longer lengths
Roof Slope:	Minimum 3:12 (recommended)
Gauge:	24, 26 or 29
Substrate:	Galvalume® or Galvanized steel
Paint System:	SMP or Kynar® 500/Hylar 5000®

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TIOGA – Engineering Data

16" COVERAGE (minor ribs shown)

SECTION PROPERTIES, 16" PANEL

TESTING

CLASS A – FIRE RATING
Metal is a noncombustible material and therefore holds the highest fire rating available - Class A. Therefore, many insurance companies offer discounts on fire insurance for homes with metal roofs. Please note that the fire classification of the material is not necessarily the fire classification of the entire roof; the roof will be fire rated based on <u>all</u> materials present, including old wood shingles if such are under the metal roofing material.

Oil canning is a natural occurrence in metal panels and is not cause for panel rejection. Prior to ordering and installing roofing panels, always check local building code requirements for additional requirements that may apply to your project. If necessary, consult a design professional for assistance.

Tioga is an excellent choice for demanding residential, light commercial and architectural applications. To achieve the best result, there are several topics that the installer and/or owner need to address before installing the Tioga panel system.

GENERAL INFORMATION

Before start of installation of the Tioga panel system, the installer should thoroughly familiarize himself with all installation instructions. Be sure to read this manual in its entirety before beginning. This manual provides suggested application procedures and details only and cannot replace the use of common sense and experience by the installer. Borga accepts no responsibility for conformance to state and local building codes, nor any other applicable project requirements. This responsibility rests solely on the installer, as does the responsibility to maintain a safe work environment at all times.

The installer and/or owner is responsible for the unloading of the shipment upon arrival, and proper equipment to do so. Upon delivery, the shipment shall be checked for damages. Material quantities shall be checked against the shipping list and immediately documented and reported. Please inspect panels for moisture accumulation. If moisture has formed, the panels should be unbundled, wiped dry, and allowed to dry completely. Once dry, carefully restack the panels and loosely recover allowing for ample air circulation.

Bundled sheets should be stored high enough off of the ground to allow for air circulation and prevent contact with accumulating water. If possible, elevate one end of the bundle to allow any moisture to run off the panels. Borga recommends covering the bundle with a tarpaulin. Do not use tight fitting plastic-type tarpaulins as panel bundle covers. While they may provide protection for heavy down-pours, they can also retard necessary ventilation and trap heat and moisture that may accelerate metal corrosion. If panels are to be stored in possible bad weather, it is suggested they be stored inside. Extended storage of panels in a bundle is not recommended.

CAUTION
Under no circumstances should the Tioga panels be stored near or come in contact with salt water, corrosive chemicals, ash or fumes generated or released inside the building or nearby plants, foundries, plating works, kilns, fertilizer, and wet or green lumber.

HANDLING

Installers should wear rubber sole shoes to keep from scuffing material while walking on the roof.

Handling of individual panels should be done carefully and properly to avoid bending or damaging the panels. Tioga panels should be carried by grasping the edge of the panel so that the Tioga panel is vertical to the ground. The panel should not be carried with the flat of the panel horizontal to the ground as this could cause the panel to buckle or bend in the center.

Normally individual panels can be handled by people placed every 6 ft to 8 ft along the length of the panel.

ROOF PREPARATION

NEW CONSTRUCTION
> Tioga is designed to be installed over solid wood substrate.
> The roof must be clear of any debris that might interfere with installation.
> Tioga is recommended to be installed over no less than a 30 lb. felt underlayment.
> The installer must utilize an alignment line ("chalk line") where the first panel is installed. This line should be vertical and 1/4" from the rake edge of the roof deck and square with the eave.

OVER EXISTING ROOFING
> Tioga is designed to be installed over solid wood substrate.
> The roof must be clear of any debris that might interfere with installation.
> Tioga is recommended to be installed over no less than a 30 lb. felt underlayment.
> The existing decking must be smooth, level and in good condition. Any wood substrate or parts of the wood substrate that does not meet those requirements shall be replaced.
> If there is an existing asphalt or other type of shingle roof, check local building codes to determine whether existing shingles must be removed before installation of metal panels.

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FASTENING RECOMMENDATIONS

For proper installation of the Tioga panel system, the following Maximum Recommended Fastener Spacing shall not be exceeded.

Substrate thickness	Max. Spacing
1/2"	12" o.c.
5/8" or thicker	24" o.c.

Notes:

The table above shows the fasteners required for Tioga panel system. Refer to the panel installation and flashing details of this manual for specific screw usage and spacing.

Panel attachment screws must be long enough to fully penetrate through the wood roof decking, or penetrate solid lumber at least one inch.

All screws must be coated to provide protection against corrosion.

Exposed fasteners must have sealing washer and should be the same color as the parts they attach.

Roofing nails may also required, e.g. for attachment of underlayment, but are not furnished by Borga, Inc.

Screws must be properly driven to ensure proper seal and holding strength. Do not underdrive or overdrive the screws.

Stainless steel rivets are not watertight.

Note that when the concealed fastening method of installation is desired, panels must be notched and field hemmed/bent to accommodate placement onto the Offset cleat. Please refer to the details of this manual for further information.

FIELD CUTTING

Tin snips or "nibbler" type electric tools are recommended for field cutting Tioga panels. Please note that cutting the steel generates sliver or metal chips. These slivers and metal chips must be removed immediately from the Tioga panels because they will damage the finish and shorten the life of the product.

To prevent damage to the finish the Tioga panels can be flipped over when cutting. This allows the slivers and metal chips to be brushed from the back side and avoids damaging the paint of the top side of the panels.

The use of a powered circular saw to cut metal panels is not recommended. This could increase the risk of edge rust and may increase the amount of slivers and metal chips on the panel surface which could damage the finish and shorten the life of the product.

When cutting Tioga panels, regardless of means, goggles must be worn for eye protection.
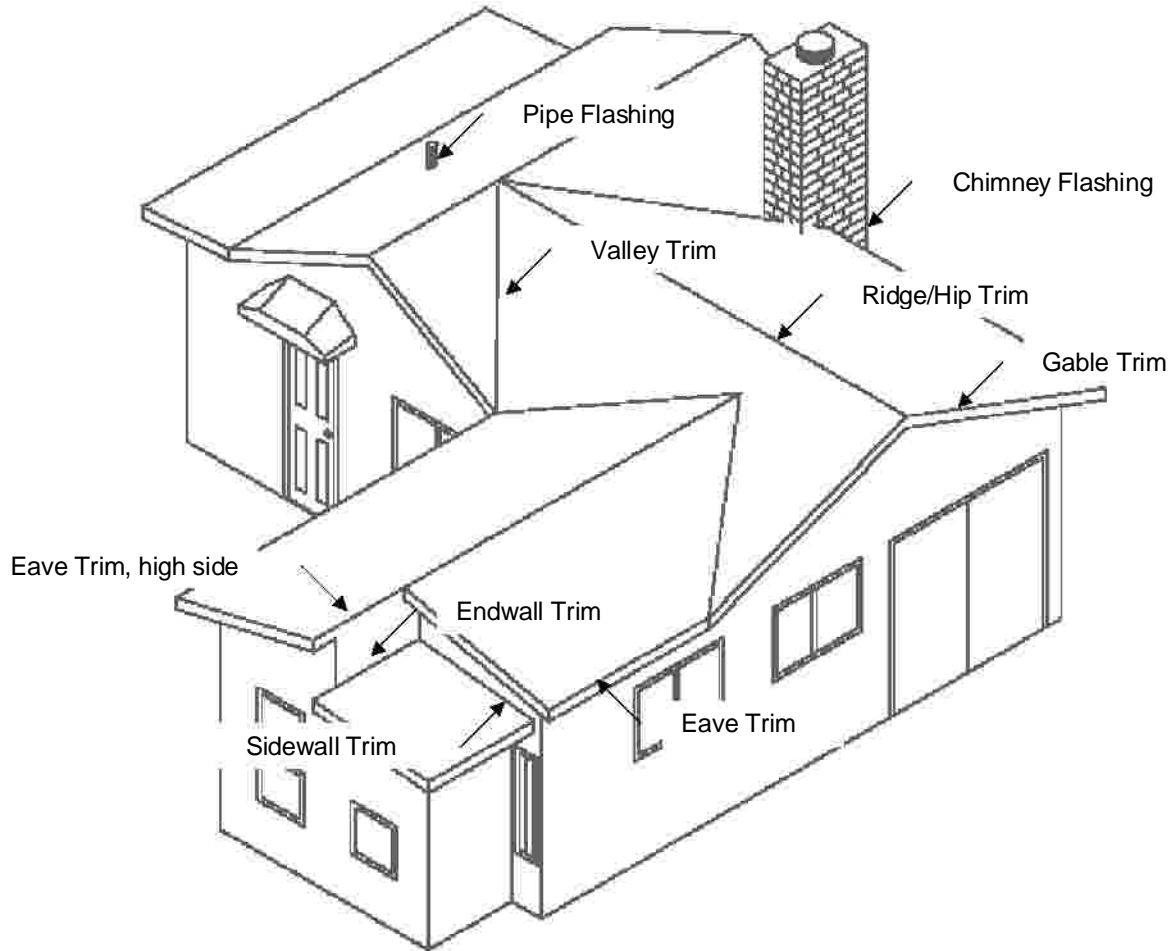
> **CAUTION**
> All product surfaces should be kept free of debris at all times. Installed surfaces should be wiped clean at the end of each work period. Never cut panels over metal surfaces. Metal shavings will rust on the surface, voiding the warranty.

TOUCH-UP PAINT

All painted panels and trim flashings have a factory applied baked on finish. Handling and installing panels may result in minor scratches or nicks to this paint finish. Touch-up paint is available in matching colors from Borga. It is recommended that a small brush be used to apply touch-up paint to those areas that are in need of repair. Touch-up paint does not have the superior chalk and fade resistance of the factory applied paint finish and will normally discolor at an accelerated rate. For this reason aerosol paint is not recommended because of the overspray that may occur.

For recommendations on how to apply trim and flashing in different areas, please refer to the following pages.

Pipe Flashing

Chimney Flashing

Valley Trim

Ridge/Hip Trim

Gable Trim

Eave Trim, high side

Endwall Trim

Eave Trim

Sidewall Trim

Note: Eave trim must be installed prior to panel installation. Also, the Tioga panel should overhang the eave line by 1" minimum.
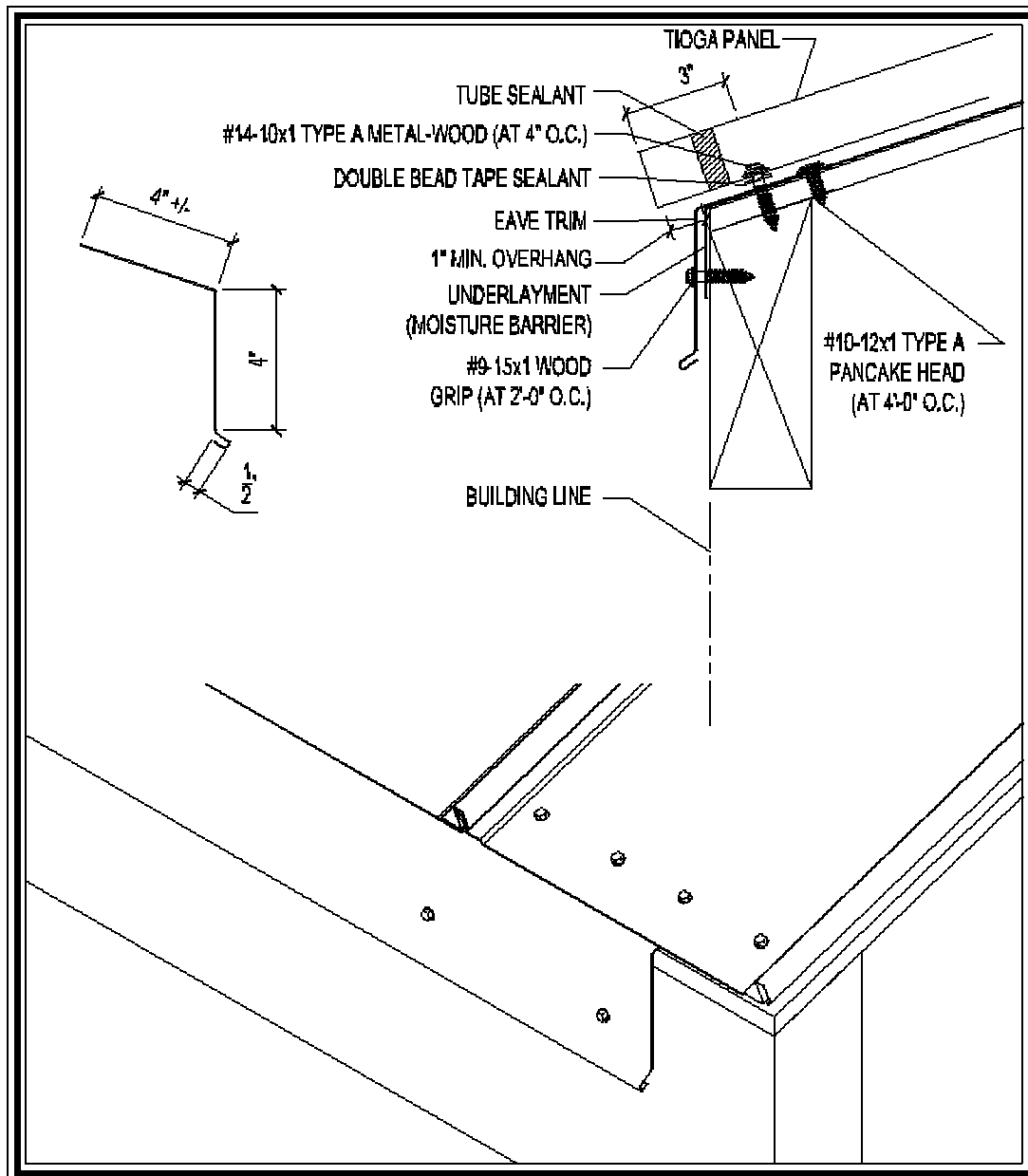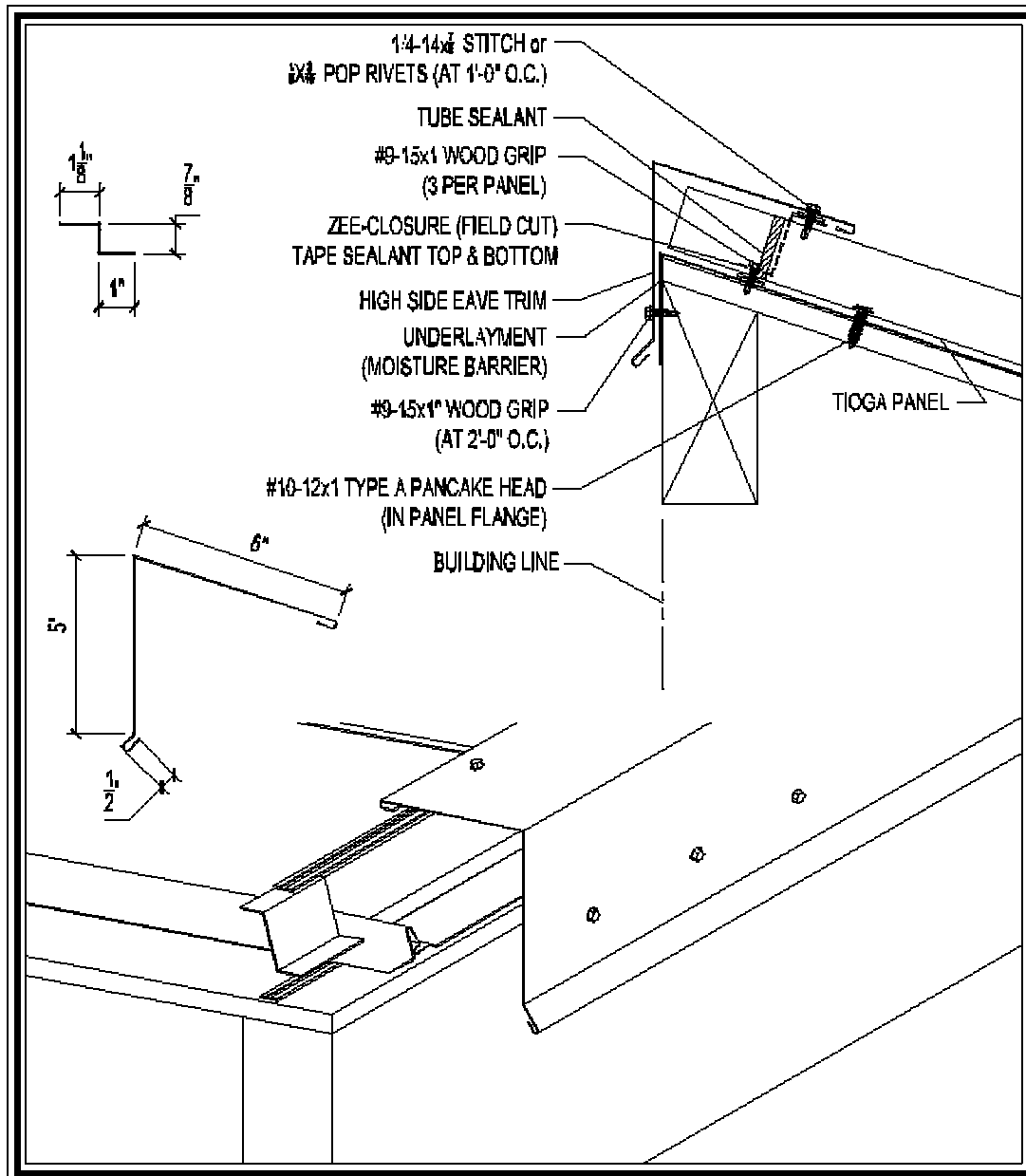

1. Attach Eave trim as shown with #10-12x1 Type A Pancake Head Wood screw.
2. Caulk and lap the Eave trim a minimum of 3", hooking the hem (see detail sheet).
3. Install panel and fasten at eave with color matched #14-10x1" Type A Metal-Wood screw with sealing washer.

Note: Eave trim and Offset cleat must be installed prior to panel installation. Also, the Tioga panel should overhang the eave line by 1" minimum.
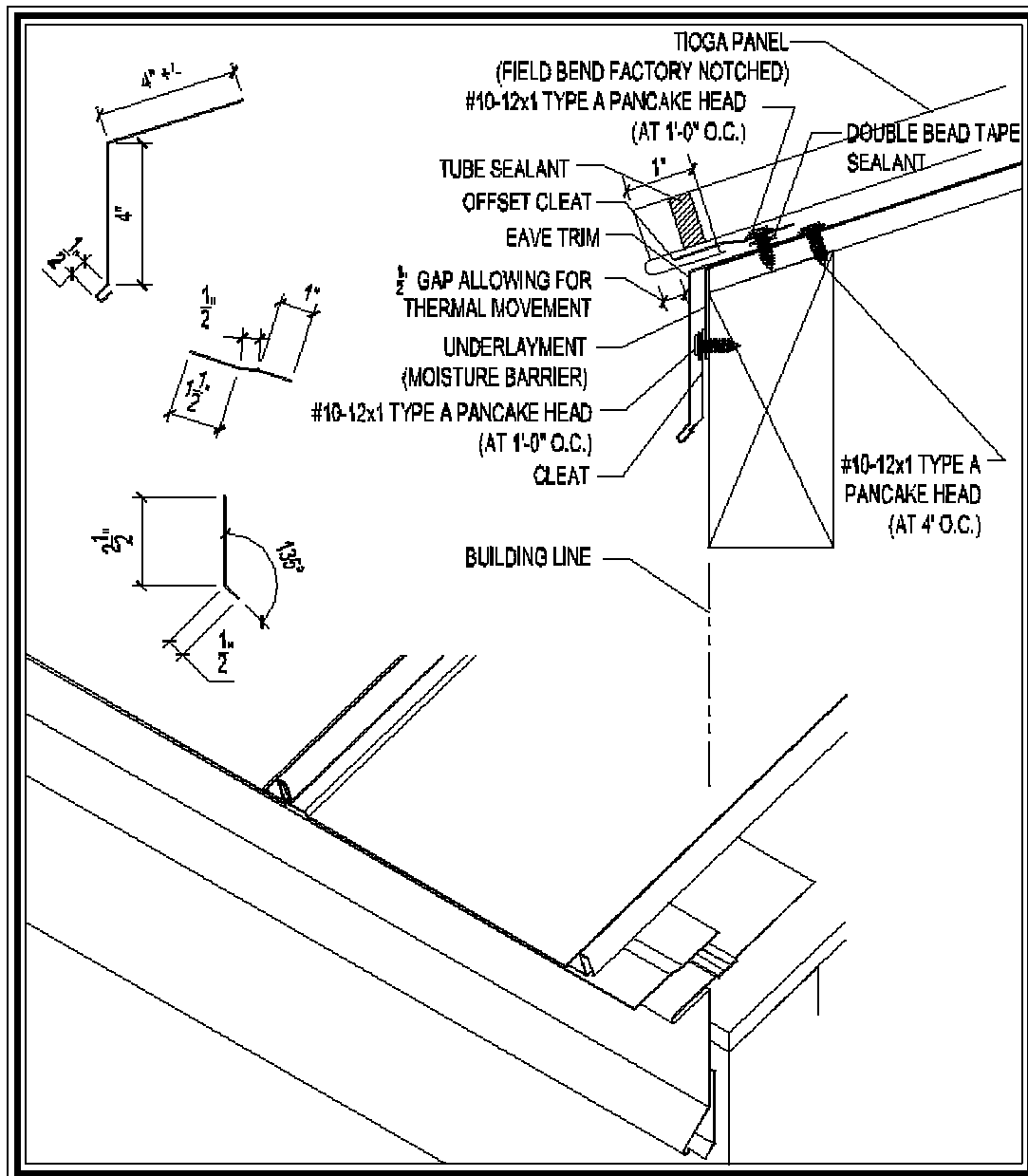

1. Install cleat with #10-12x1 Type A Pancake Head Wood Screw at 1'-0" o.c.
2. Install Eave trim as shown with #10-12x1 Type A Pancake Head Wood Screw.
3. Place double bead tape sealant on Eave trim and attach Offset cleat with #10–12x1 Type A Pancake Head Wood Screw at 1'-0" o.c.
4. Field bend notched Tioga panel and hook to Offset cleat.

Drawing labels:
- 1/4-14x7/8 STITCH or 1/8x3/16 POP RIVETS (AT 1'-0" O.C.)
- TUBE SEALANT
- #9-15x1 WOOD GRIP (3 PER PANEL)
- ZEE-CLOSURE (FIELD CUT) TAPE SEALANT TOP & BOTTOM
- HIGH SIDE EAVE TRIM
- UNDERLAYMENT (MOISTURE BARRIER)
- #9-15x1" WOOD GRIP (AT 2'-0" O.C.)
- #10-12x1 TYPE A PANCAKE HEAD (IN PANEL FLANGE)
- BUILDING LINE
- TIOGA PANEL

1. Panels should end parallel to high-side.
2. Attach Zee closure parallel to high-side. with double bead sealant tape.
3. Fasten High-side Eave trim to the Zee closure using color matched 1/4–14x7/8 Stitch screws with sealing washer or 1/8 x 3/16 pop rivets at 1'-0" o.c.
4. Caulk, lap and fasten trims.
5. Fasten the face of High-side Eave trim with color matched #9–15x1 Wood Grip screws with washer at 2'-0" o.c.
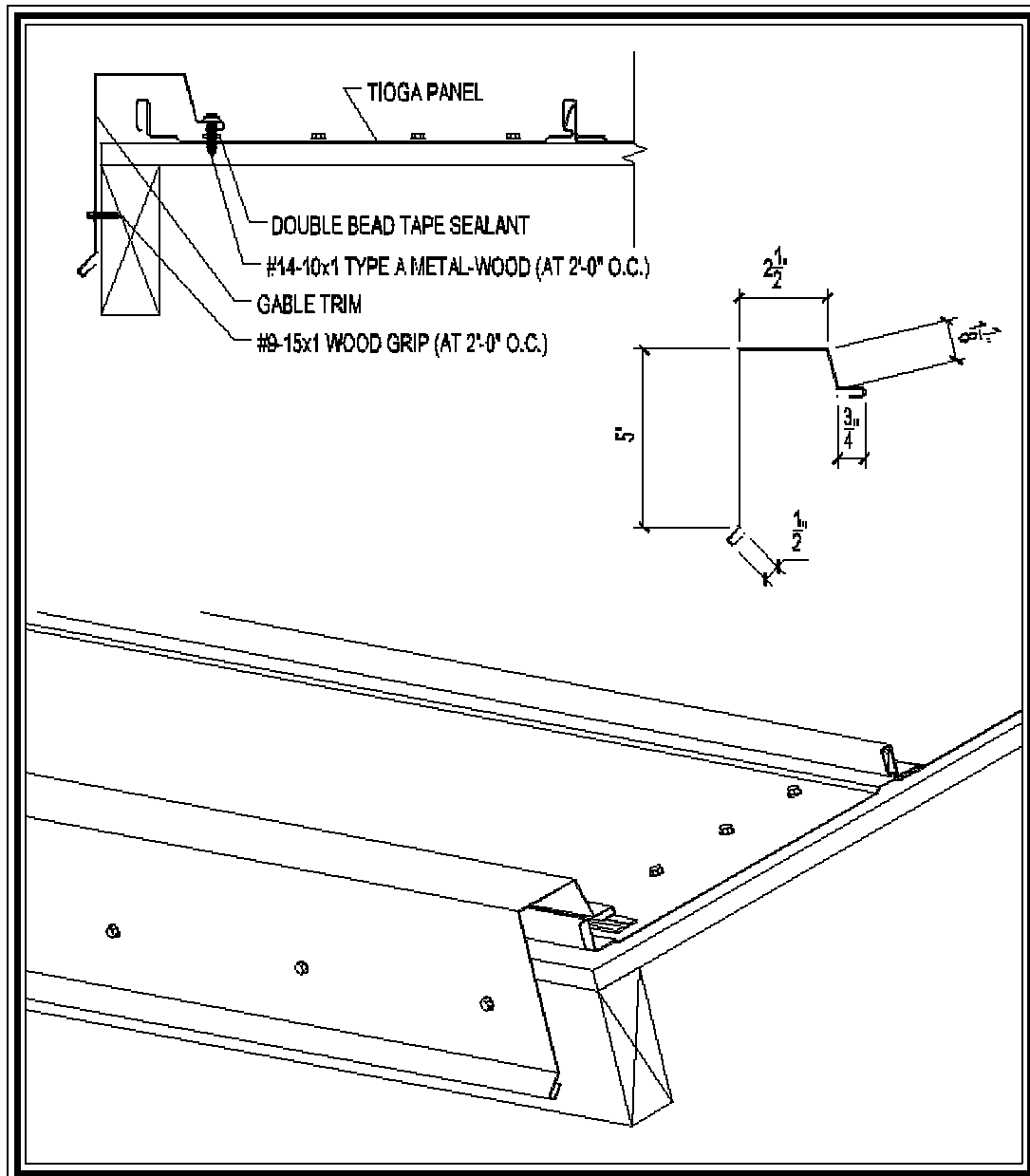
1. Install first Tioga panel.
2. Place double bead tape sealant along the Gable trim flange as shown.
3. Install the Gable trim by placing it firmly over the rib. Pre-drill holes 2'-0" o.c., then fasten using color matched #14–10x1 Type A Metal-Wood screws with sealing washer.
4. Caulk and lap the trim a minimum of 3".
5. Miter cut the Gable trim at the peak (if applicable) to join each side at the ridge.
6. Snip and fold the Gable trim at the eave to close the end. Use 1/8 x 3/16 pop rivets to fasten.
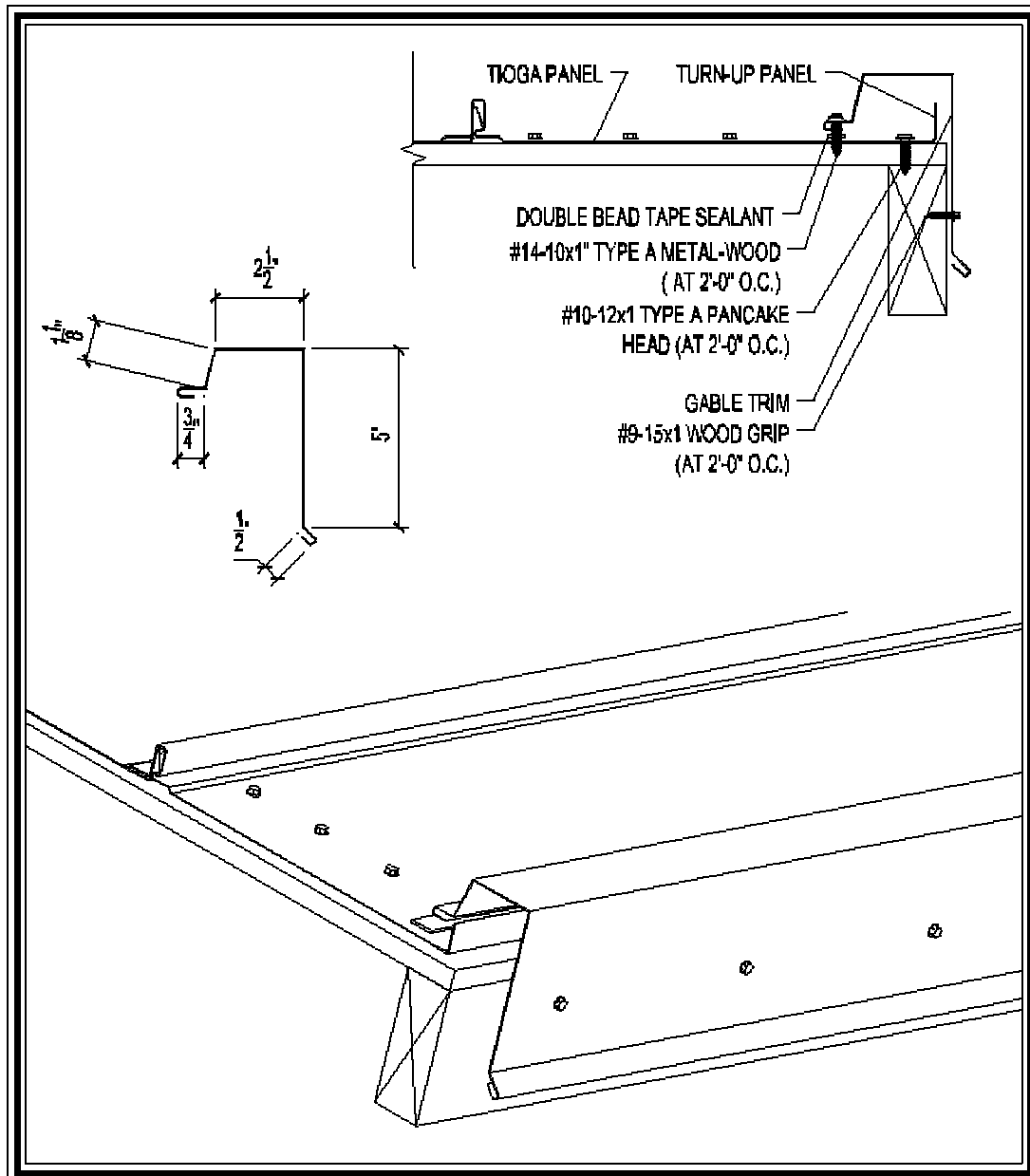
1. Trim the panel 1/2" in and parallel with the edge of the roof. Turn-up the panel edge.
2. Place double bead tape sealant along the Gable trim flange as shown.
3. Install the Gable trim by placing it firmly over the rib and pre-drilling holes 2'-0" o.c., then fasten using color matched #14–10x1 Type A Metal-Wood screws with sealing washer.
4. Caulk and lap the Gable trim a minimum of 3".
5. Miter cut the Gable trim at the peak (if applicable) to join each side at the ridge.
6. Snip and fold the Gable trim at the eave to close the end. Use 1/8 x 3/16 pop rivets to fasten.
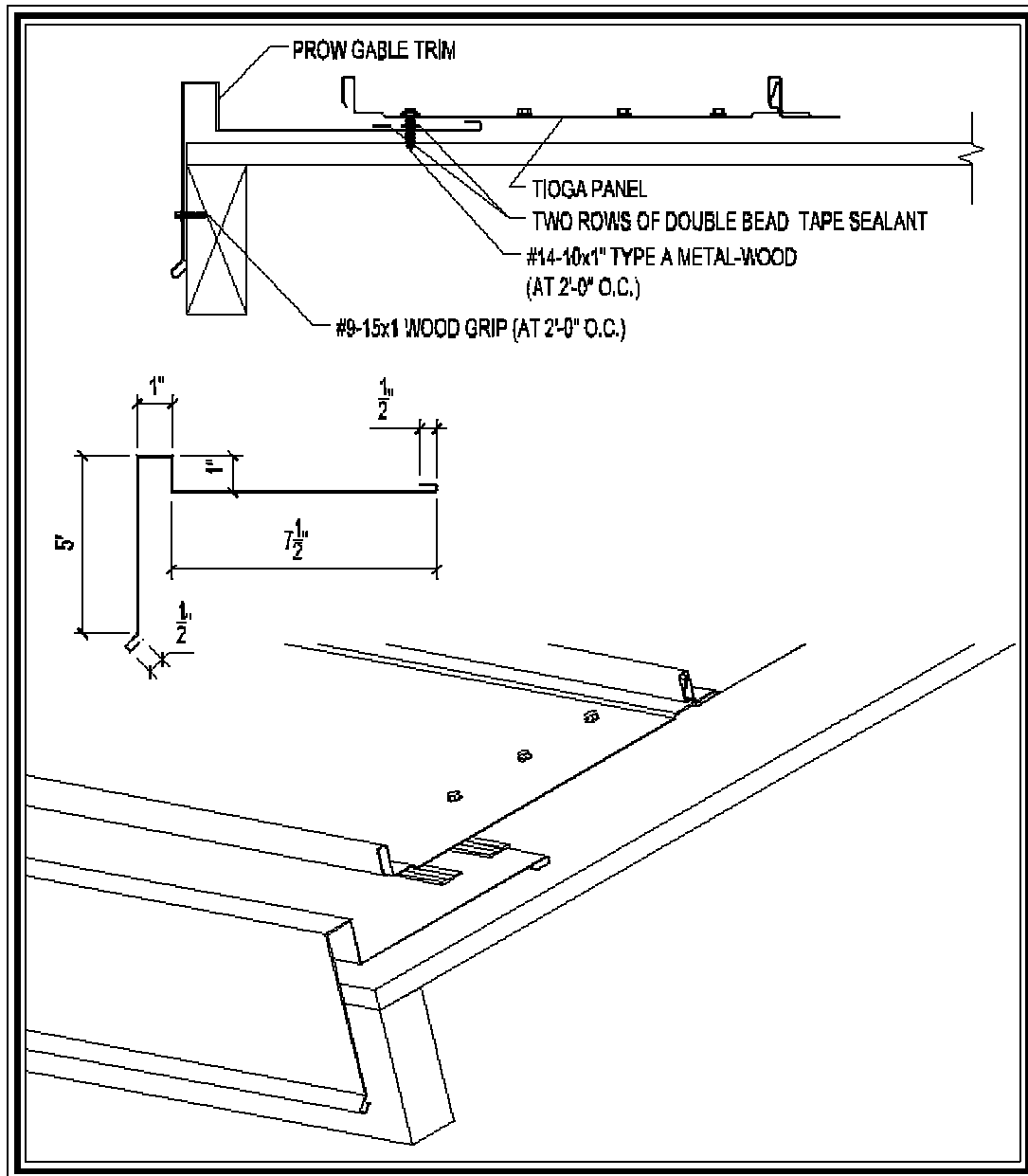
1. Attach the Prow Gable trim using #9-15x1 Wood Grip screws spaced at 2'-0" o.c.
2. Caulk and lap the flashing a minimum of 3".
3. Parallel to the face of the flashing, place two rows of double bead sealant tape as shown.
4. Field cut the panels holding 5" back for the face of the trim as shown.
5. Attach the panels to the roof and 'thru-fasten' along the bottom edge using #14-10x1 Type A Metal-Wood screws spaced at 4" o.c.
6. Attach the panels along the trim edge (approximately 7 ½" in from the face of the Prow Gable trim, aligning with the second row of tape sealant) using #14-10x1 Type A Metal-Wood screws spaced at 2'-0" o.c..

Note: Gable trim must be installed prior to installing the ridge. Panels must be field cut at hip.
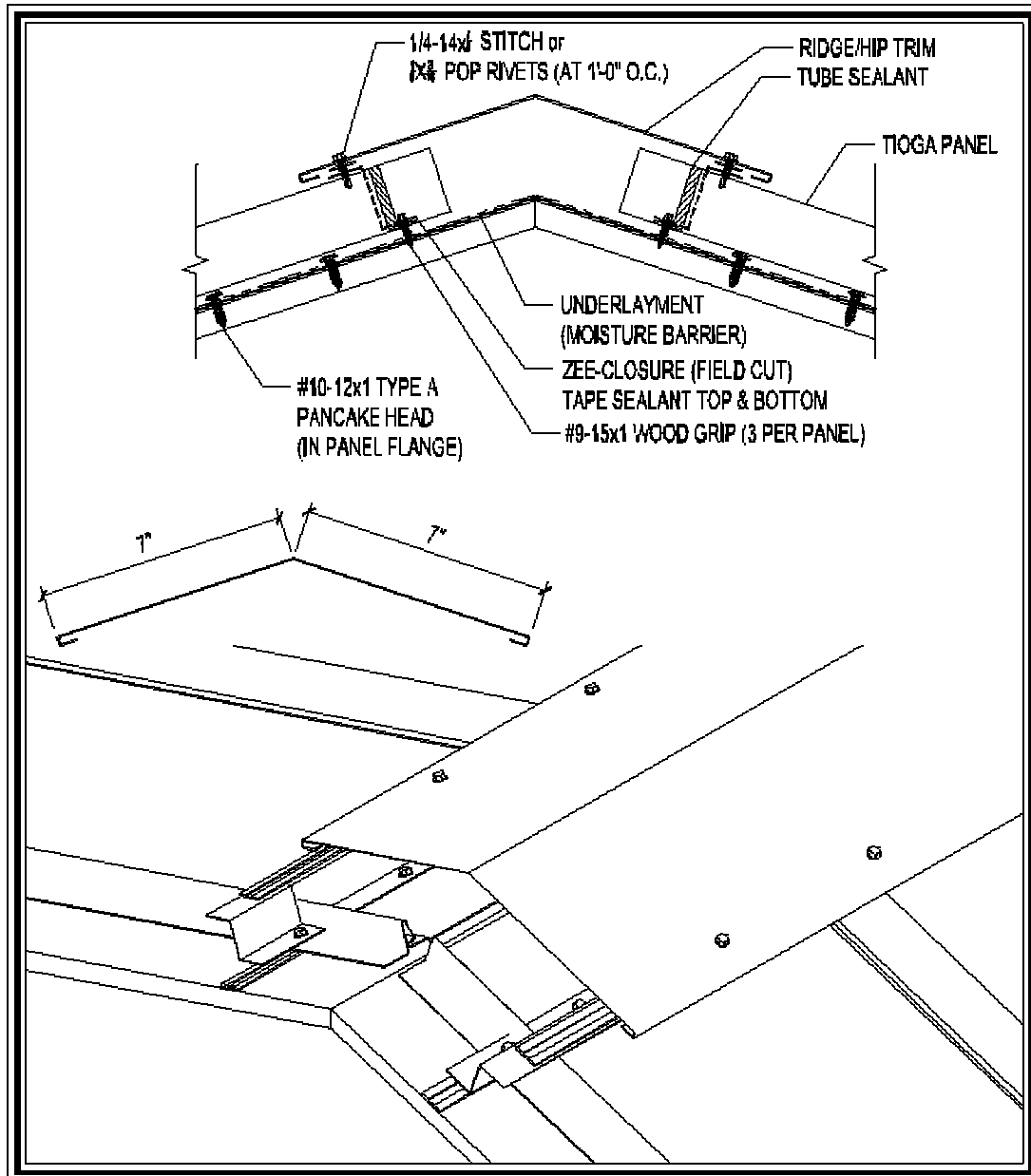
1.   Panels should end parallel to the ridge.
2.   Attach Zee closure parallel to ridge, with double bead sealant tape.
3.   Fasten Ridge/Hip trim to the Zee closure using color matched 1/4–14x7/8 Stitch screws with sealing washer or 1/8 x 3/16 pop rivets at 1'-0" o.c.
4.   Caulk lap and fasten trims.

Note: Gable trim must be installed prior to installing the ridge. Panels must be field cut at hip.
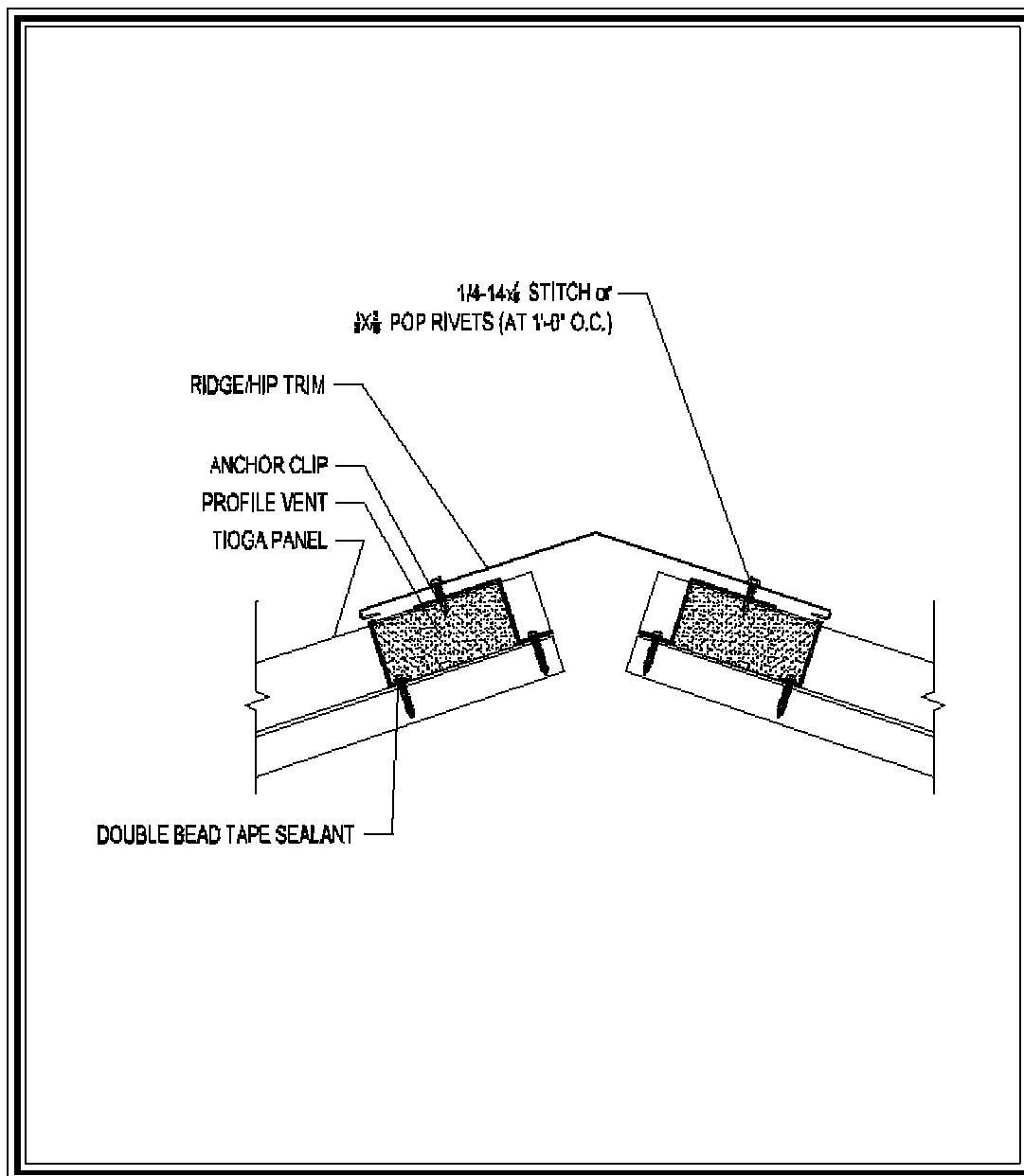
1. Allow a 2" opening at ridge for ventilation. Roll out ProfileVent along the ridge, from gable to gable. Install ProfileVent about ½" to 1" up-slope from the edge of the ridge cap. The positioning adhesive will hold ProfileVent in position during installation.
2. ProfileVent can be cut with scissors or utility knife. When splicing ProfileVent, make the splice at the center top of the high rib and use caulk or sealant along the splice.
3. Screw through ridge cap and top of each anchor clip. Pop rivets can also be used to anchor the ridge cap.

WELL-BALANCED VENTILATION SYSTEM

All building codes agree that proper attic ventilation and uniform airflow are crucial elements in the proper maintenance of your building. Attic temperatures can reach 150 degrees without proper ventilation. This excessive heat can raise utility costs and cause severe damage to the building. Profile Vent is the intelligent choice to meet your attic ventilation needs.
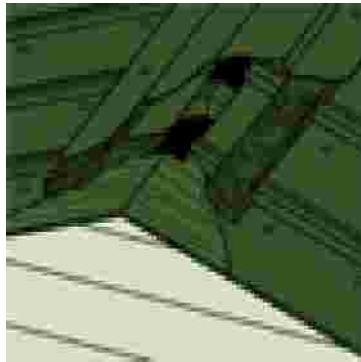

RIDGE CAP ANCHOR CLIP

Use of the special Ridge Cap Anchor clip is recommended in high wind areas and on panels with major ribs 16" on center or greater, such as the Tioga panel system.


RIDGE CAP ANCHOR CLIP INSTALLATION INSTRUCTIONS
1. Install Tioga panels in accordance with manufacturer's instructions.
2. Apply double bead tape sealant above and below pre-drilled holes in the clip.
3. Before installing ProfileVent, insert #14-10x1 Type A Metal-Wood screw through the large down-slope access hole in top of the Ridge Cap Anchor Clip.
4. Lift the back end of clip. Slip ProfileVent under the clip. Push clip back down and insert another #14-10x1 Type A Metal-Wood screw in the up-slope hole.
5. Screw through Ridge cap and top of each anchor clip. Pop Rivets can also be used to anchor the ridge cap for the Tioga panel system.
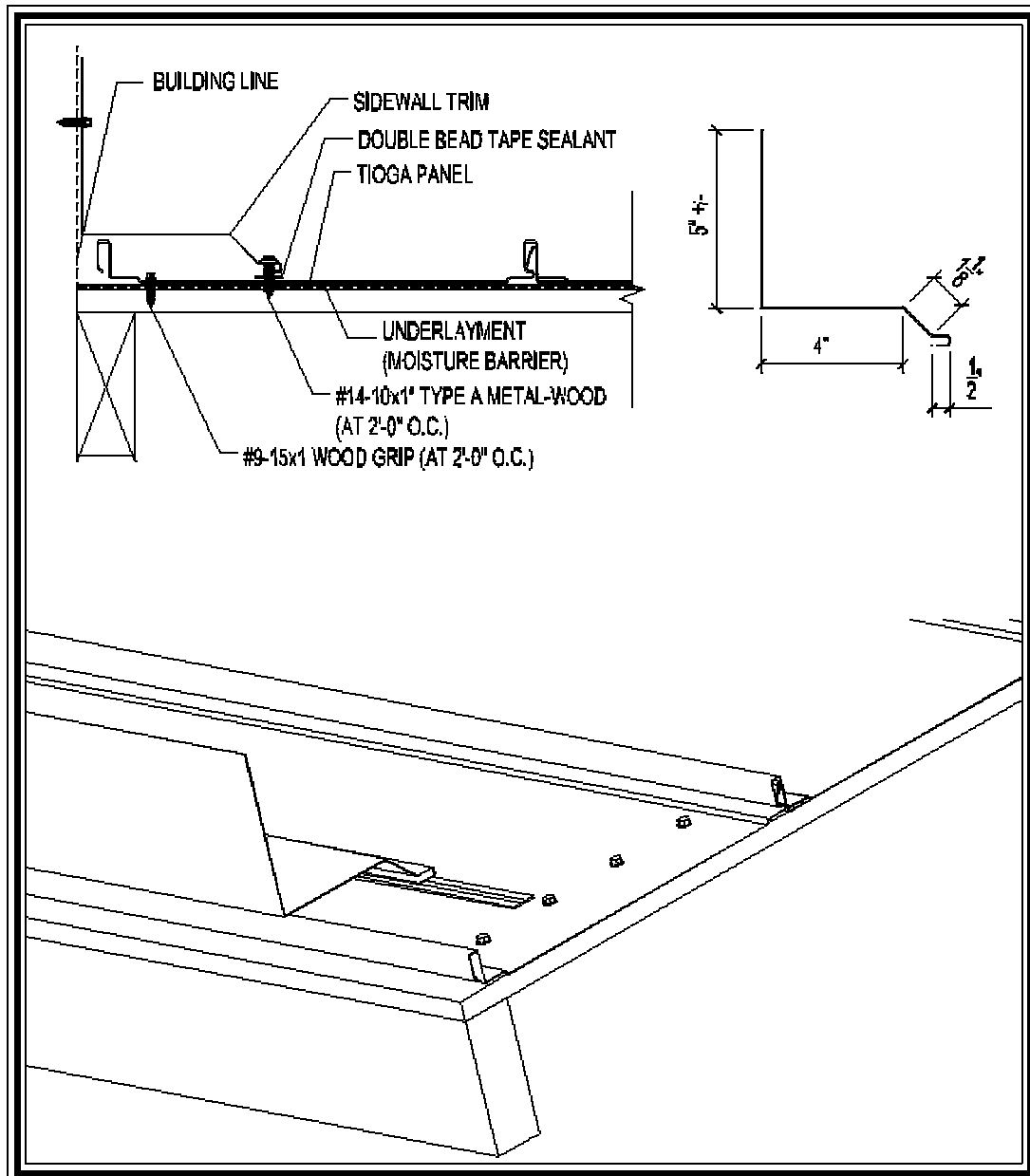
1. Place double bead sealant tape along the Sidewall trim flange.
2. Install Sidewall trim using color matched #14–10x1 Type A Metal-Wood screws with sealing washer at 2'-0" o.c.
3. Caulk and lap the Sidewall trim at least 3".
4. Cut and fold the Sidewall trim at the eave to seal the end. Use 1/8 x 3/16 pop rivets to fasten.
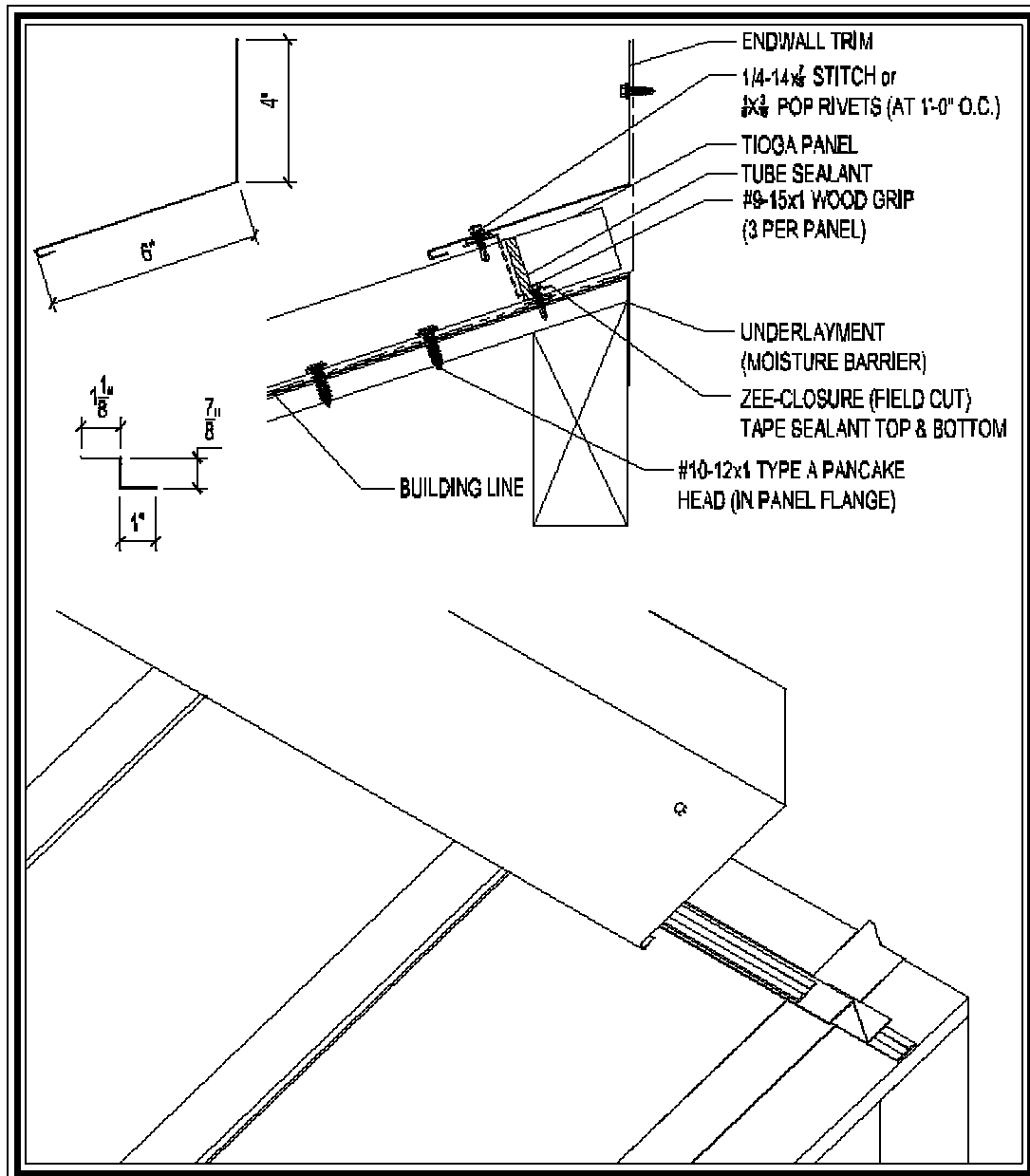
1. Attach Zee closure parallel to the high-side of panels, with double bead sealant tape..
2. Fasten Endwall trim to the Zee closure using color matched 1/4–14x7/8 Stitch screws with sealing washer or 1/8 x 3/16 pop rivets at 1'-0" o.c..
3. Caulk, lap and fasten the trim.

Note: Valley trim must be installed prior to panel installation. Panels must be field cut at valley.
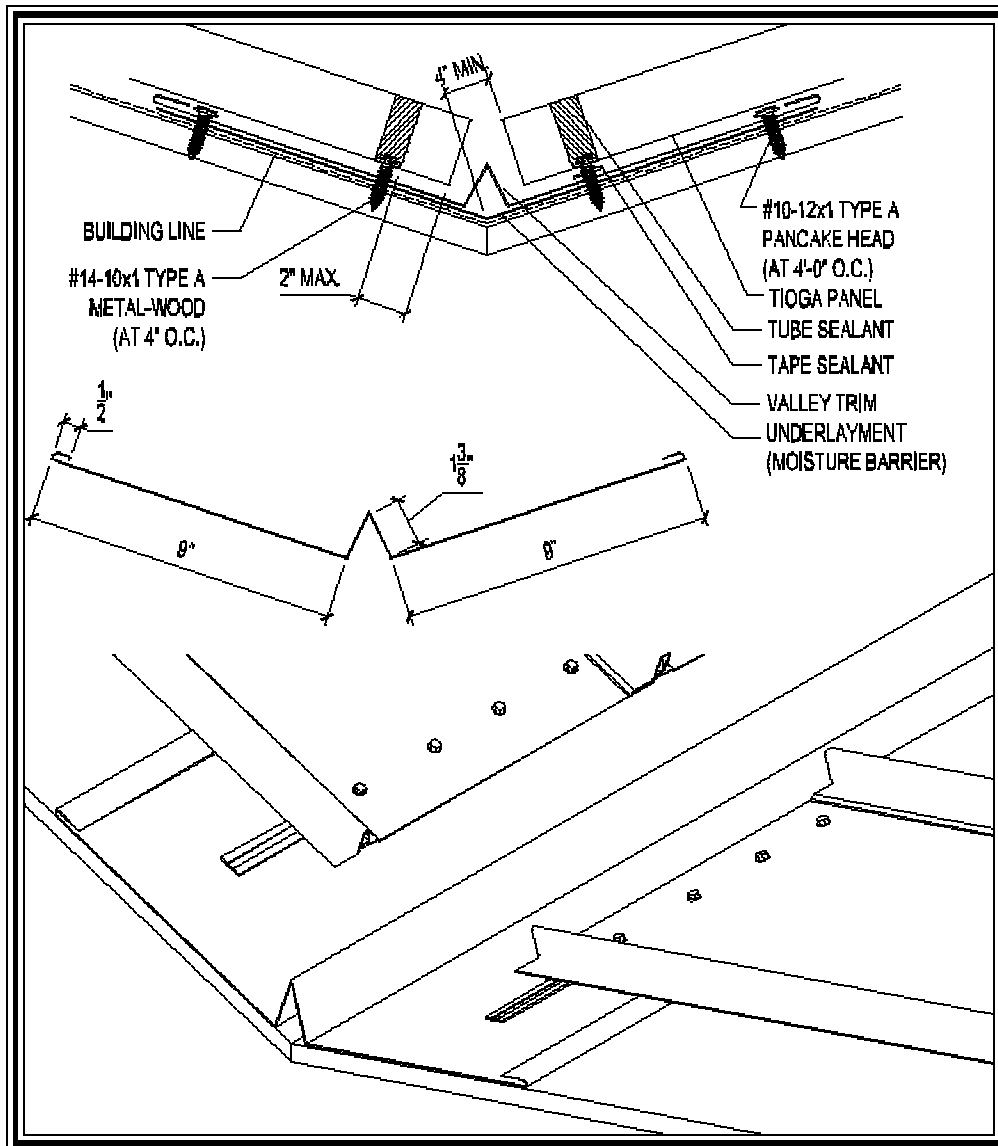
1.   Place an additional layer of underlayment on the valley centerline with 18" of coverage on each side.
2.   Place Valley trim at eave with a 1" overhang. Attach using #10–12x1 Type A Pancake Head Wood screw at 4'-0" o.c.
3.   Caulk and lap the Valley trim a minimum of 6".
4.   Place double bead tape sealant on Valley trim parallel to valley, 6" from center.
5.   Field cut panels allowing for overlap with Valley trim, and fasten panels along bottom end using #14–10x1 Type A Metal-Wood screws with sealing washer at 4" o.c., penetrating the row of double bead tape sealant.
6.   Seal panel end with tube caulking.

Note: Valley trim must be installed prior to panel installation. Panels must be field cut at valley.
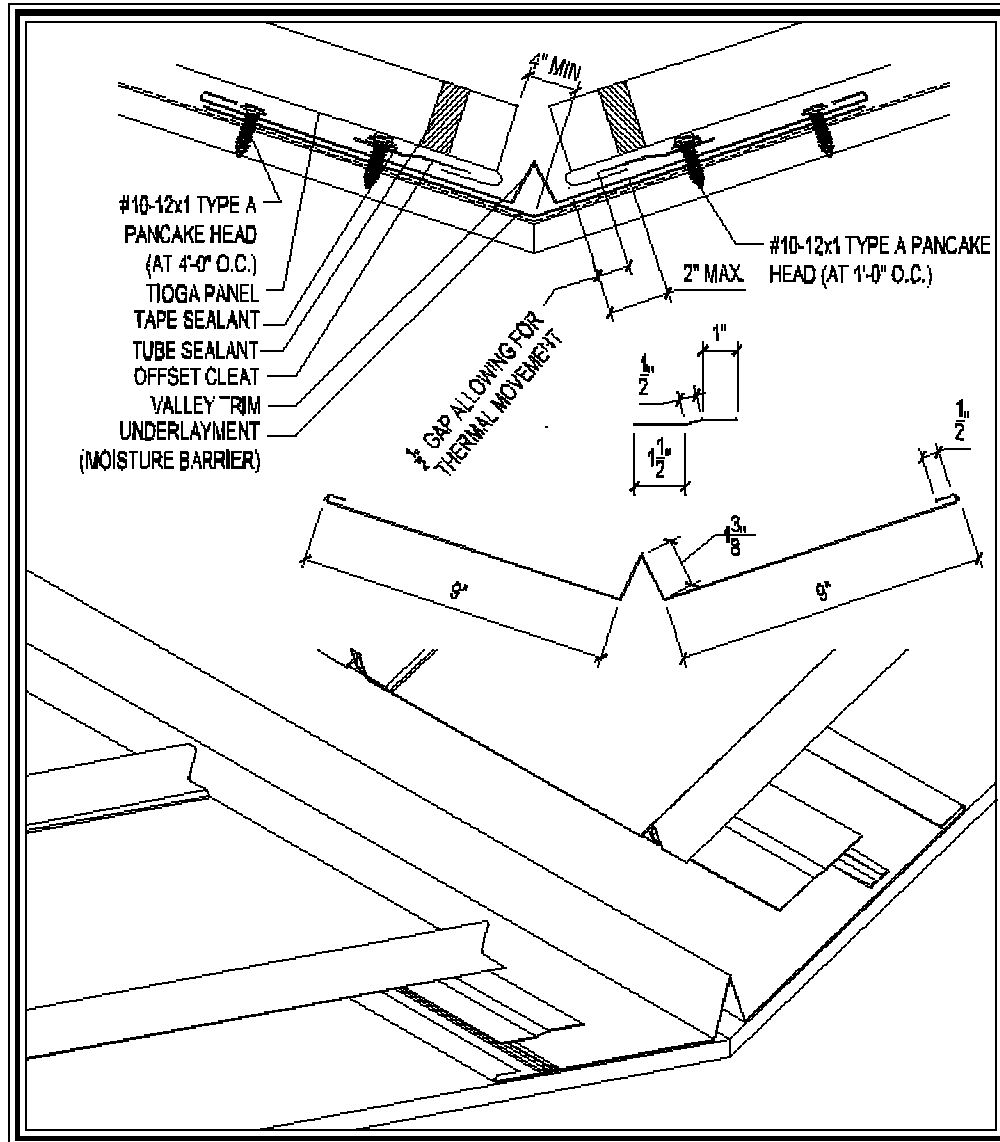

1. Place an additional layer of underlayment on the valley centerline with 18" of coverage on each side.
2. Place Valley trim at eave with a 1" overhang. Attach using #10–12x1 Type A Pancake Head Wood screw at 4'-0" o.c.
3. Caulk and lap the Valley trim a minimum of 6".
4. Place double bead tape sealant on Valley trim parallel to valley, and attach Offset cleat to deck with #10–12x1 Pancake Head wood screws at 1'-0" o.c.
5. Field cut and bend notched panels allowing for overlap with Offset cleat and hem, then to Offset cleat.
6. Seal panel end with tube caulking.

Note: metal closures and caulking are required between the intersecting Ridge/Hip cap and Valley trim to provide adequate weather tightness.

1/4-14x⅞ STITCH (AT 2" O.C.)

PIPE FLASHING
(type DEKTITE)
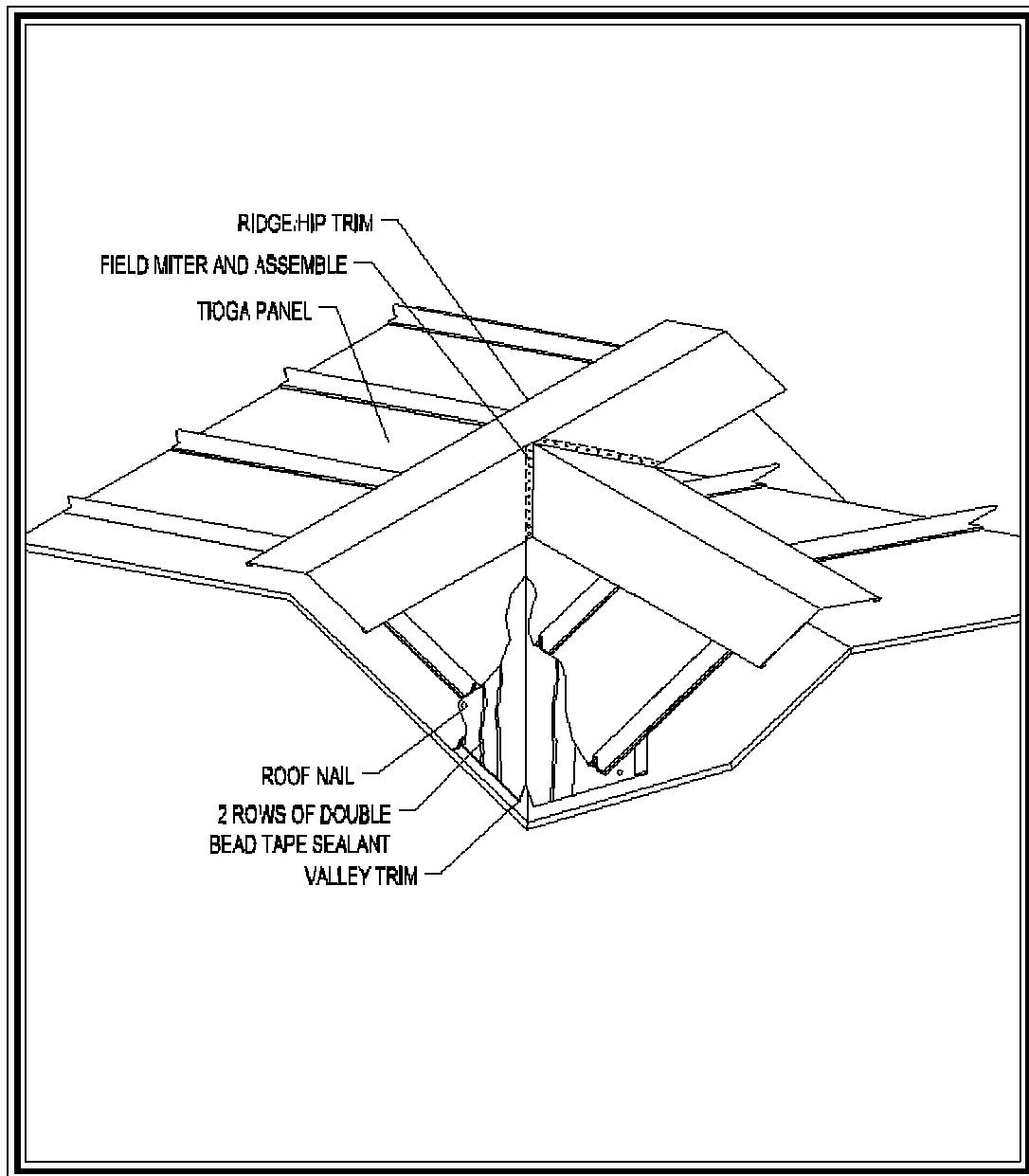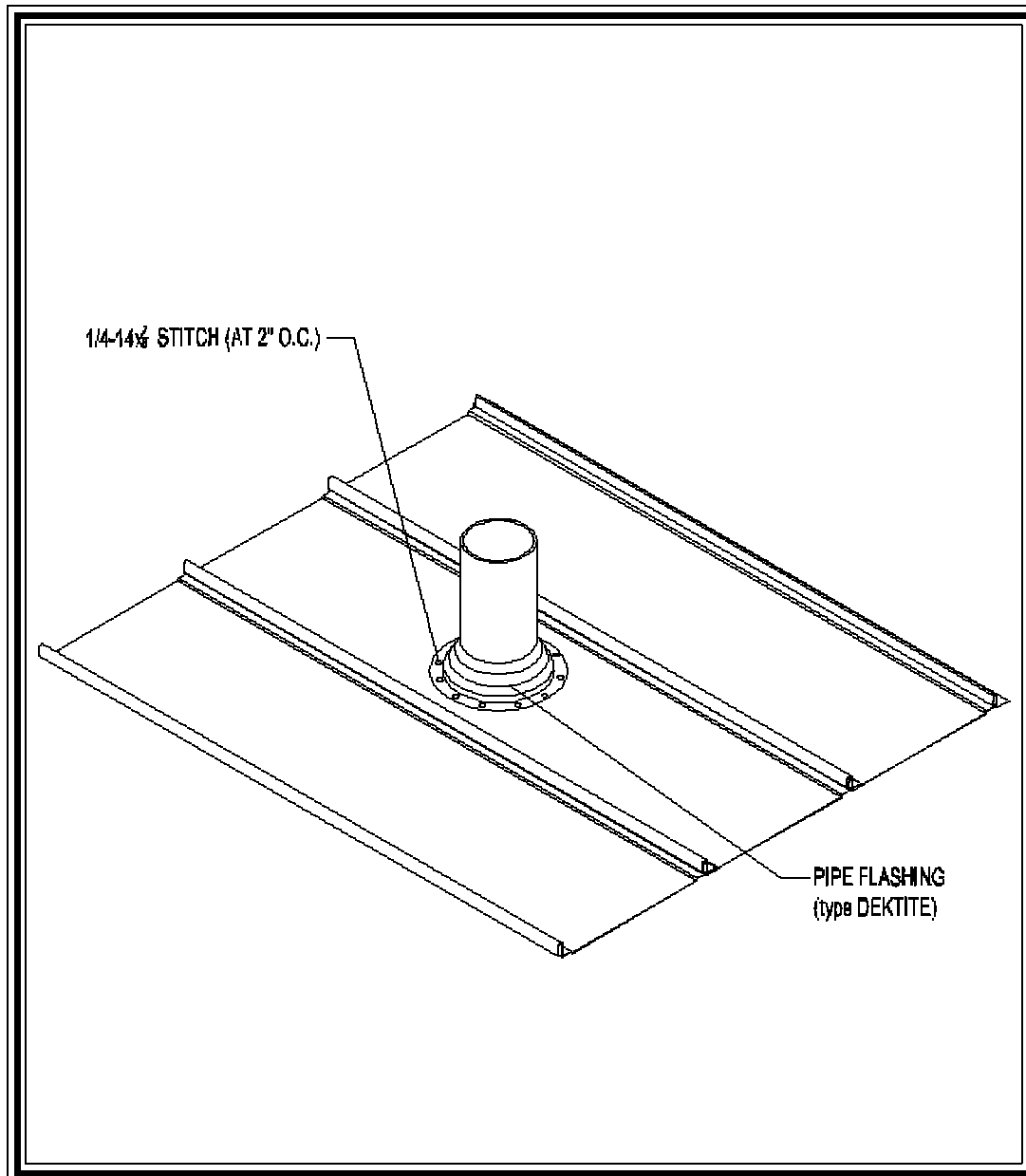
1. Cut pliable Pipe flashing (e.g. type Dektite) at appropriate pipe diameter marking on sleeve.
2. Slide the flashing boot down over pipe.
3. Seal between base and roof panels with tube caulk.
4. Adjust base to fit profile of the roof panel.
5. Fasten the flashing using color matched 1/4–14x7/8 Stitch screws with sealing washer at 2" o.c.

Closure and Venting Products

Pipe opening can be easily customized on job site utilizing clearly marked pipe diameters on each flashing.
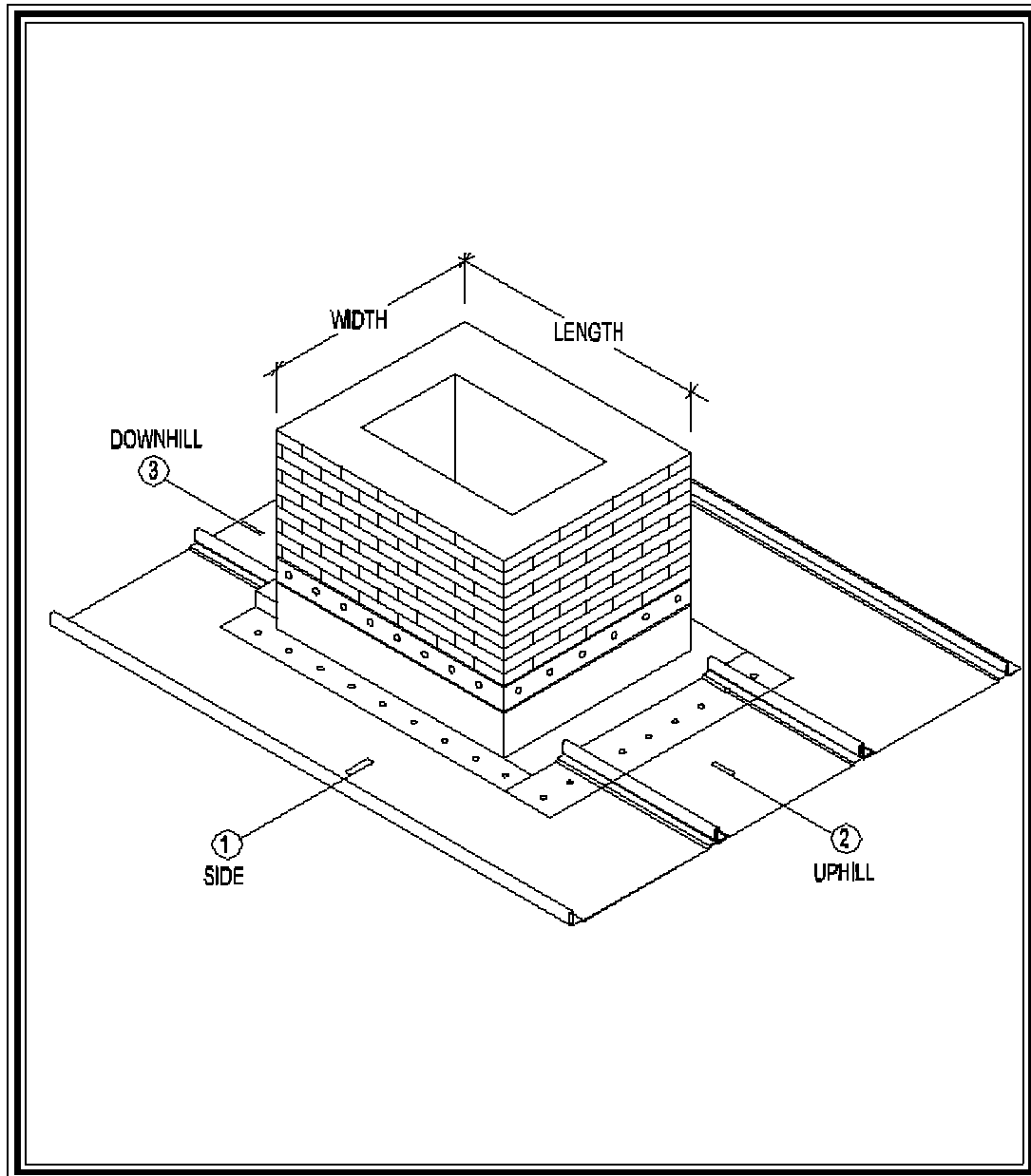
EPDM and Silicone are both flexible materials, resistant to ultraviolet rays, cracking or weathering.

Available in EPDM black or gray and silicone red.

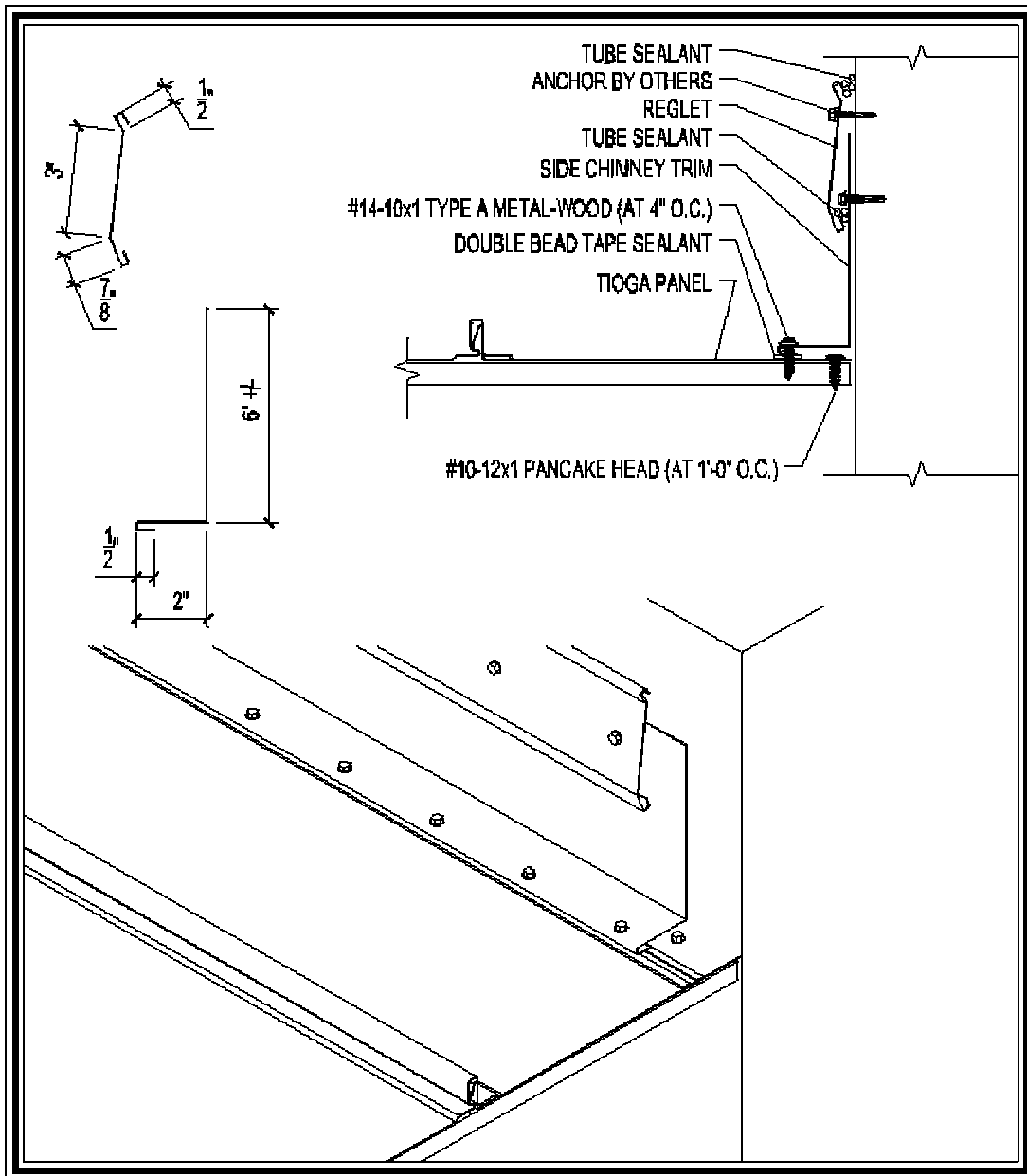The aluminum base is corrosion resistant and conforms easily to any panel configuration or roof pitch.

Retrofit flashing is available for piping with welded caps or cross bars.

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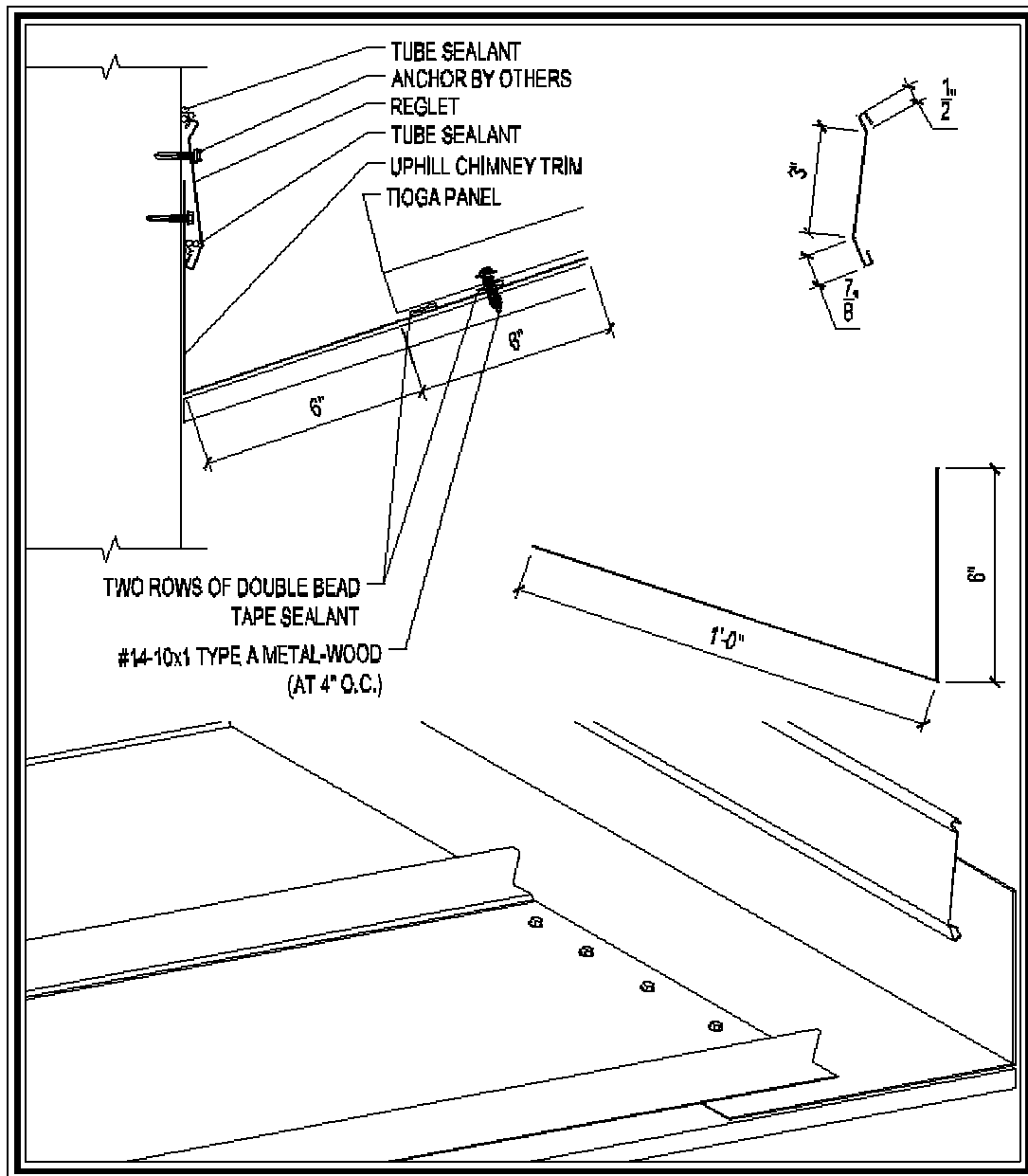Note: Procedures for installation of Chimney flashings are similar to the skylight. The reglet shown may be deleted if the chimney is clad with siding. (lap the siding over the flashing and caulk). Be sure to specify the slope and the orientation of the chimney dimensions when ordering this assembly.

*** A reglet is a flashing found on the side of a wall, chimney or other similar roof penetration.

TUBE SEALANT
ANCHOR BY OTHERS
REGLET
TUBE SEALANT
SIDE CHIMNEY TRIM
#14-10x1 TYPE A METAL-WOOD (AT 4" O.C.)
DOUBLE BEAD TAPE SEALANT
TIOGA PANEL

#10-12x1 PANCAKE HEAD (AT 1'-0" O.C.)

$\frac{1}{2}$"

3"

$\frac{7}{8}$"

6 $\frac{1}{4}$"

$\frac{1}{2}$"

2"

Note: Provide 6" space between end of panel and structure to accommodate for thermal movement of panels.

TUBE SEALANT
ANCHOR BY OTHERS
REGLET
TUBE SEALANT
DOWNHILL CHIMNEY FLASHING
1/4-14x⅞ STITCH or
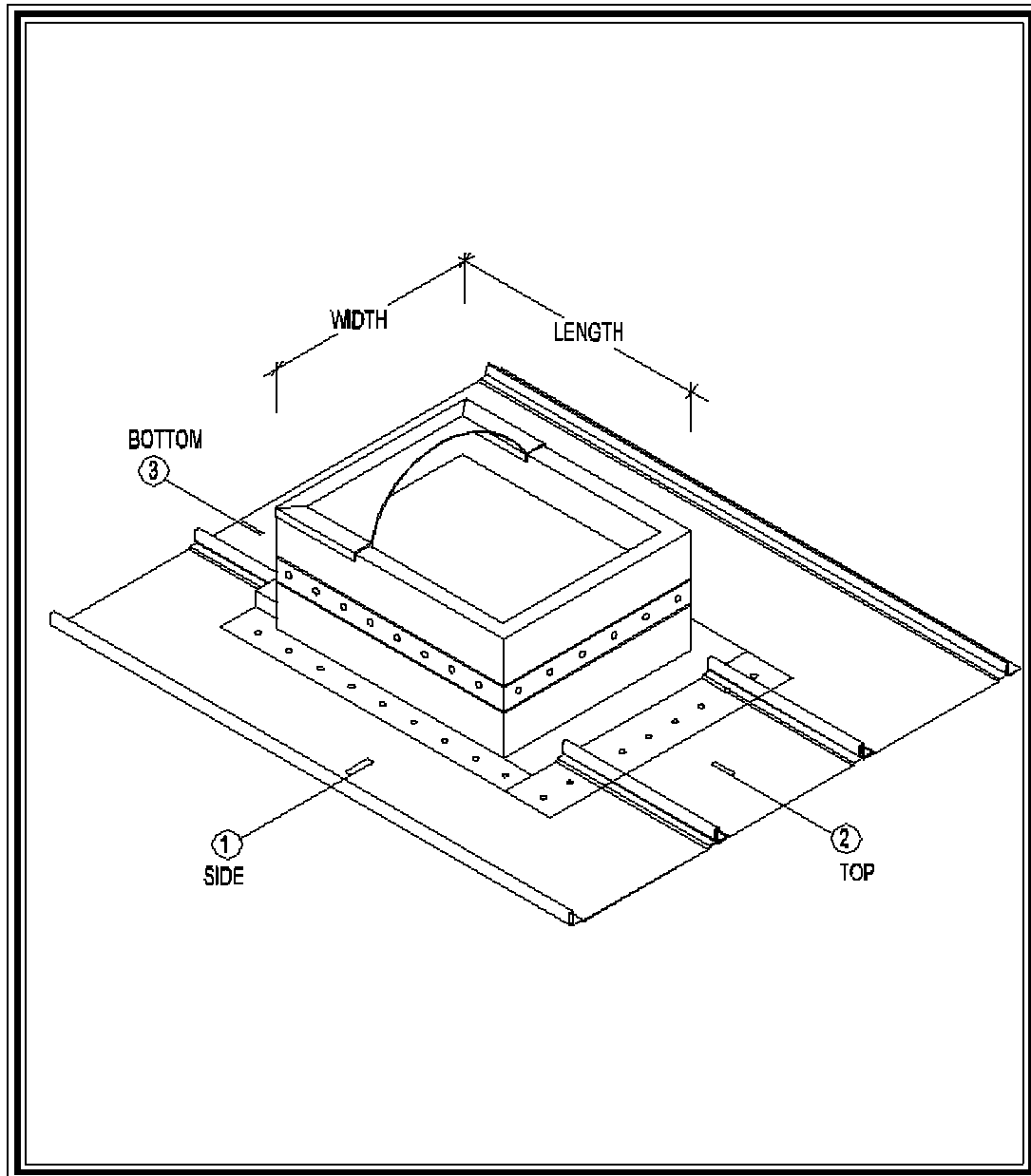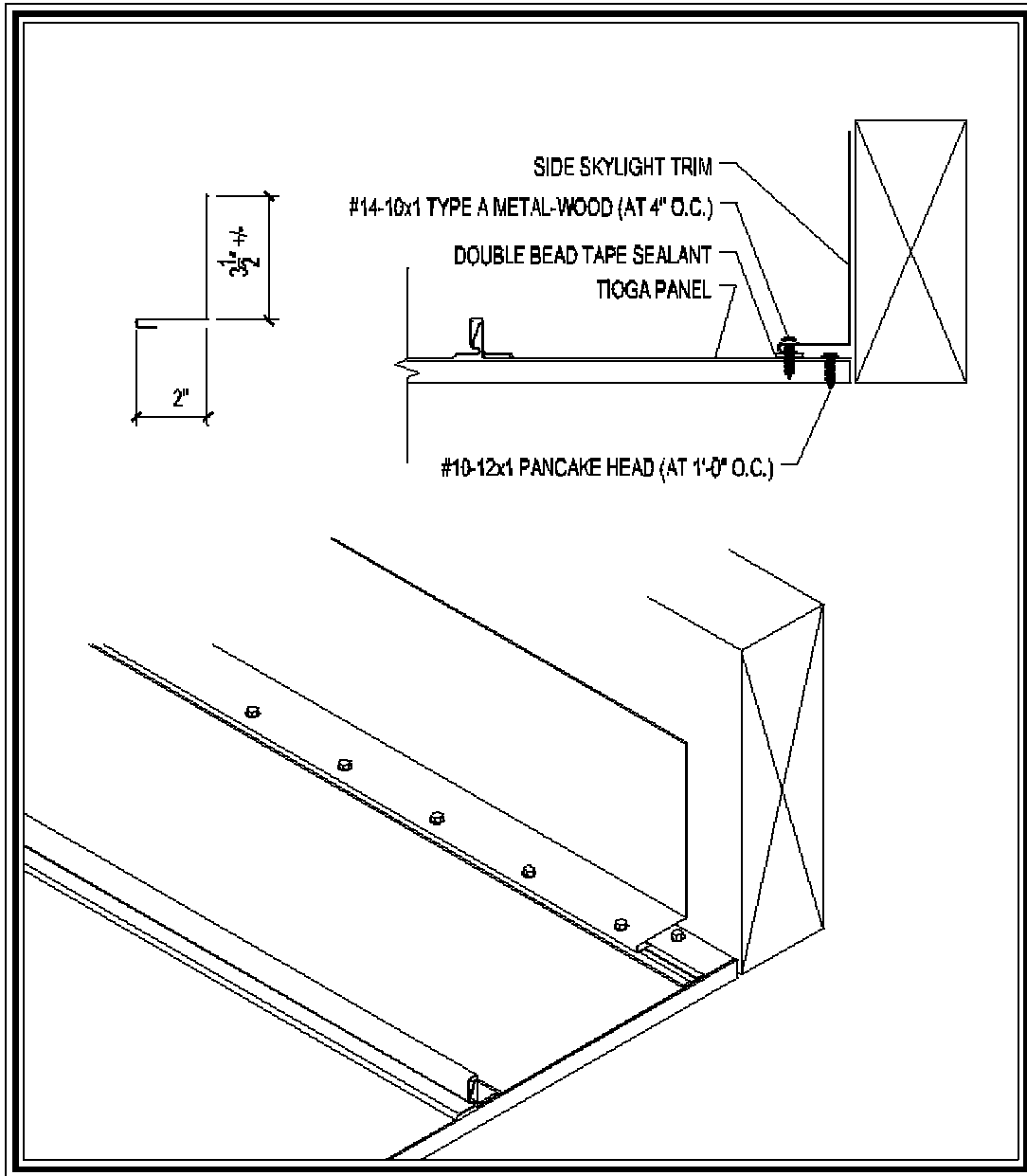⅛X¼ POP RIVETS (AT 1'-0" O.C.)
ZEE CLOSURE
DOUBLE BEAD TAPE SEALANT
TOP& BOTTOM
TIOGA PANEL
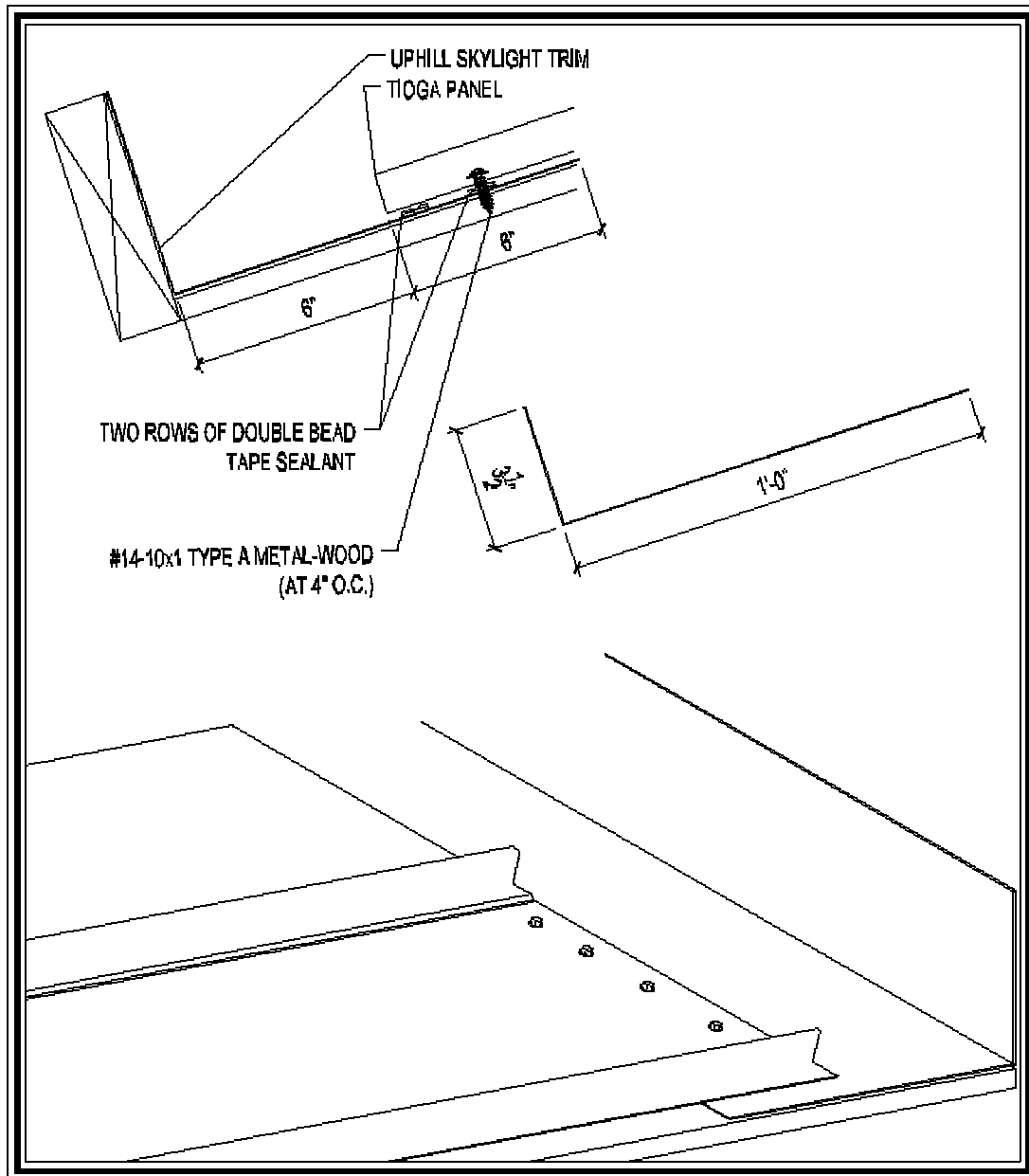#9-15x1 WOOD GRIP (3 PER PANEL)

1 ⅛"
7/8"
1"
5"
3"
1/2"
3"
7/8"
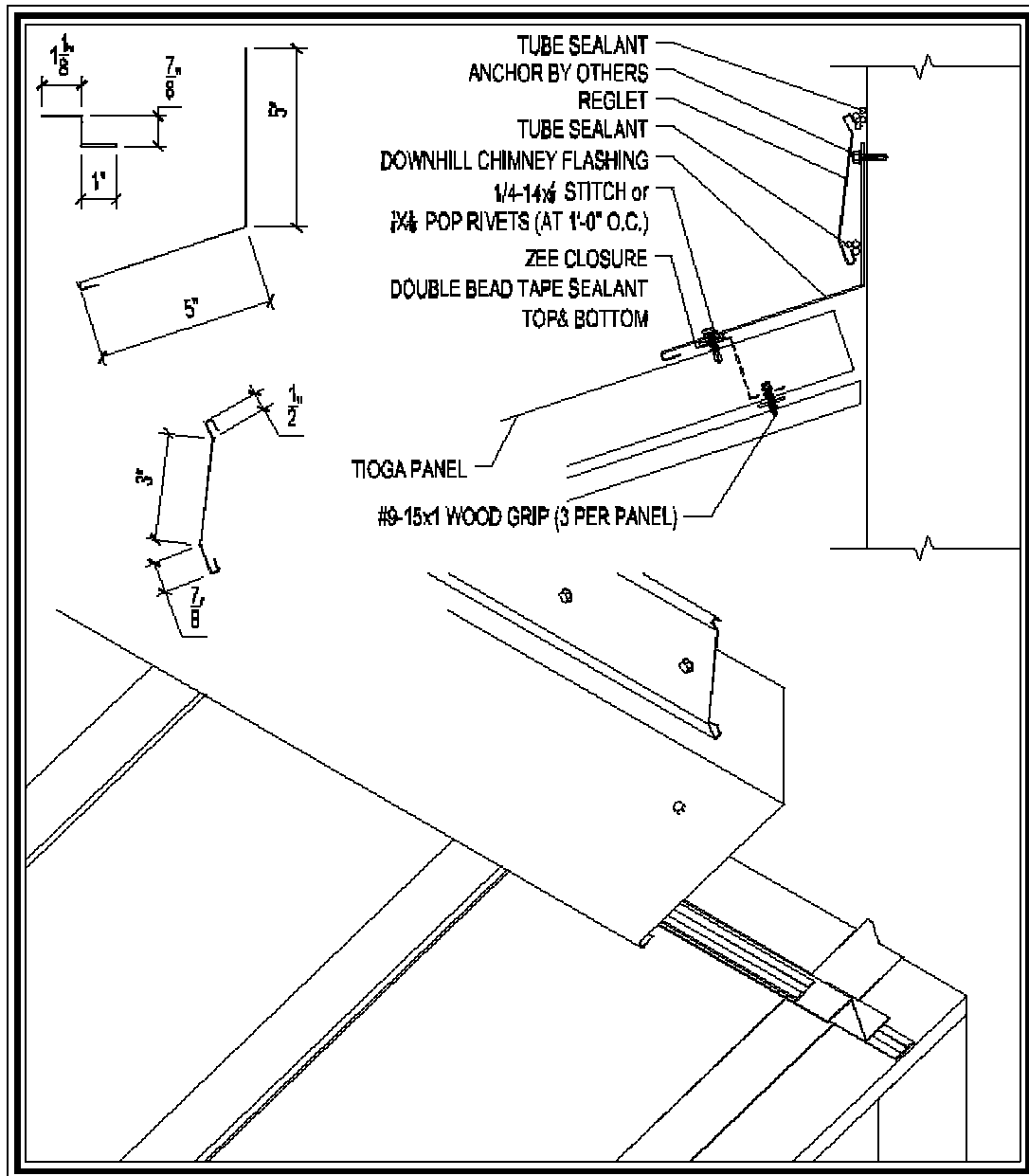
Note: Whenever possible, position the skylight curb so the ribs of the roof panels do not interfere with the flashing. Cut the Tioga panels as close to the left, right and downhill side of the curb as possible. Cut the uphill side 6" up from the curb as indicated to provide room for thermal movement of panels.

SIDE SKYLIGHT TRIM
#14-10x1 TYPE A METAL-WOOD (AT 4" O.C.)
DOUBLE BEAD TAPE SEALANT
TIOGA PANEL

$3\frac{1}{2}$"+/-

2"

#10-12x1 PANCAKE HEAD (AT 1'-0" O.C.)

UPHILL SKYLIGHT TRIM

TIOGA PANEL

6"

6"

TWO ROWS OF DOUBLE BEAD
TAPE SEALANT

#14-10x1 TYPE A METAL-WOOD
(AT 4" O.C.)

1-0"

DOWNHILL SKYLIGHT TRIM

1/4-14x⅞ STITCH or
⅛X¼ POP RIVETS (AT 1'-0" O.C.)

ZEE CLOSURE
DOUBLE BEAD TAPE SEALANT
TOP & BOTTOM

3" +/-

5"

TIOGA PANEL

#9-15x1 WOOD GRIP (3 PER PANEL)
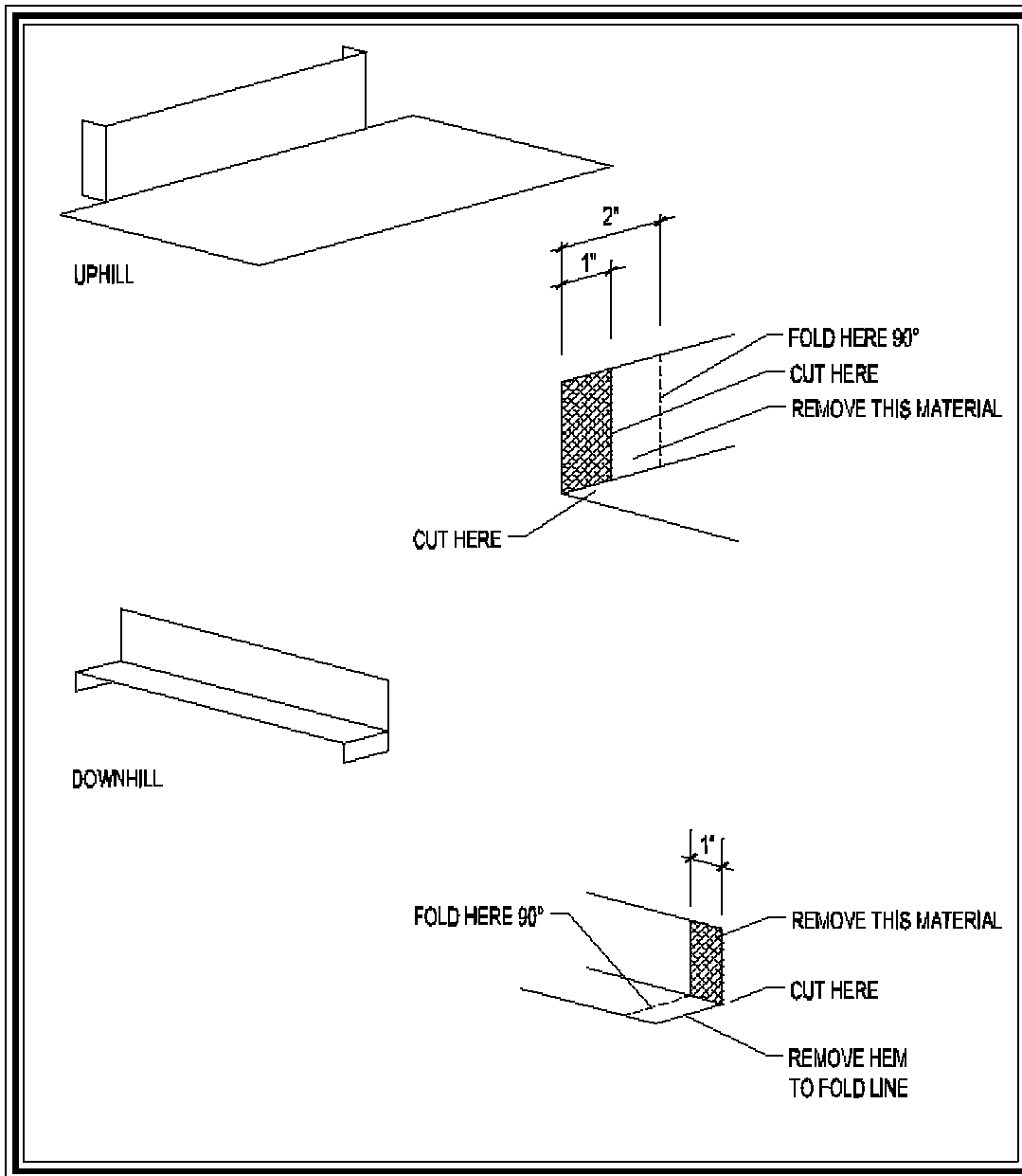
TURN UP PANEL
(OPTIONAL)

1. Cut the skylight flashing to be 4" wider than the width of the curb (2" on each side).
2. Cut an 1/8" slot in the two uphill corners of the Tioga Panel slightly wider than 2.1/16", so the uphill flashing can slide through the two slots.
3. Trim and bend the right side skylight flashing as indicated. Trim the left side in a similar fashion.

Note: the left and right side flashing are mirror images of each other.

UPHILL

2"

1"

FOLD HERE 90°
CUT HERE
REMOVE THIS MATERIAL

CUT HERE

DOWNHILL

1"

FOLD HERE 90°
REMOVE THIS MATERIAL
CUT HERE
REMOVE HEM
TO FOLD LINE

1.   Trim both ends of the uphill and downhill sides of the skylight flashing as indicated.
2.   Slide the uphill flashing into the slots of the Tioga Roofing and apply liberal amount of tube sealant.
3.   Assemble the skylight as indicated.

STEP ONE

SNIP HERE

$\frac{1}{8}$"

3"

OPEN THE HEM OF BOTH
FLASHINGS TO BE JOINED
USING A SCREWDRIVER OR
SCRATCH AWL.

REMOVE THIS MATERIAL FROM
THE 'INSIDE' FLASHING ONLY

STEP TWO

CAULK AND RIVET
AS REQUIRED

3"

2"

RE-CLOSE HEMS WITH
'DUCKBILL' PLIERS