

# ROOF SYSTEM INSTALLATION GUIDE

## INTRODUCTION

This manual is furnished as a supplement to other Installation Manuals and Drawings. The design features of the roof system call for careful planning in handling and locating panels on the structure well in advance of the actual installation to avoid costly delays.

IN NO MANNER IS IT THE INTENT OF THIS MANUAL TO COVER THOROUGHLY ALL INSTALLATION STEPS OR CONDITIONS WHICH MIGHT OCCUR ON YOUR BUILDING, BUT RATHER TO BE A BASIC OVERVIEW OF POSSIBLE PRODUCT SOLUTIONS WITH A STRONG EMPHASIS ON MATERIAL HANDLING AND SAFETY PRACTICES.

Note: Variations from the contents of the manual can occur because of specific customer requirements and subsequent engineering changes. ALWAYS refer to the Installation Drawings supplied with the shipment which will govern specific part and assembly arrangements and applicable installation details.

## TABLE OF CONTENTS

	Page
Safety Guidelines .....	4
Handling Guidelines	
Full Crates: Unloading and Storage .....	10
Full Crates: Preloading .....	11
Single Panels .....	12
Handling Materials	
Insulation Storage .....	13
Hardware, Fasteners and Sealant Storage .....	13
Trims and Flashings .....	13
Tools and Related Materials .....	14
Sealants .....	15
Fasteners .....	16
Fastener Installation .....	18
General Information	
Panel Clip .....	19
Roof Systems Seaming Machine .....	20
Lock Seam .....	20
Roof Panel Dimensions .....	20
Panel Usage .....	21
Overview	
Direction of Panel Installation .....	22
Insulation	
General .....	23
Stapling Procedure .....	24

Adhesive Tap Procedure .....	25
Installation Procedure at Ridge .....	26
Insulation Systems / Basic Blanket System .....	27
Insulation Systems / Insulated Purlin System .....	27
Rigid Insulation on Metal Deck .....	28
Installation of Panels	
Paneling Procedures .....	29
Dry-Line Technique / Punched structurals .....	30
Insulation Detail .....	31
Laying the First Roll of Insulation .....	32
Thermal Block Installation .....	33
Installation of First Panel .....	34
Eave Panel Attachment / Fascia Panel Attachment .....	35
Panel Clip Detail .....	36
Thermal Block Detail .....	37
Position Second Insulation Roll / Stapling Insulation.....	38
Installing the Third Panel / Installing the Fourth Panel.....	39
Seaming Procedures	
Seaming the First Four Panels .....	40
Stack Remaining Panels on Finished Roof.....	40
Unroll the Next Insulation Roll / Shake out Insulation into Position.....	41
Continue Installing Roof Panels .....	42
Seaming Procedures .....	43
Seaming Machine Tolerance .....	45
Seaming Direction .....	46
Panel Endlap	
In-Line Installation .....	47
Staggered Endlap Installation .....	47
Fascia Panel	
Fascia Panel Fixture .....	48
Fascia Panel Installation .....	49
Eave Cap Installation .....	50
Gable Trim Installation	
Gable Trim with Movable Clip Installation .....	52
Narrow Gutter Installation .....	53
Inside Corner Gutter to Gutter Transition .....	54
Inside Corner Gutter to Gable Trim .....	55
Outside Corner Gutter to Gable Trim .....	56
Wide Gutter Installation .....	57
Inside Corner Gutter to Gutter Transition .....	58
Inside Corner Gutter to Gable Trim .....	59
Outside Corner Gutter to Gable Trim .....	60
Valley Gutter Installation .....	61
Eave Trim Installation	
Low Eave Trim Installation .....	62
High Eave Trim Installation .....	63
Bare Eave Trim Installation .....	64
Panel End Closure Installation .....	65

Low Profile Ridge Cover Installation	
Ridge Cap Installation .....	66
Ridge Cap Splice Installation.....	67
End Cap Installation.....	68
Ridge to Wall Transition Installation.....	69
Ridge to Wall Transition at 45°.....	70
Vented Ridge Installation	
Ridge Vent, Ridge Cover and Splice Installation.....	71
End Cap Installation.....	72
Ridge To Wall Transition Installation.....	73
Expansion Ridge Cover	
Ridge Retainer / Ridge Cover Installation.....	74
Ridge Cover Splice Installation.....	75
Expansion Ridge End Cover Installation.....	76
Expansion Ridge End Cap Installation.....	76
Expansion Ridge to Wall Transition.....	77
Perpendicular Roof to Wall Transition Fixed	
Roof to Wall Flashing Installation.....	78
Inside Corner Flashing Installation.....	79
End Cover Installation.....	80
Perpendicular Roof to Wall Transition Movable	
Roof to Wall Flashing Installation.....	81
Inside Corner Flashing Installation.....	82
End Cover Installation.....	83
Stepped Roof Transition Installation	
Intermediate Application and Inside Corner.....	84
Inside Corner / End Cap Installation.....	85
Parallel Roof to Wall Transition Installation	
Expandable Roof to Wall Transition Installation.....	87
Valley Flashing Installation	
Valley Flashing and Splice Installation.....	88
Valley Flashing Intersection.....	89
Hip Closure / Panel Installation .....	90
Hip / Ridge Transition Installation Low Profile Ridge .....	91
Hip / Ridge Transition Installation Vented Ridge.....	92
Hip / Ridge Transition Installation Expansion Ridge .....	93
Fascia - Inside Corner Installation at Valley Flashing .....	94
Fascia - Outside Corner Installation Low Profile Ridge.....	95
Fascia - Outside Corner Installation Vented Ridge .....	96
Fascia - Outside Corner Installation Expansion Ridge .....	97

# SAFETY GUIDELINES

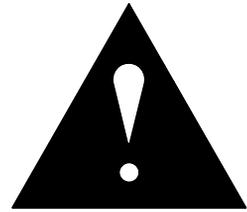
## SAFETY

Safety must be a prime concern throughout the entire installation process. This manual contains safety information that is important for all workers to know and understand. It is not possible to present complete and comprehensive safety instructions in this manual. All local, state and OSHA safety regulations must be followed at all times. The installation contractor has the ultimate responsibility for the safety of workers and must comply with all applicable safety regulations.

The Occupational Safety and Health Act regulations applicable to the installation of this or any other building are identified as Part 1926, Safety and Health Regulations for Construction and are available from any government book store. These OSHA Regulations should be recognized as a job site requirement and must be fully complied with. Failure to do so may result in worker death or injury as well as substantial fines in the event of an OSHA inspection.

## RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe practices.



## FOLLOW SAFETY INSTRUCTIONS AND WARNING

Carefully read and follow all safety and warning messages in this manual as well as the Operating Instructions for the seaming machine and all applicable installation drawings.

All bundles of roof panels have numerous "Roof Panel Warning Labels" attached to them. This label is designed to inform workers of the hazards associated with falls from roof panels. A copy of this label is found in this manual on page 5.

The "Roof Work Safety Instructions" set out in detail the hazards involved in roof installation as well as suggestions on how to prevent falls and a copy of these instructions is found in this manual on page 6 and 7.

Eight copies of the Roofing Work Safety Instructions, eight copies of the Roof Panel Warning Label and one "Sign Off Sheet" are provided in the "Roof Warning packet" that is sent with each roof order. The envelope of this packet provides instructions to the roofing crew supervision to hold a safety meeting and review the Roof Panel Warning Label and Roofing Work Safety Instructions with each member of the roofing crew before roof installation begins.





# WARNING

You may fall from roof and be killed or seriously injured

---



Any panel can collapse.

Do not step on panels with creased edges

Do not step on or NEAR edge of panel.

Do not step within 5 feet of panel end.

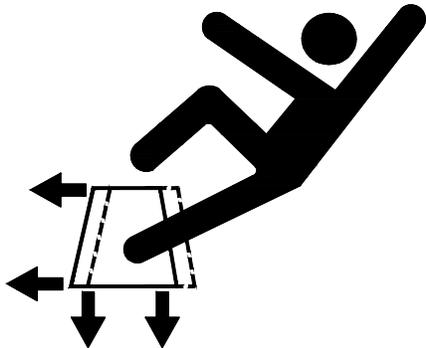
---



Panels are slippery.

Use fall protection.

---



Loose panels may slide out from under you.

Do not step on loose panels or stacks of panels.

---

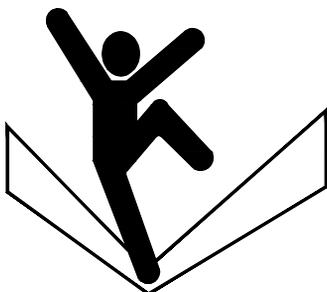
Always use fall protection.

Get and read "Roofing Work Safety Instructions" from supervisor.

## ROOFING WORK SAFETY INSTRUCTIONS

Working off the ground even a few feet can be extremely dangerous. Falls from a height of six feet or less can be fatal. You should be aware of the following hazards while installing roof panels.

### I. PANELS CAN COLLAPSE



Roof panels can be a safe walking surface (except for slipperiness) **ONLY** when they are completely seamed or fastened as applicable. Panels not completely seamed or fastened on each side are not safe and can collapse suddenly and without warning.

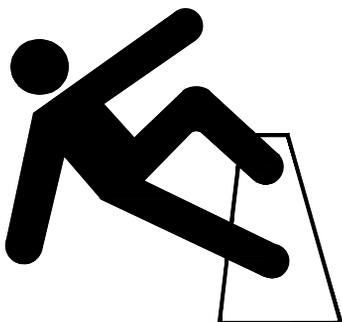
When installing roof panels, always use fall protection.

Follow these additional safety precautions:

1. Never step, kneel or place weight on an edge or edge corrugations of any panel.
2. Use extra care when installing panels with creased or kinked corrugation or edges. Placing weight on any portion of such a panel may cause the panel to collapse.
3. Never stand or work within five (5) feet from the end of a panel that is not completely seamed or fastened.
4. When fastening a panel to the structural, stand toward the middle away from the edge and edge corrugations of the panel and directly over the roof structural.
5. Never allow more than one worker to stand or work on the same panel between two roof structurals before the panels are completely installed.
6. When walking on liner panel that has been completely fastened to the roof structural, do not step on the sidelap. Step only on the liner panel area that is supported by the roof structural. Observe inspection slots to verify underlying panel has been attached to structural.

Never use unattached roof panels as a work platform for any purpose. This is an extremely hazardous practice and should never be done.

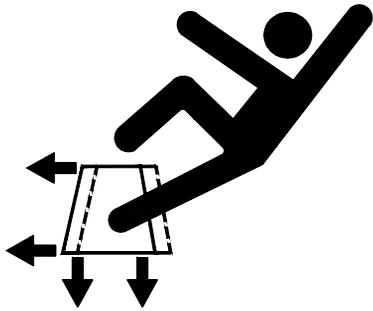
### II. PANELS ARE SLIPPERY



All roof panels, whether painted or unpainted, are slippery to walk on. Dew, frost, or any other moisture on roof panels greatly increases the slipperiness of the panels and extra care should be taken. The pitch of the roof (its slope) can also increase the hazard.

Because of these hazardous conditions, it is essential that fall protection be use at all times.

### III. LOOSE PANELS MAY SLIDE OUT FROM UNDER YOU

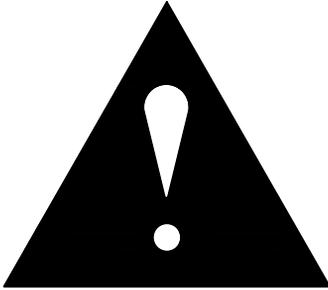


Never step on a single roof panel or a stack of several roof panels lying unattached on the roof structurals. If you step onto a single panel lying unattached on the roof structurals, it may slip causing you to lose your balance and fall. Even a stack of several panels lying unattached on the roof structurals may slip if you step on it.

#### WHAT TO DO TO PREVENT ROOF FALLS

1. Always Use Fall Protection - including but not limited to, lifelines, safety clamps, safety harnesses, lanyards, safety nets, scaffolding, man-lifts, and catch platforms.
2. If You Need a Work Platform - for laying insulation or any other purpose, use only platform constructed in accordance with OSHA regulations. Never use unattached or partially attached panels as a work platform.
3. To Avoid Slipping - wear good work boots while on the roof. The danger from a slip is greatest while installing roof panels or insulation at the edge of the roof. Use walkboards in the flat of panels when installing panels. When working near the edge of the roof, always use fall protection.
4. To Prevent Panels from Slipping - Do not step on loose roof panels or even a stack of several roof panels.
5. Walkboards - One method to add stability to panels during installation is to place walkboards in the flat of panels. (Use 2x12 lumber for liner panels. For all other panels, use "2x" lumber sized to fit in the flat.) The boards should run the full length of the roof slope and should be fastened together by drilling a hole near the ends of each board and tying it to the next board with rope. Cut a groove in the bottom of each board so that the board will lie flat and not tip back and forth because of the rope. This will prevent the boards from slipping out from under you when you step on them. Adequately secure walkboards to the building. Walkboards are not a substitute for appropriate fall protection.

## FALL PROTECTION



Fall protection is required by OSHA when working at heights. There are many types of fall protection devices available and the installation contractor is responsible for making sure the appropriate device is used in accordance with all local, state and OSHA Regulations. Examples of some fall protection devices are:

- Safety clamps
- Safety harness and lines
- Safety lanyards
- Safety nets
- Catch platforms
- Scaffolds
- Mesh leading edge fall protection and insulation support systems available from BlueScope

## SEAMING MACHINE

Installation of the roof system requires the use of an electronic seaming machine. Detailed operation instructions begin on page 43 of this manual. Operators of these machines should also adhere to the following safety guidelines:

- Always use fall protection when installing panels or working near roof edges.
- Make sure seaming follows laying of panels as closely as possible.
- Never tie power cords together or to the seamer.
- Never "ride" the seamer or block vents on the motor in any way.
- Keep the path of the seamer clear at all times and power cords free of entanglements.

Failure to heed these warnings can result in serious injury or even death.

## OTHER ROOF INTALLATION HAZARDS



**INSULATION** - Blanket insulation has no load bearing strength and cannot support a workers weight. Always use fall protection. The use of fiberglass blanket insulation may cause an allergic or other physical reaction to some people.

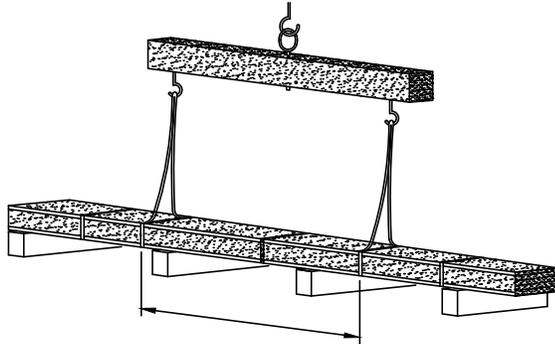
**WIND** - Carrying roof panels on windy days is extremely hazardous. Panels may act like a sail, throwing you off balance and causing you to fall. Blown panels may also hit and injure other workers.

# HANDLING GUIDELINES

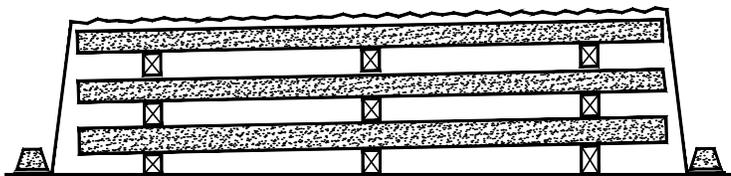
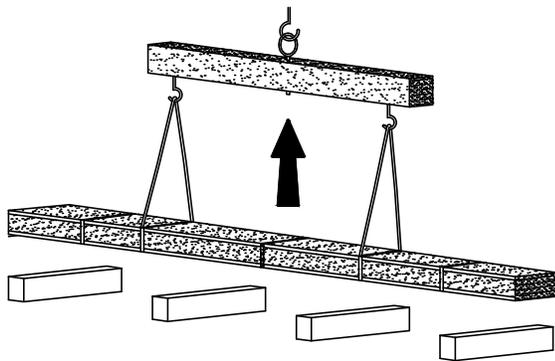
## FULL CRATES: UNLOADING AND STORAGE

When unloading crates of panels upon arrival of shipment or handling to preload onto roof structurals, it is important to rig the bundles properly for a safe lift.

Incorrect handling may break the panel crate, severely damaging panels beyond use.



SLIGHTLY LESS THAN HALF THE PANEL LENGTH



When using a crane and wire rope sling, examine the wood crating to make sure the wood prevents the slings from damaging the panels. Nylon slings are necessary when handling crates that have been opened or no longer have the wood crating for protection. The distances between the slings should be a little less than half the length of the panel.

With 40 foot panels, the slings should be a little less than 20 feet apart, which will allow the bundle to arch slightly as the lift is made. The use of a spreader bar is preferred.

When using a forklift for unloading, spread the forks and make a test lift at the center of the crate. If upward bow is not excessive, carefully lift. If the crates are too long or the forks cannot be used under the crate safely, use a spreader bar and slings from the forks. Normal crates of 32 panels will weight approximately 4,000 lbs. maximum.

when unloading and storing at jobsite, always place dunnage under the crate, cover and slope for drainage of water from rain or snow.

Check these parts for damage and store in a protected area. The trim parts may be covered with a strippable film, to eliminate transit scratching. If the part is not to be protected from the weather while in storage, then the film must be removed. This is to avoid sun exposure which will make the film brittle and difficult to remove.

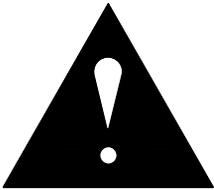
Strategically place materials so they are near their use to prevent unnecessary handling

## FULL CRATES: PRELOADING

Plan where and how panels will be loaded on the roof structurals. Decide whether to preload as the structurals are being installed or wait until after structurals are complete.

Preloading is usually the most effective method on moderate to large buildings, but individual project details must be taken into consideration: the building's size, site condition, the type or method of installing insulation and equipment to be used.

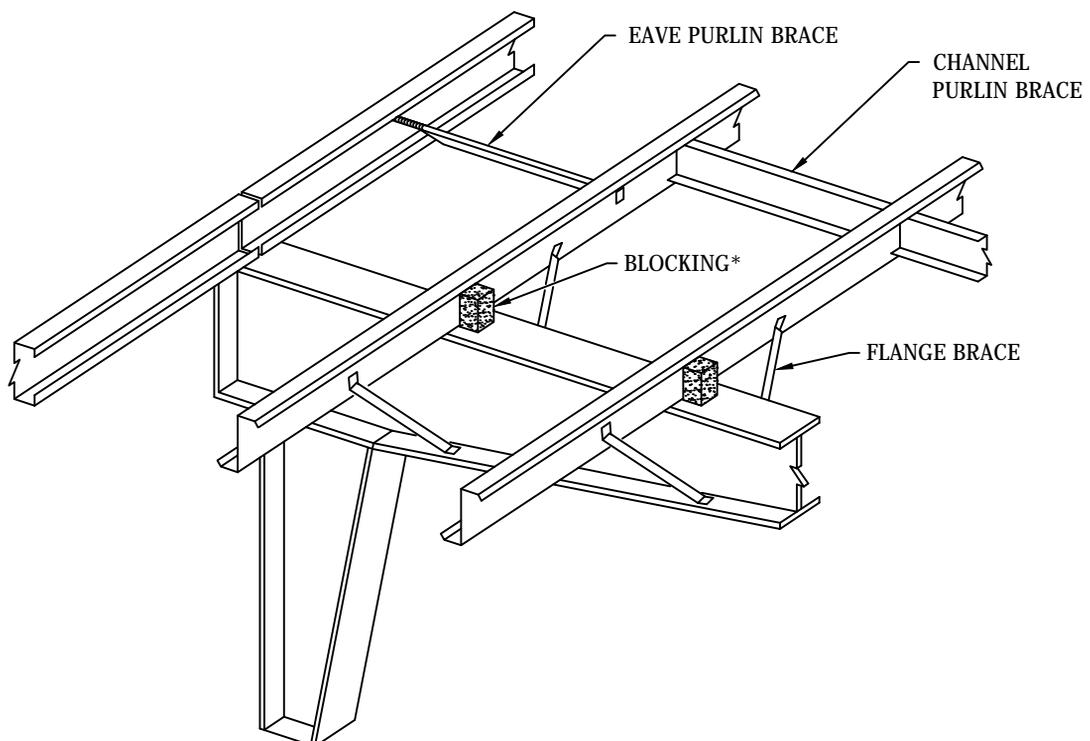
To help you with your preload planning, refer to your roof panel layout drawings to determine the best location for preloading panel bundles.



**IMPORTANT:** Full bundles of panels are too heavy to load onto roof structurals at mid-bay locations. They should be only positioned near the main frames.

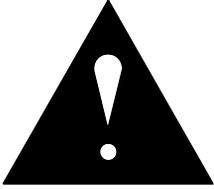
On Widespan™ structural systems, the "Z" purlin should be blocked for additional support. This blocking can be made from dunnage or crate material cut to the height of the "Z" purlin and positioned under the flange of the purlin and bear on the main frame top flange.

Install all purlin and flange braces and tighten all bolts and nuts before preloading

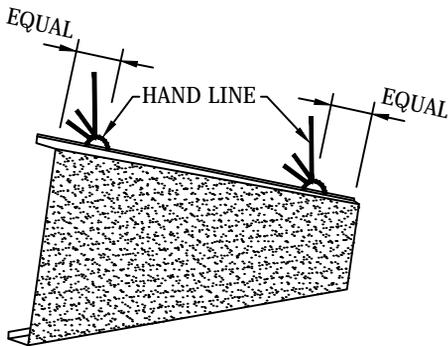
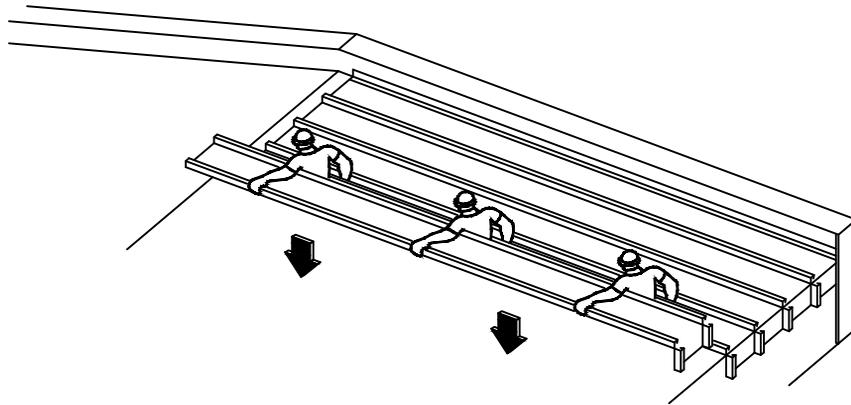


## SINGLE PANELS

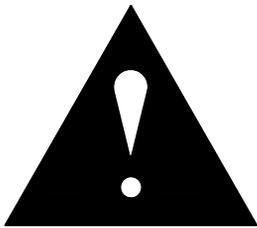
To prevent buckling when hand carrying a single panel, two workmen should grip the corrugation edge on the same side of the panel and lift in unison, distributing the weight, allowing the panel to hang sideways. Longer panels may require another workman in the middle.



**CAUTION:** Always wear gloves when handling panels.



When handling panels from the ground to the roof, use locking pliers type clamps over the corrugation edge positioned toward each end to distribute the weight. Attach the line to the clamps and then pull the lines smoothly up to the roof allowing the panel to hang sideways.



**WARNING:** Carrying roof panels on windy days is extremely hazardous. Panels may act like a sail throwing you off balance and causing you to fall. Always use fall protection.

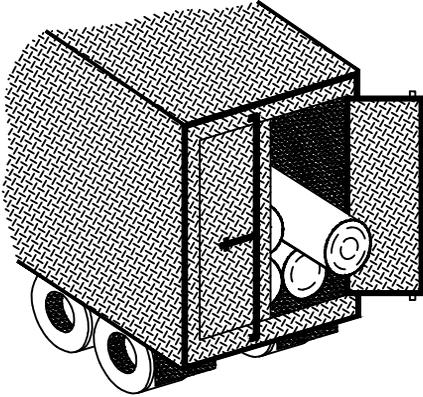
Blown panels may also hit and injure other workers. Keep loose panels secure to prevent wind damage.

Bundles of loose panels should be banded to the purlins at the end of the work day. Steel banding should be tensioned so that wind will not loosen the bundle. Using a rope or wire lashup may allow the panel to loosen during a strong wind resulting in panel damage.

# HANDLING MATERIALS

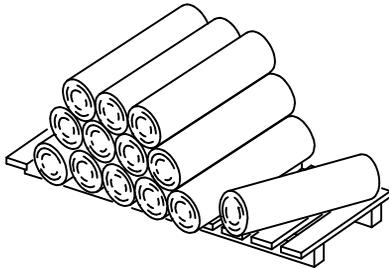
## INSULATION STORAGE

Inspect the insulation upon arrival at the jobsite to insure that it is exactly as ordered. If the insulation is defective, it should not be installed and the supplier should be contacted immediately.



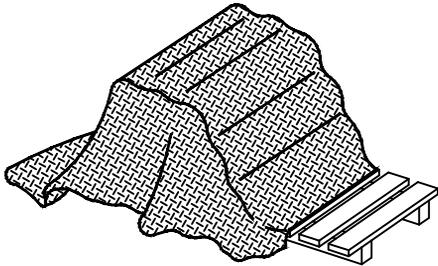
Insulation must be stored in a dry protected area. A storage trailer provides very good protection.

If a dry protection area is not available at the site, the insulation should be placed at the end of the building where the roof panels will first be applied. This will provide protection for the insulation material until the building is completed.



Elevate all packages above the ground or slab to prevent possible contact with surface water. Facings utilizing Kraft paper are especially susceptible to moisture. All facings are fragile and subject to impact damage. Care in handling must be exercised. Do not allow the rolls of insulation to be thrown off the shipping vehicle, kicked, or placed in contact with sharp objects during storage.

Plastic bags used for wrapping should have holes in each end to ventilate the insulation. Do not remove plastic bags until insulation is needed.



Packages can be left uncovered during the day, weather permitting, but should be protected at night with a tarp or other covering.

Use the insulation as soon as possible after delivery. On large projects, the insulation can be supplied in phases as construction progresses. The longer the insulation is in storage, the more likely it will be damaged or stolen.

## HARDWARE, FASTENERS AND SEALANT STORAGE

All building materials used for the roof installation should be checked, separated and stored in a dry protected area so that they are not damaged, stolen or lost before using.

Do not store heavy materials on boxes of sealant as this will damage the sealant beyond use.

## TRIMS AND FLASHINGS

Check these parts for damage and store in a protected area. The trim parts may be covered with a strippable film, to eliminate transit scratching. If the part is not to be protected from the weather while in storage, then film must be removed. This is to avoid sun exposure which will make the film brittle and difficult to remove.

Strategically place materials so they are near their use to prevent unnecessary handling.

## TOOLS AND RELATED MATERIALS

Installation procedures illustrated in this manual will require the following tools and materials:

- Seaming machine - leased
- Lock-Rivet™ fastener tool
- Blind rivet pulling tool
- Nylon slings 4" wide 10' and 12' long or 1/2" cable, 10' and 14' long, eyes at both ends
- Electric Impact Wrench - 1/2" drive with 5" long drive extension and 3/8" magnetic socket
- T-45 Torx® Plus tips
- Electric screwgun
- Drive extension holder with tips for #3 Phillips head
- T-30 Torx® Plus tips
- Electric drill with 5/16" and 9/64" drill bits
- Double faced insulation tape or adhesive
- Aligning punches, tapered 1/8" to 3/8" x 9" long-sharpened
- Dual purpose caulk gun (10 oz. sausage/10.3 oz. cartridge)  
(10 oz./20 oz. sausage/10.3 oz. cartridge/bulk application)
- Steel banding equipment or rope
- Speed wrench with 7/16" socket
- Hard hats
- Utility knife
- Gloves
- Insulation stapler and staples
- Locking pliers
- Hacksaw
- Tin snips - right and left
- Steel tape measure
- Dry string line
- Tarps or plastic sheeting
- Hand lines
- Appropriate fall protection equipment including: body safety harness; safety nets; safety / lanyard; catch platform; safety clamp; etc.

Installation of Lock-Rivet fastener requires fastener tool with pulling head available from  
Dynamic Fastener

9911 E. 53rd St., Kansas City, MO 64133

(800) 821-5448 - Voice            (800) 844-1199 - Fax

All other tools are the normal tools required for the installation of pre-engineered buildings with the exception of the seamer which is covered later in the manual.

Torx® is a registered trademark of the Camcar Division of Textron, Inc.

Lock-Rivet™ is a trademark of BlueScope Buildings North America, Inc.

## SEALANTS

The use and proper application of all sealants shown in this manual or on the installation drawings is critical. All surfaces in contact with sealant must be clean.

Install roll sealant by pressing on the paper backing to get good adhesion and work into surfaces. To cut, use a utility knife. Never attempt to tear the sealant because it will stretch beyond the proper shape. Remove paper backing just before laying the lapping material.

When using cartridge sealant, pay special attention to the size of bead that is required

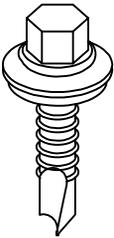
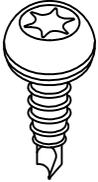
The code and description of sealant listed in this manual are:

- 025392 Cartridge type Panlastic® sealant with embedded nylon cubes
- 016688 Cartridge type gray sealant
- 027893 Ribbon type Panlastic® sealant 1/8" X 1" X 25' roll with embedded nylon cubes
- 560185 Foam type sealant 3/4" X 50' roll
- 560564 Bead type Panlastic sealant 3/16" dia. X 40' roll
- 560201 Joint sealant 3" X 3" X 22" - a compressable polyurethane foam joint sealant strip impregnated with polybutlene
- 560562 Ribbon type Panlastic sealant 1/16" X 1" X 40' roll

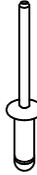
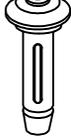
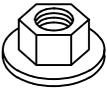
# FASTENERS

## DESCRIPTION

The shipping manifest will list the use location of the roof fasteners. The use location may also be shown on the roof panel layout drawing. The code and description of the fasteners listed in this manual are.

FASTENER	DESCRIPTION	WHERE USED
	097230 1/4 - 14 X 1 1/4" SDS with Washer (Color) Type 3, Max. Material Thickness - .250	Painted - Eave attachment, trim and flashing with .080" and greater thickness steel.
	097357 1/4 - 14 X 7/8" SDS with Mini Point (Color) Type 1, Max. Material Thickness - .035	Painted - Eave attachment, trim and flashing with less than or equal to .035" thickness steel or wood.
	097296 #12 - 14 X 1 1/4" SDS Type 3, Max. Material Thickness - .210	Z-support at gable trim and parallel roof to wall transition
	097364 1/4 - 14 X 3/4" T-30 Torx SDS with Mini Point and Galv. Steel Backed E.P.D.M. Washer	Where specified in trim applications

## FASTENERS (contined)

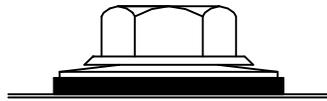
FASTENER	DESCRIPTION	WHERE USED
	097124 or 096884 or 097580 1/8" x 3/8" Black Pop-Rivet 3/64" Thru 5/16" Grip Range	Where specified in trim applications.
	096583 9/32" Lock-Rivet / Roof (Gold E.P.D.M. Washer) 1/4" Thru 5/8" Grip Range	Ridge cover splices end covers.
	096306 9/32" Lock-Rivet / Roof (Green E.P.D.M. Washer) 3/64" Thru 3/8" Grip Range	Ridge cover splices end covers.
	097190 1/4" - 20 Flange Nut - Stainless Steel	Panel splices

NOTE: Many fasteners require a color suffix number. Please check the Price List to verify that number.

# FASTENER INSTALLATION

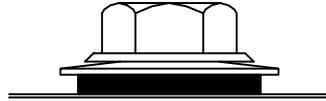
Although the selection of specialized fasteners is important, their correct application holds the key to a weathertight, structurally sound construction project. The following fastener installation procedures should be read and understood by all installation personnel.

**DO NOT OVERDRIVE!** When possible, use drivers with torque control set to function properly for the combination of fastener size, hole size and material thickness.



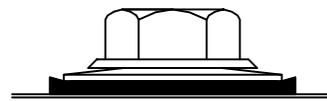
**CORRECT**

(Sealing material slightly visible at edge of metal washer. Assembly is watertight)



**TOO LOOSE**

(Sealing material is not visible-not enough compression to seal properly)



**TOO TIGHT**

(Metal washer deformed, sealing material pressed beyond washer edge)

## FASTENER INSTALLATION: LOCK-RIVET™ FASTENERS

All holes for Lock-Rivet fasteners should be factory punched or drilled with a 5/16 diameter bit. To function properly the rivet must be used in a free-fit hole surrounded by a flat, smooth surface.

The rivet must be perpendicular to the surface and firmly seated against the surface before activating the pulling tool.

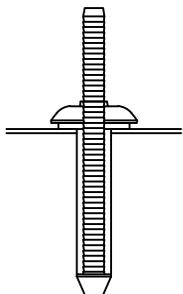
A properly installed rivet will be firmly seated and occasionally a very small part of the neoprene washer will be showing.

A properly installed rivet will always have three tines expanded on the underneath side.

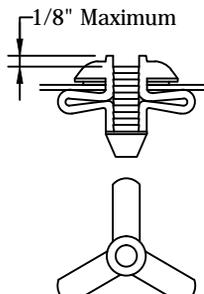
The rivet stem will break off from a point slightly above the head to a point as much as 1/8" below. If the break off point is more than 1/8" below the head, a malfunction is indicated, and the rivet should be replaced.

If the rivet stem breaks off high, it is because of using the wrong fastener for the grip range of the pulling head of the tool needs repair; these rivets are not properly sealed and should be replaced.

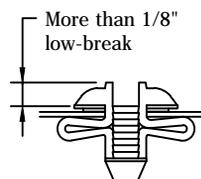
To remove a malfunctioned rivet, first drive the stem down with a tapered punch and cut through the head of the rivet with Lock-Rivet fastener cutters, which can be purchased from Dynamic Fastener. As an alternative method, hold the head of the fastener with pliers and drill the center of head out with a 5/16" diameter bit.



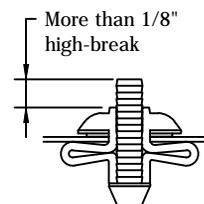
**BEFORE PULLING**



**PROPERLY INSTALLED**



**REPLACE**

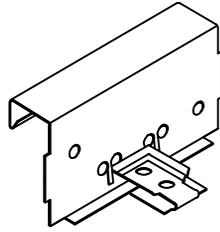


**REPLACE**

## GENERAL INFORMATION

The roof system differs considerably from other metal building roof systems because of the unique method used to fasten the roof panels to each other and to the structurals. There are no through fasteners used with these roof panels except at the eave structurals. Instead, panels with factory applied sealant are joined together by a mechanically formed lock seam. Concealed clips secure the panels to the roof structurals.

### PANEL CLIP



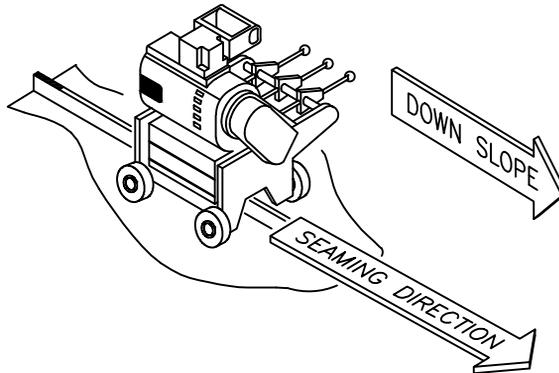
#### STANDARD CLIP

- Raises panel 1/2" or 1" above supports
- Use when installing panels over fiberglass insulation, with or without thermal blocks
- Clip allows for thermal movement
- 2 1/2" clip compresses a maximum 2" fiberglass Insulation plus 1/2" thermal block
- 2 1/2" clip compresses 2" thru 6" fiberglass insulation without thermal block
- 3" clip compresses 2" thru 6" fiberglass insulation plus 1/2" thermal block

## ROOF SYSTEM SEAMING MACHINE

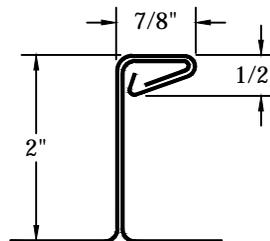
Portable, self-propelled, one stand, roof forming machine that joins the roof system panels together by crimping the edges of the panel verticals. It is powered by an electric motor and weights approximately 28 lbs. (30 lbs. in its shipping box). Its average forming speed is 22 ft. per minute.

The seamer, is leased only on terms of 30 days or 12 months and required signing of a lease agreement. without damage. The tab is centered by elastic bands that break away as movement occurs.



## LOCK SEAM

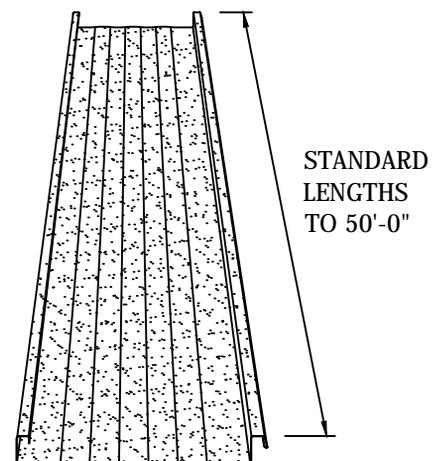
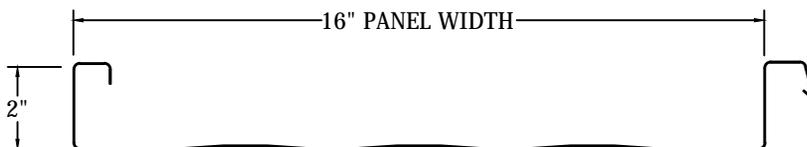
The seamer contains one forming roll or "stand". It performs a metal forming (seam closure) operation as the machine is self propelled either up or down the roof panels.



DIMENSIONS ARE APPROXIMATE

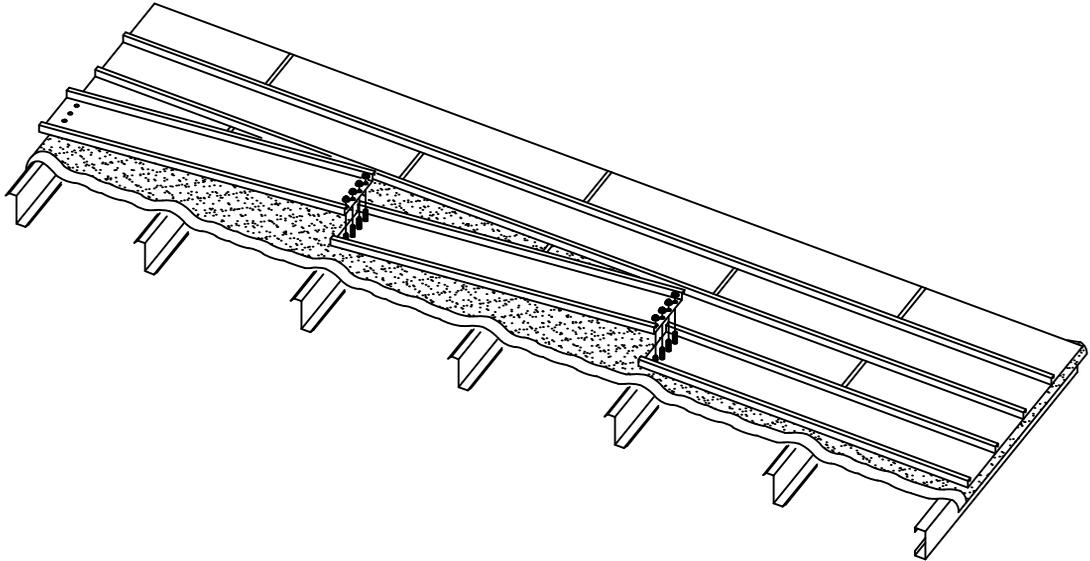
## ROOF PANEL DIMENSIONS

Standard panel is 16" wide and available in lengths to 50'-0".



## PANEL USAGE

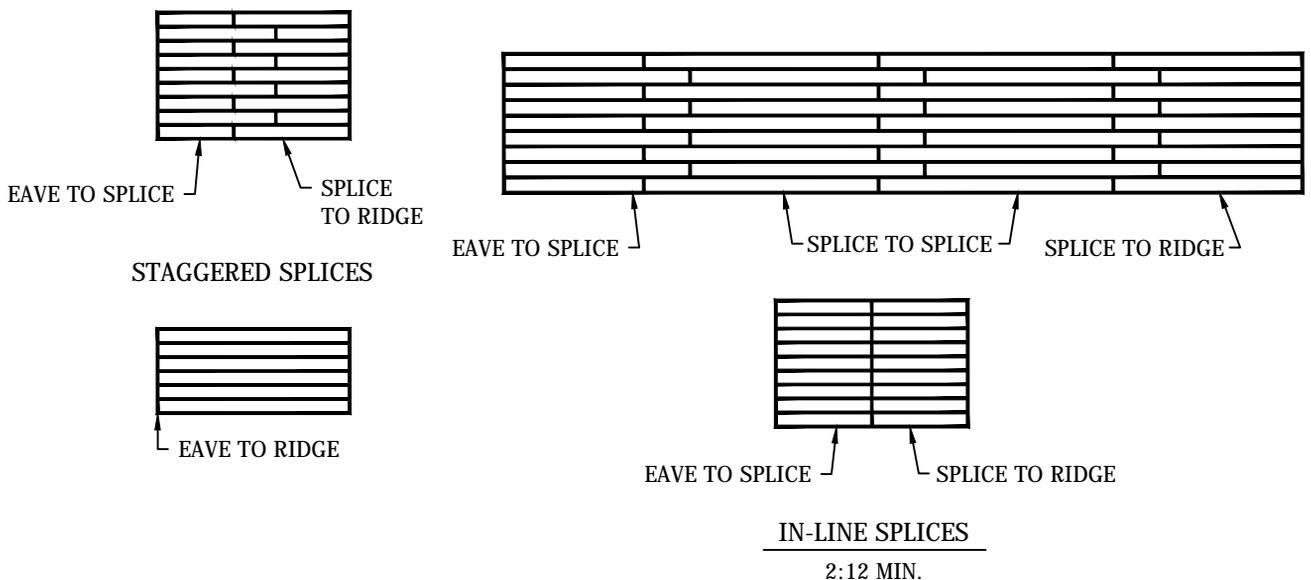
Four different types of panels are available and the type of panel, or panels, supplied will vary depending on the width of the roof. For example, some roofs will require a single panel from eave to ridge; some will require two, an eave and a ridge panel. Other will require a combination of eave and ridge panels with one or more splice panels.



Always refer to your roof panel layout for specific panel requirements. All panels are prepunched and prenotched where end splices are required.

Whenever one or more panels splices are required, the end laps of adjacent rows of panels may be installed in-line or staggered for the entire roof length. Carefully follow the roof panel layout give for your particular roof.

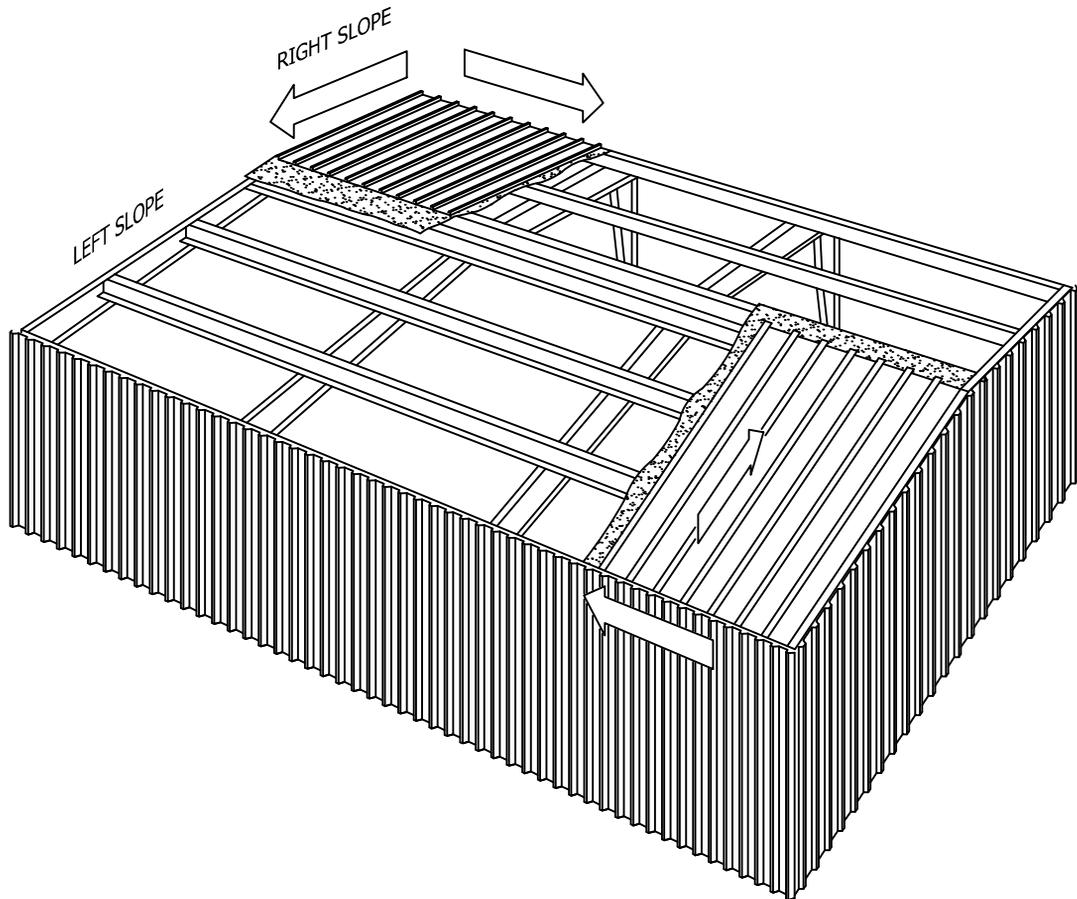
When panel splices are required, the panels are crated with alternating lengths in the same crate. Panels may be used as they come out of the crate to obtain the staggered lap pattern.



# OVERVIEW

## DIRECTION OF PANEL INSTALLATION

Panels are "non-handed" (i.e. may be installed on left or right slope), however panels must be installed from RIGHT TO LEFT on each slope.



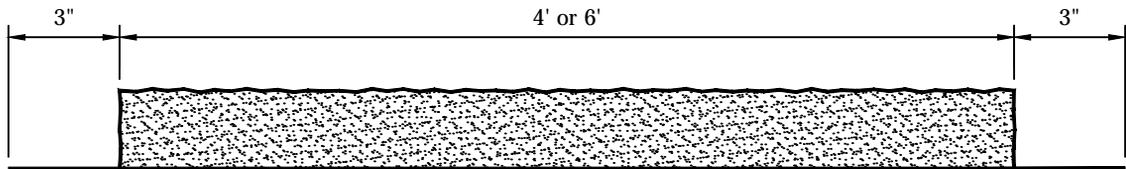
**WARNING: ALWAYS USE FALL PROTECTION WHILE ON ROOF**

# INSULATION

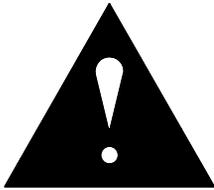
## GENERAL

Faced fiberglass blanket insulation with a minimum 2" thickness and a maximum 6" thickness is recommended over the roof structurals on roof system installation. The system may be installed without insulation, however, problems with condensation, panel flutter, noise and possible clip fatigue may be encountered and therefore is not recommended. If the decision is made to install this roof system without insulation, roof felts should be installed.

Insulating blanket of 4' or 6' wide rolls should be used, depending upon facing and or thickness specified. Two tabs are required for stapling rolled insulation together.



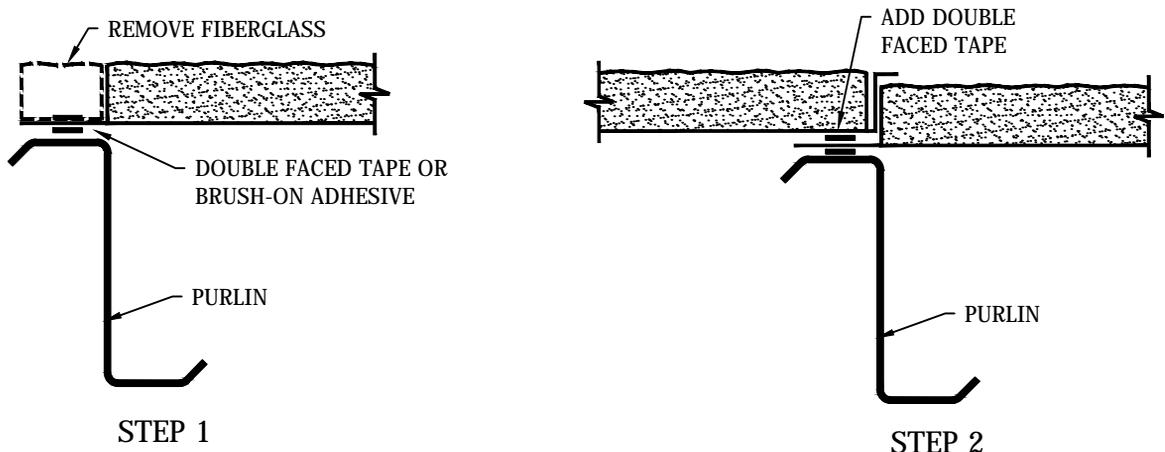
SECTION



**WARNING:** Insulation has no load bearing strength and cannot support a worker's weight. Always use fall protection.

Roll lengths to cover half of the building (eave structural to ridge purlin) should be ordered. When building width precludes this, a length (end) splice must be made.

Insulation end splices over a roof structural is simplified using double-faced tape or brush-on adhesive. Double-faced tape holds the insulation firmly to eave member and ridge structural eliminating weighting or clamping required with adhesives.



SUGGESTED METHOD FOR LENGTH SPLICE

## STAPLING PROCEDURE

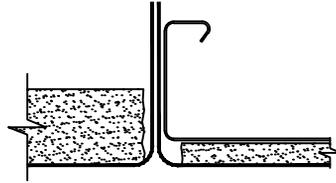
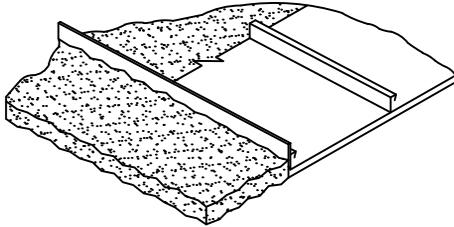
It is essential that the insulation facing provide a continuous complete vapor retarder to prevent airborne moisture from condensing within the insulation and on the inside surface of the panel.

The adjacent facing tabs are sealed together at the joints by folding and stapling. A good quality plier-type stapler (such as Bostitch Model P6-8 with 3/8" STH 5019 staples or equivalent) should be used.



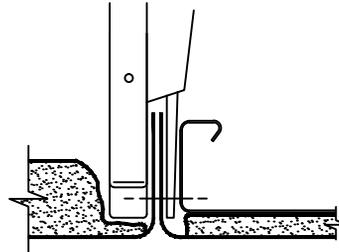
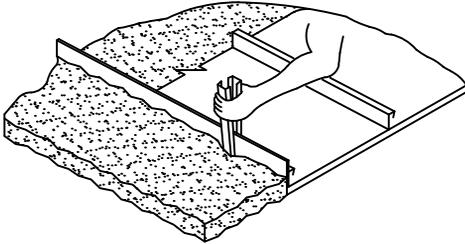
**WARNING:** Stapling procedure requires work at the leading edge of the roof. Always use fall protection.

①



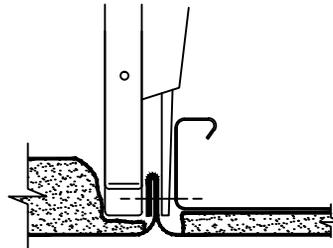
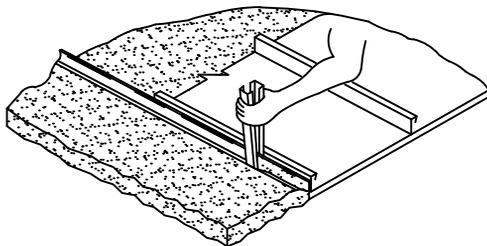
Stapling is done from the topside as the insulation is applied. Pull the adjoining facing tabs outward at the joint and align the top edges of the two tabs.

②



Staple the two tabs together approximately 1/2" from the bottom on 8" to 10" centers.

③



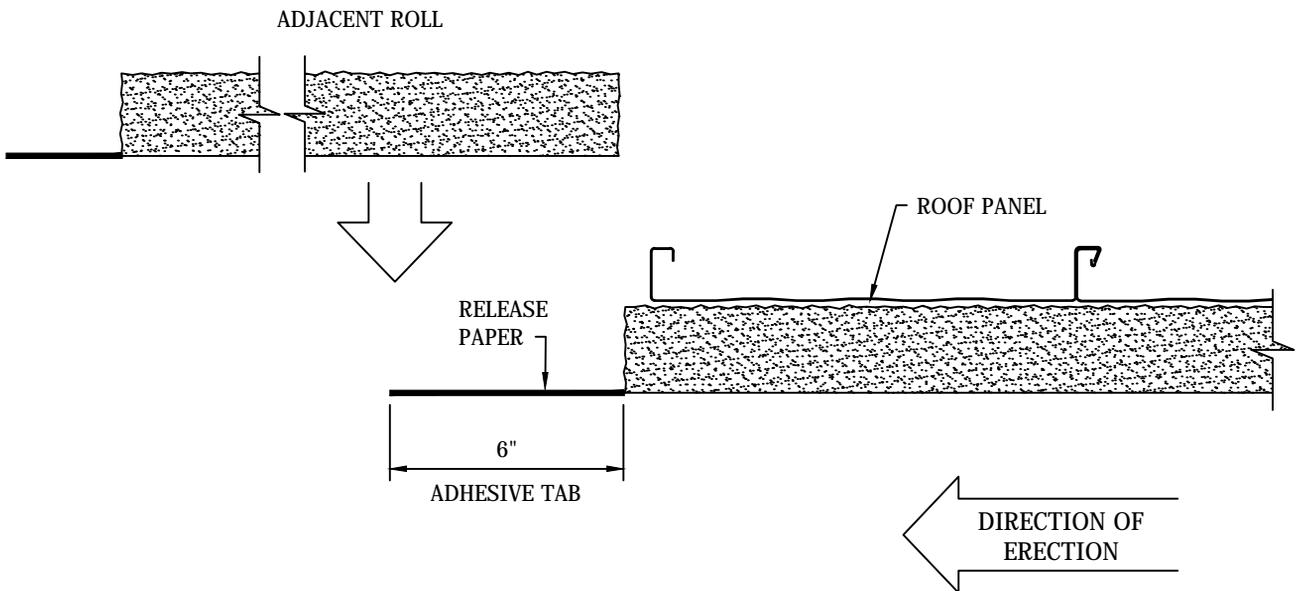
Fold the tab over and staple again on 4" centers.

## ADHESIVE TAB PROCEDURE

It is essential that the insulation facing provide a continuous complete vapor retarder to prevent airborne moisture from condensing within the insulation and on the inside of the panel.



**WARNING:** Adhesive tab procedure requires work at the leading edge of the roof. Always use fall protection.

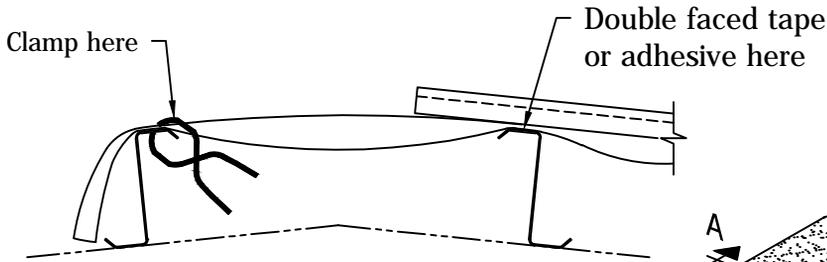


### INSTALLATION STEPS:

1. Slowly pull away release paper exposing adhesive tab.
2. As release paper is removed, gently push adjacent insulation roll into place. This method should be executed in one direction only and should achieve a full 6" bonded lap.

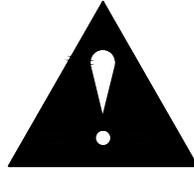
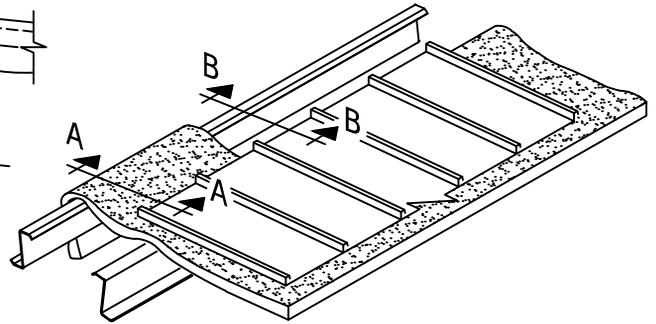
**IMPORTANT:** Do not expose too much adhesive surface as it may attach to unwanted locations.

## INSTALLATION PROCEDURE AT RIDGE

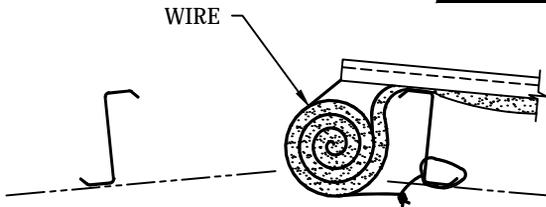


### SECTION A-A

Temporarily clamp insulation to opposite ridge purlin. Install roof panel.

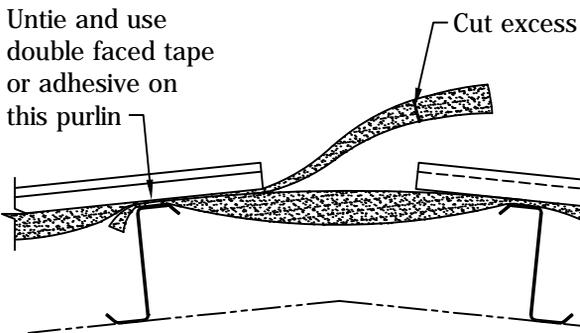
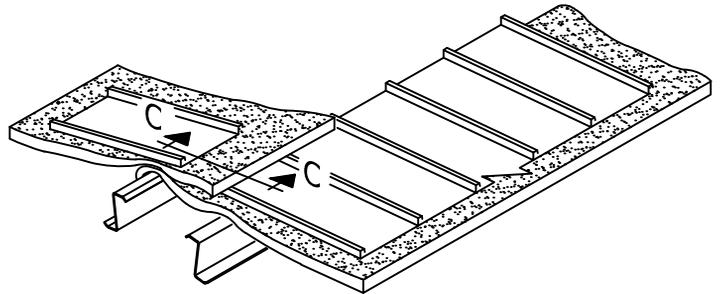


**WARNING:** Insulation has no load bearing strength and cannot support a worker's weight. Always use fall protection.



### SECTION B-B

After roof panel has been installed, roll up excess insulation and wire to purlin and roof panel to prevent damage from wind or weather.



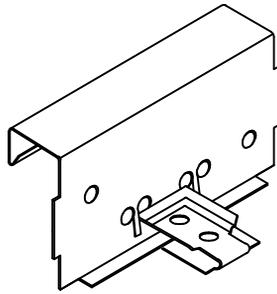
### SECTION C-C

Pull insulation this side to past ridge. Stretch and cut after panel is in place.

## INSULATION SYSTEMS

There are three insulation systems used with the roof system:

- Basic blanket insulation system
- Insulated purlin system
- Rigid insulation on metal deck

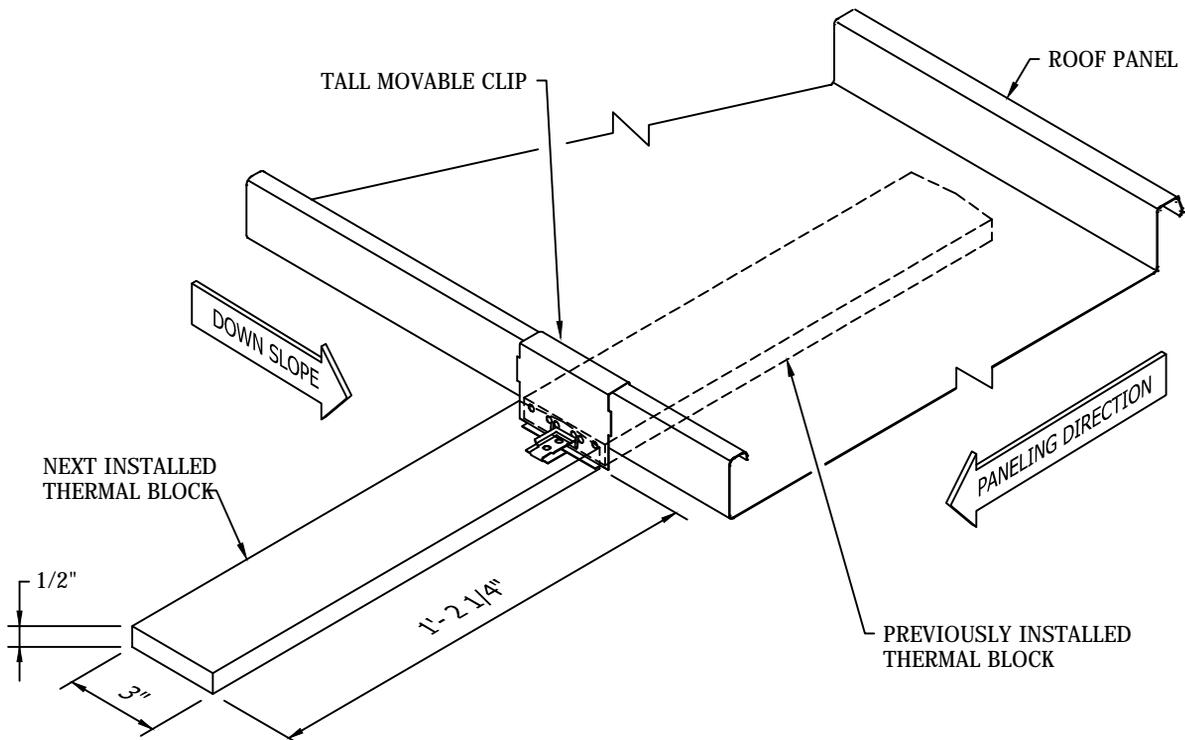


STANDARD CLIP

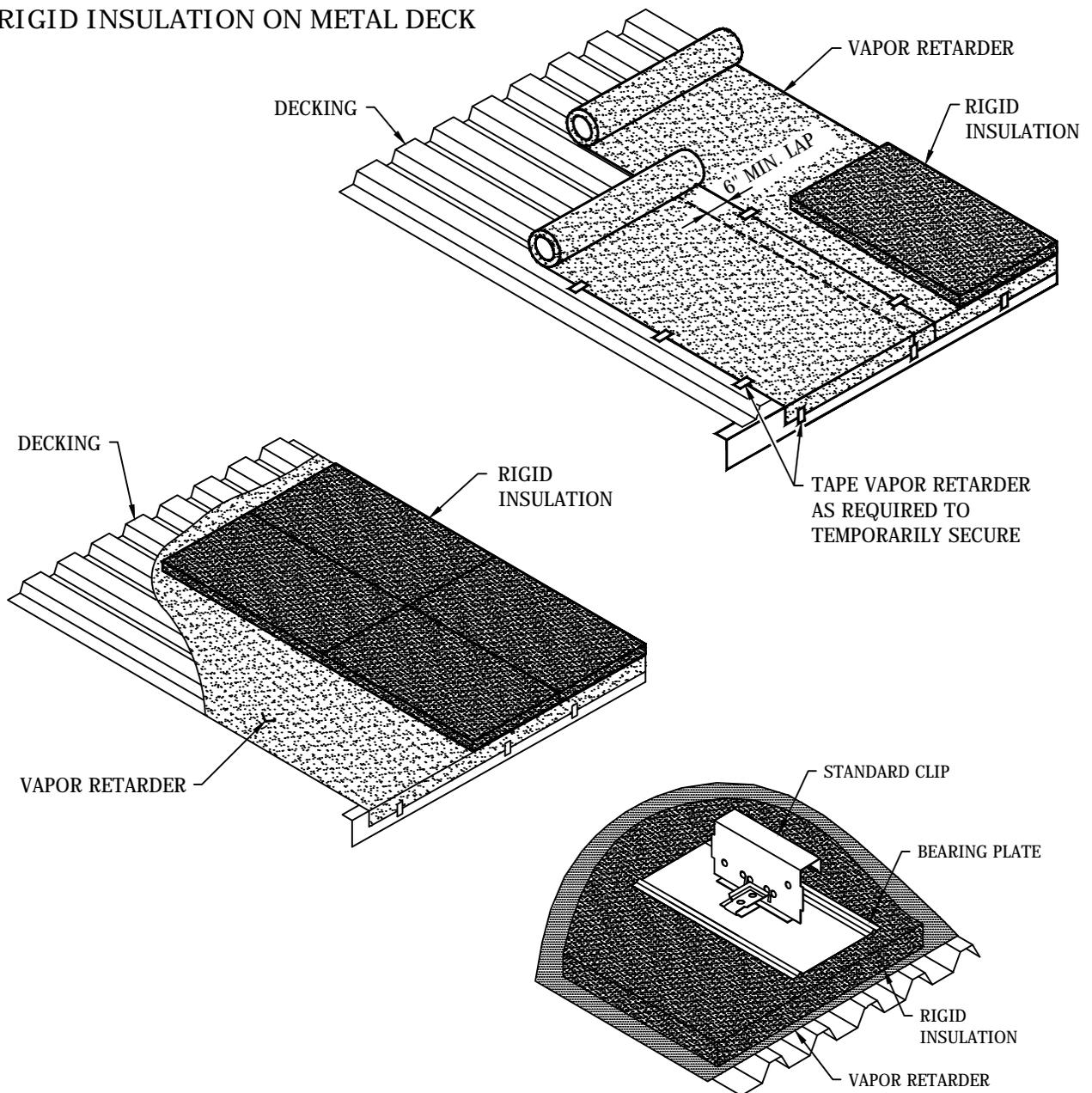
The Basic Blanket System uses the low moveable panel clip to support the roof panel. The blanket insulation is installed over and compressed between the roof structural members and the roof panels.

The Insulated Purlin System uses the tall panel clip to support the roof panel and the panel is raised above the roof structural. The blanket insulation is installed over the roof structurals in the same manner as the basic blanket system but in addition, a polystyrene foam thermal block is installed on top of the blanket insulation over the roof structurals between the panel clips.

The thermal block provides additional insulation between the roof panel and structural when the blanket insulation is compressed. Thermal blocks are 3" wide by 1'-2 1/4" long by 1/2" thick.



## RIGID INSULATION ON METAL DECK



### RIGID INSULATION INSTALLATION STEPS:

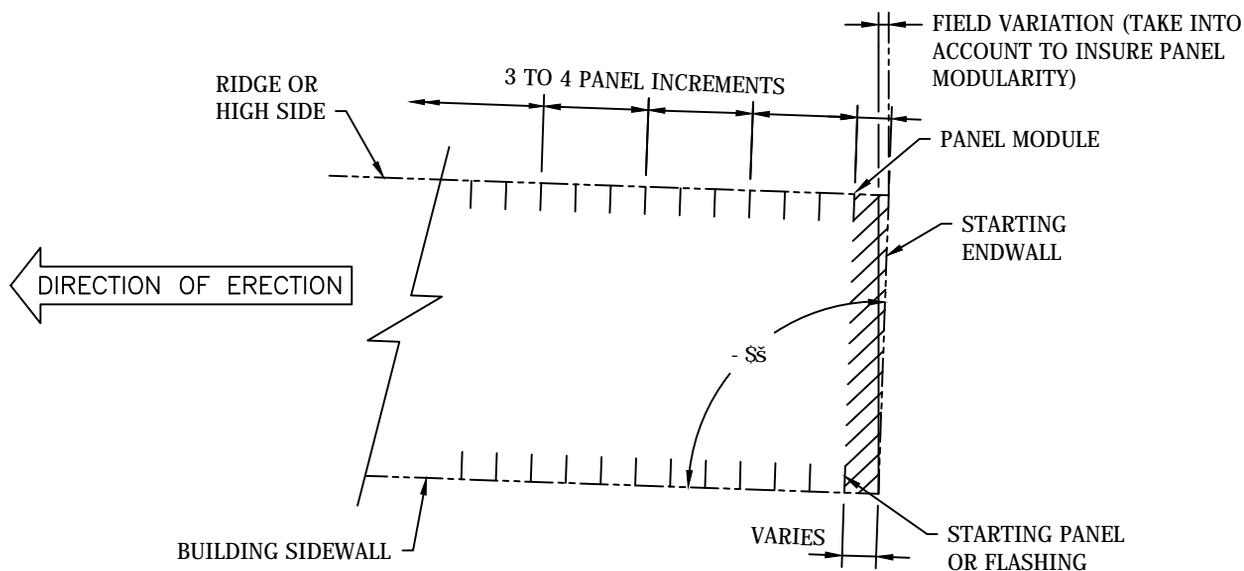
1. With vapor retarder in place over deck, install first course of insulation from eave to ridge.
2. Install bearing plate, panel, and panel clip to secure insulation.
3. Install second course of insulation.
4. Continue steps across building.

### NOTES:

1. For additional installation information specific to UL-90 installations, refer to standard installation drawings.
2. If vapor retarder is installed in extreme cold, care is required because it may become brittle and crack. (Use optional climate vapor retarder).
3. Steel decking material is not supplied by BlueScope Buildings.

# INSTALLATION OF PANELS

## PANELING PROCEDURES



## INSTALLATION STEPS:

**IMPORTANT:** Roof Panels must be installed from right to left viewed from eave of building.

Starting panels is installed with right rib removed and must be located so that is is square with an established straight line at the eave or sidewall of the building and **NOT THE END OF THE BUILDING.**

After making sure that the initial panel is square with the building sidewall, it is important that each successive panel run be installed on module. To insure modularity, it is suggested that marks be placed at the eave and ridge of each roof section indicating the panel module for every 3 to 4 panels. These marks should be used to periodically monitor the squareness of the installed panels. Each panel may be installed with minimal adjustments to align with marks on building. Adjustments may also be made within the last 10'-0" run of paneling so as to align the last panel to be on module with the building endwall.

Panel clips are required to retain panels. For buildings with steel or plywood decking beneath the roof panel, a clip should always be located within 6" of the building eave and typically 5'-0" O.C. up slpe thereafter. For buildings with intermittent structurals, a clip is required at each structural member. When rigid board insulation is used, a bearing plate located beneath each panel clip is required.

Panel clips must be located at the high profile of steel decking systems.

**IMPORTANT:** All access on the roof must be made with walk boards in the flat of the panels and sufficiently secured to prevent damage. NO foot traffic should be allowed directly on the panels.

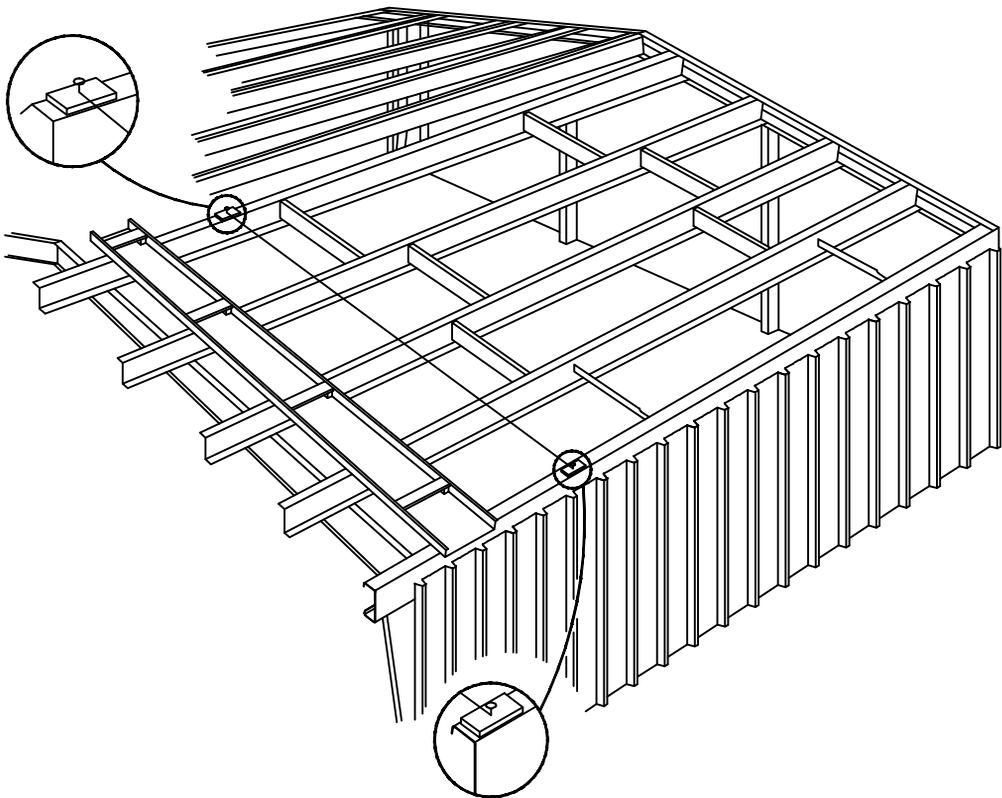
The general sequence of roof installation followed in this manual include:

1. Installation of insulation and roof panels.
2. Installation of perimeter trim which includes endwall trim.
3. Installation of ridge cover.
4. Installation of hip / valley trim conditions.
5. Installation of roof / fascia panels.

**IMPORTANT:** The many roof / trim transition conditions illustrated in this manual are given only as a general guide. Installation drawings must be reviewed for specific installation details prior to beginning work on the roof.

Prior to the actual installation of the roof system, the structure must be properly plumbed and squared, with the secondary roof members straight and panel attachment holes properly aligned. This may be accomplished by using the dryline technique.

**IMPORTANT:** Unpunched structurals are standard for roof system. Structurals which are factory punched may be used as long as panel clip attachment is located at unpunched surface. The dryline technique for aligning a punched structure may be used as in conjunction with premaking panel modularity on structurals with specific intent to avoid panel clip attachment at existing holes.



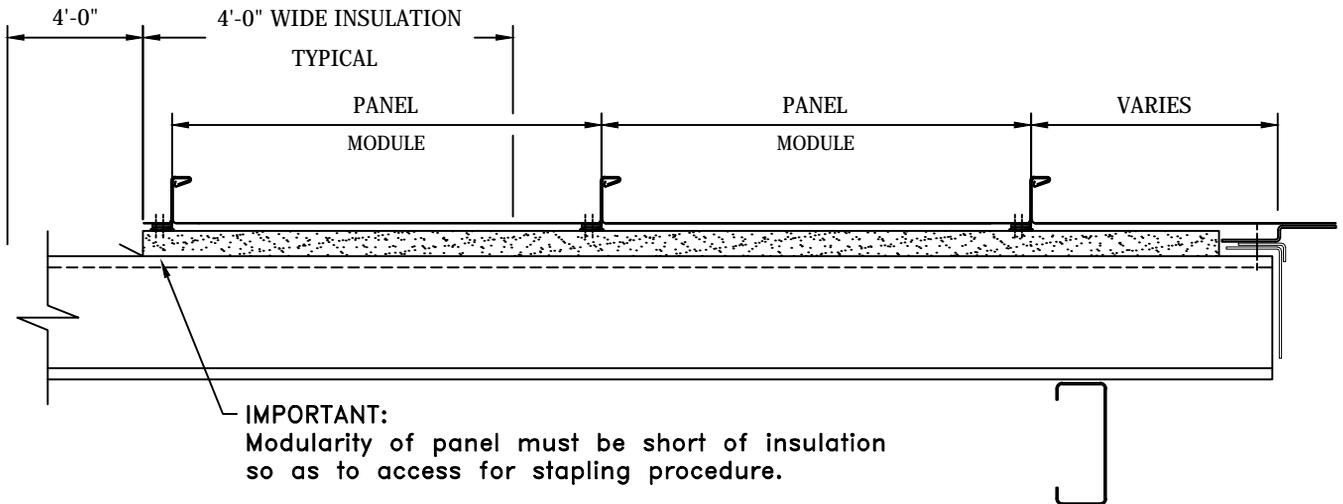
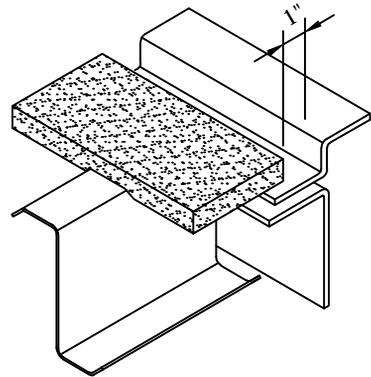
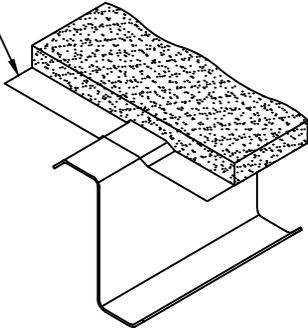
#### Dryline Technique / Punched Structurals

Attach a dryline to the eave strut and the ridge purlin. Select identical holes in these members then sight along the line to make sure all purlin holes are directly under the line. If not, recheck the frame for any sweep or dogleg condition.

## INSULATION DETAIL

A standard 4' wide roll can be used for the starting row of insulation but requires careful positioning. The insulation must be laid so the fiberglass portion of the insulation will clear the panel clips which are installed on 16' centers. This can be gauged by aligning the leading edge of the insulation 1" past the panel clip attachment at the third panel location (or 4'-0" module). This will leave a small void (approx. 1") in the roof insulation at the endwall which can be filled in later by tucking insulation from the overlap of the endwall insulation.

3" TAB OR  
6" WITH  
SEAL TAB



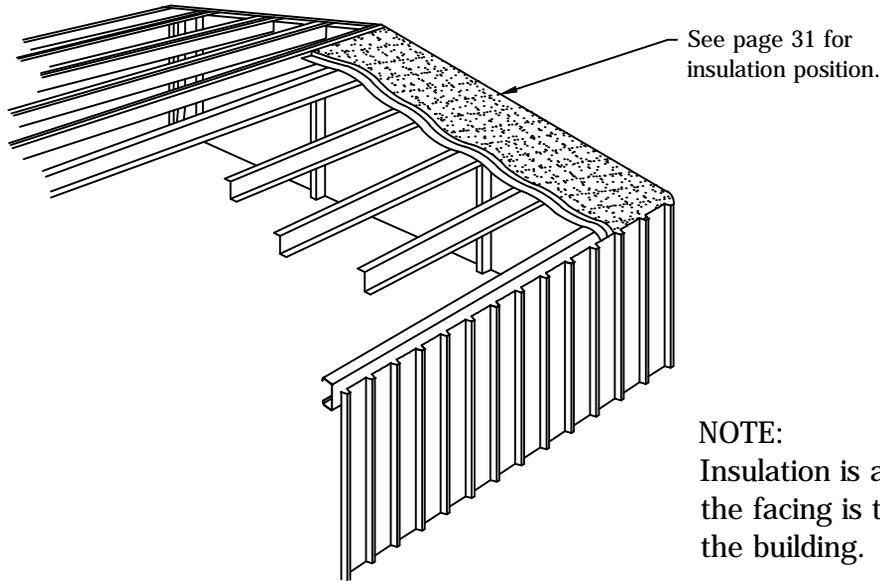
### SECTION

This detail shows the position of the panel clips in relation to the width of the insulation only. Panel clips are installed as the panels are being placed and not out in front of the roof paneling activity.



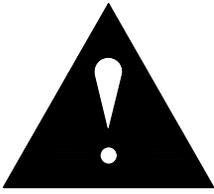
**WARNING:** Insulation has no load bearing strength and cannot support a worker's weight. Always use fall protection.

## INSULATION DETAIL (Continued)



### NOTE:

Insulation is always installed so the facing is toward the inside of the building.



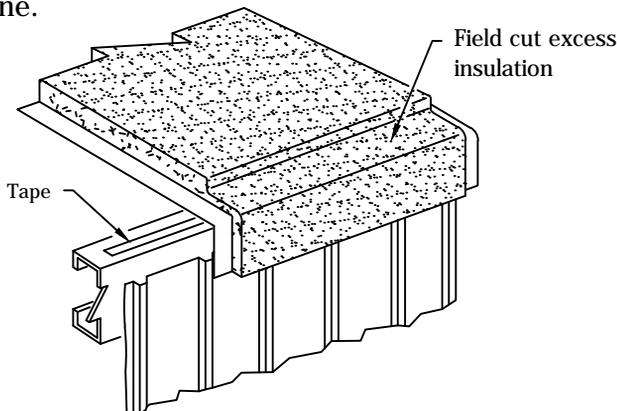
**WARNING:** Insulation has no load bearing strength and cannot support a worker's weight. Always use fall protection.

### LAYING THE FIRST ROLL OF INSULATION

Start laying the insulation at the eave and work to the ridge. Position the insulation so that it spans both ridge purlins with an approximate 6" overhang.

When a 4' starter roll is used, align the edge so the fiberglass is 1" from the edge of the gable angle or rake channel. See detail on page 31.

Using double-faced tape, adhesive, or clamp, attach the insulation to the opposite ridge purlin and unroll the insulation across the roof structurals to the eave. Stretch the insulation to provide a taut, smooth inside surface making sure the insulation is properly positioned and in a straight line.

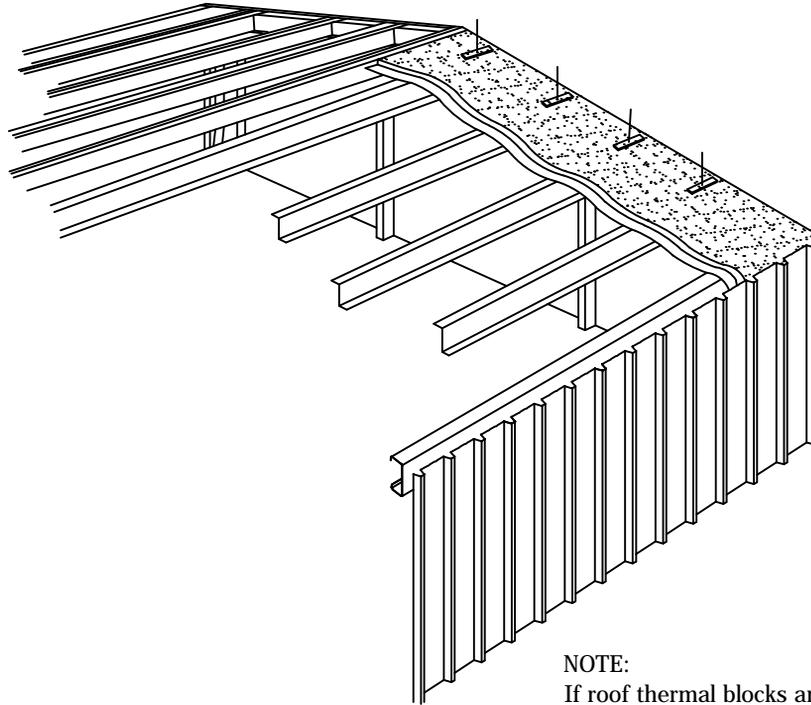


### NOTE:

Do not use over 2" thick insulation at eave strut to prevent dimpling of roof panels around fasteners. Peel off excess insulation thickness over eave strut.

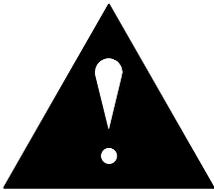
Detail Attachment of Insulation to Eave Member

## SPACER BLOCK INSTALLATION

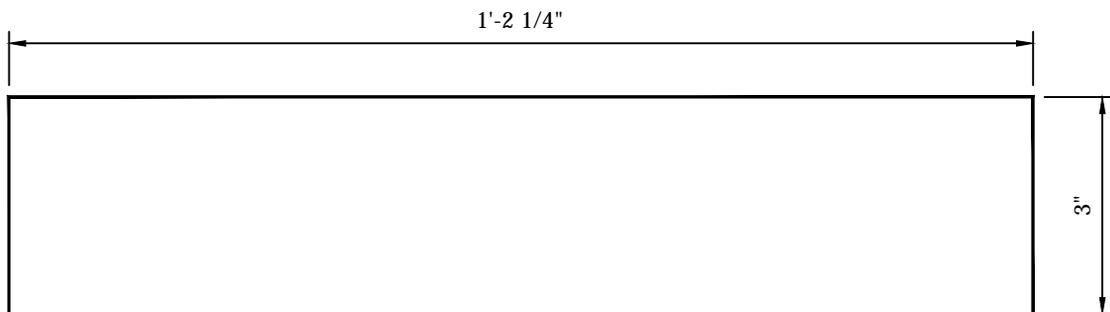


**NOTE:**

If roof thermal blocks are required, cut to length and fasten with self-drilling screws at all non-full width panels. Normally at start and end rows of panels.

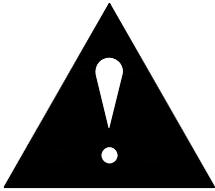
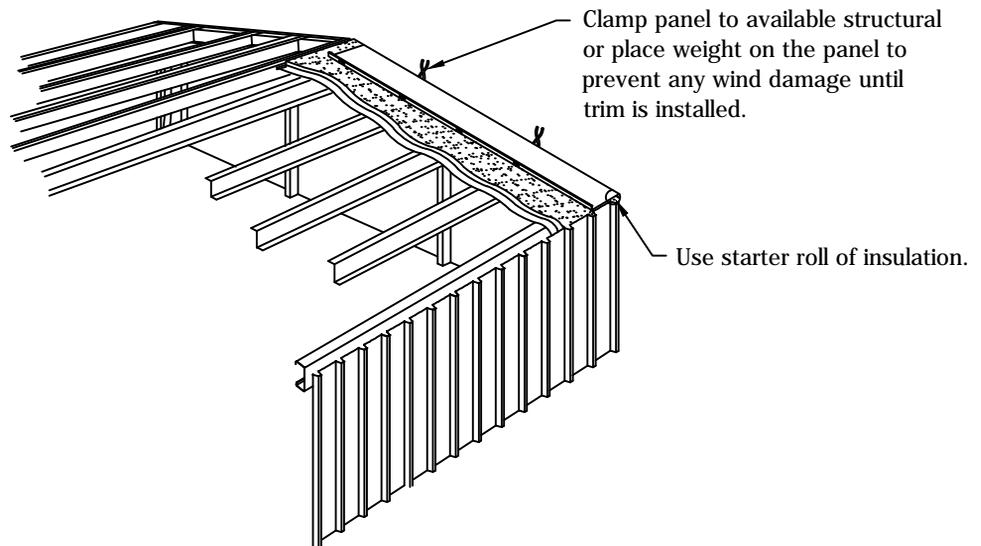


**WARNING:** Insulation has no load bearing strength and cannot support a worker's weight. Always use fall protection.



Place thermal block over the insulation at each purlin location. Thermal blocks insulate the purlin and support the panel. At the start and end of rows of panels it may be necessary to cut the thermal block. To hold this row of thermal blocks in place, fasten to roof structural with a self-drilling screw and drive flush with top of thermal block. Thermal blocks are not required at eave member.

## INSTALLATION OF FIRST PANEL



**WARNING:** Always use fall protection when installing panels.

To install the first panel, field cut and position the right hand edge of the panel at structure line. Install panel clips by hooking the panel clip over the panel edge and rotating it into position. Use extreme care to locate panels on premarked modules.

Install panel clips from the top end of the panel towards the eave to control the panel alignment.

Before installing adjacent panels, apply a bead of panlastic sealant vertically on the inside face of the standing edge of the panel, about 1" from the end. This seals the end of the standing seam for protection in the event of gutter overflow and eave icing.



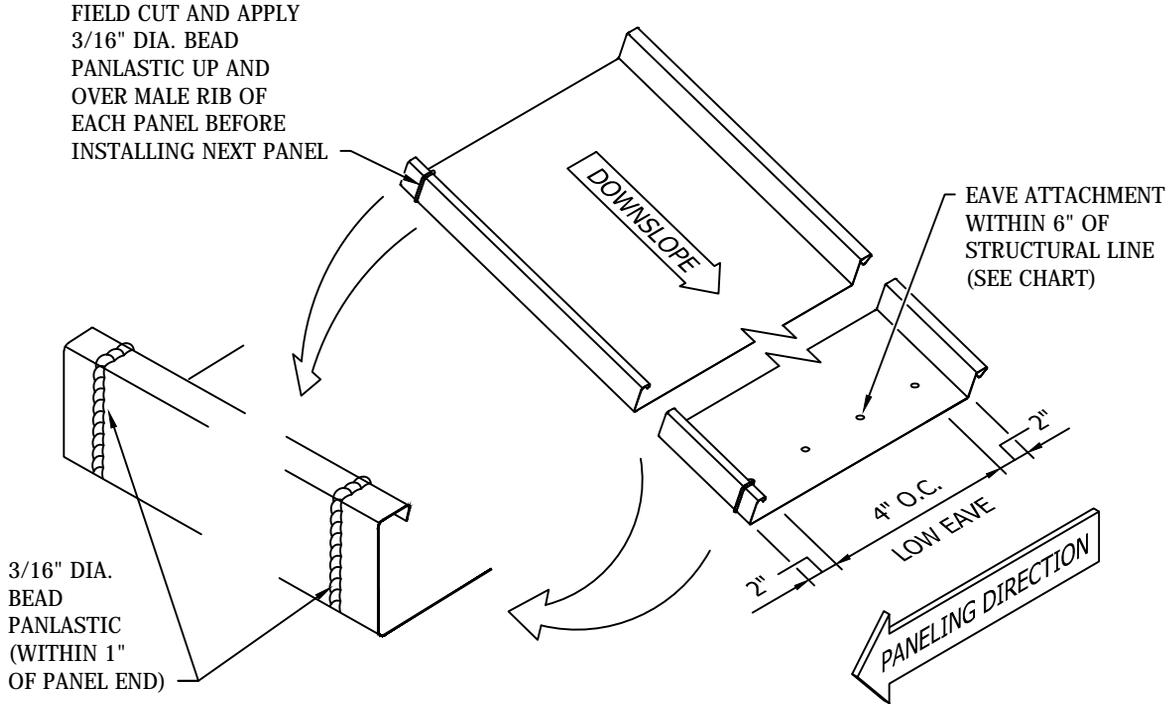
**WARNING:** To avoid wind damage, always secure the edge of the starting panel to the available structure with clamps or locking pliers, since seaming of this panel will not be secured until the endwall trim is installed.

If single panels eave-to-ridge are being installed on the roof, and a 4' starter roll of insulation has been used, the second panel can now be installed.

After installation of the first four runs of panels is completed and seamed together, begin installing panels that have been unloaded on the completed portion of the roof working toward the preloaded bundles.

The seaming operation must follow panel installation as closely as possible.

## EAVE PANEL ATTACHMENT

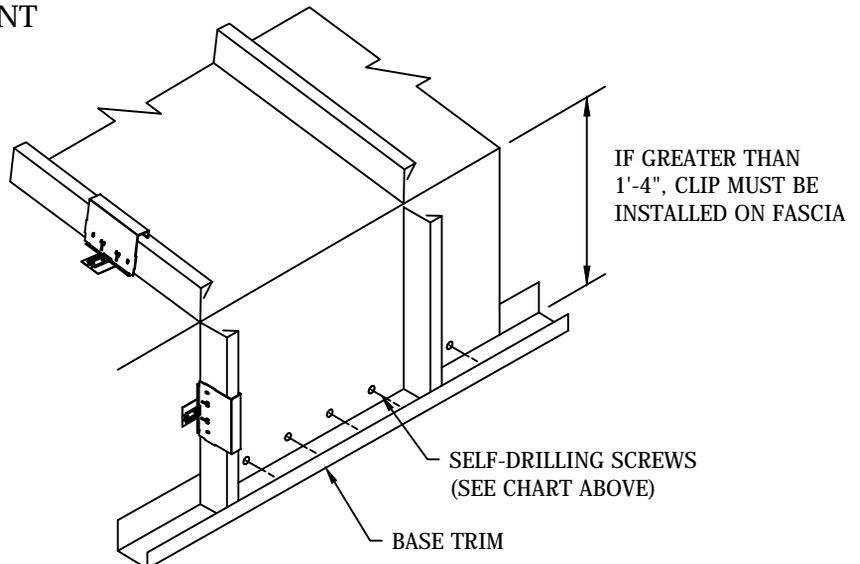


## CRITICAL MASTIC APPLICATION AND EAVE ATTACHMENT

Always apply a bead of Panlastic at the low eave or ridge / hip as shown. Before installing succeeding panels.

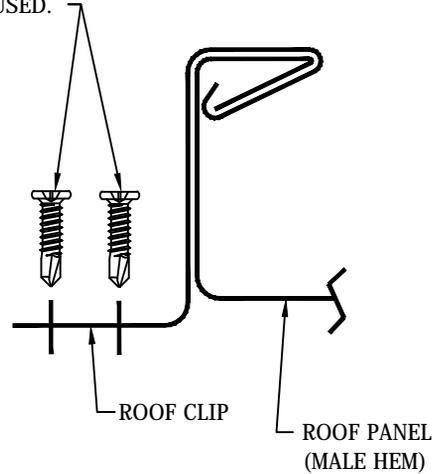
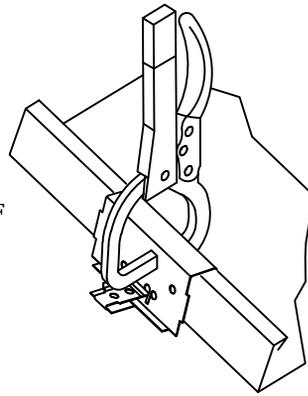
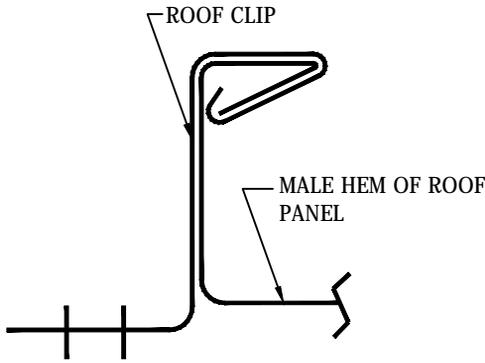
DESCRIPTION	
DESCRIPTION	
1/4-14 X 7/8" HEX. HD. MINI PT. SDS	STRUCTURE
1/4-14 X 1 1/4" HEX. HD. STD. PT. SDS	STRUCTURE

## FASCIA PANEL ATTACHMENT



# PANEL CLIP DETAIL

FASTENERS (TWO PER CLIP)  
 NOTE: FASTENER VARIES WITH TYPE OF  
 ROOF CLIP AND TYPE OF SUBSTRATE USED.

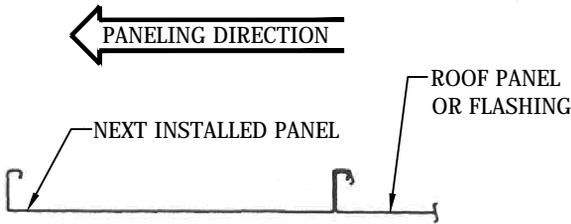


Engage roof clip to male hem as shown.

**CRITICAL:** Roof clip must be tight against roof panel male hem before installing fasteners. Use clamp as shown.

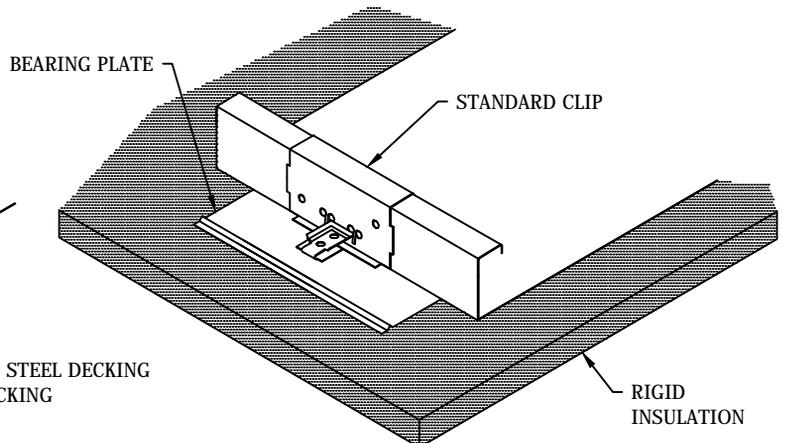
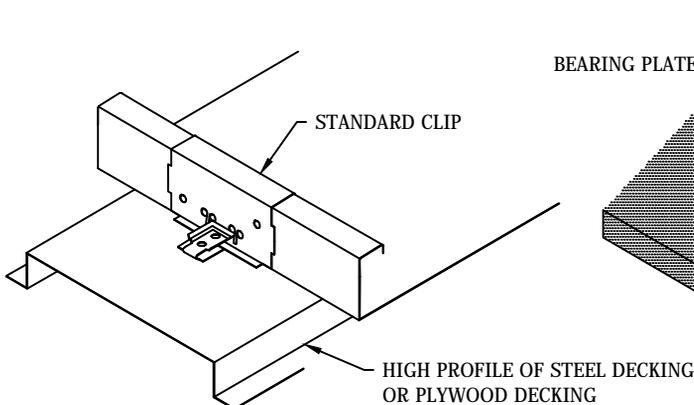
## NEXT PANEL PLACEMENT

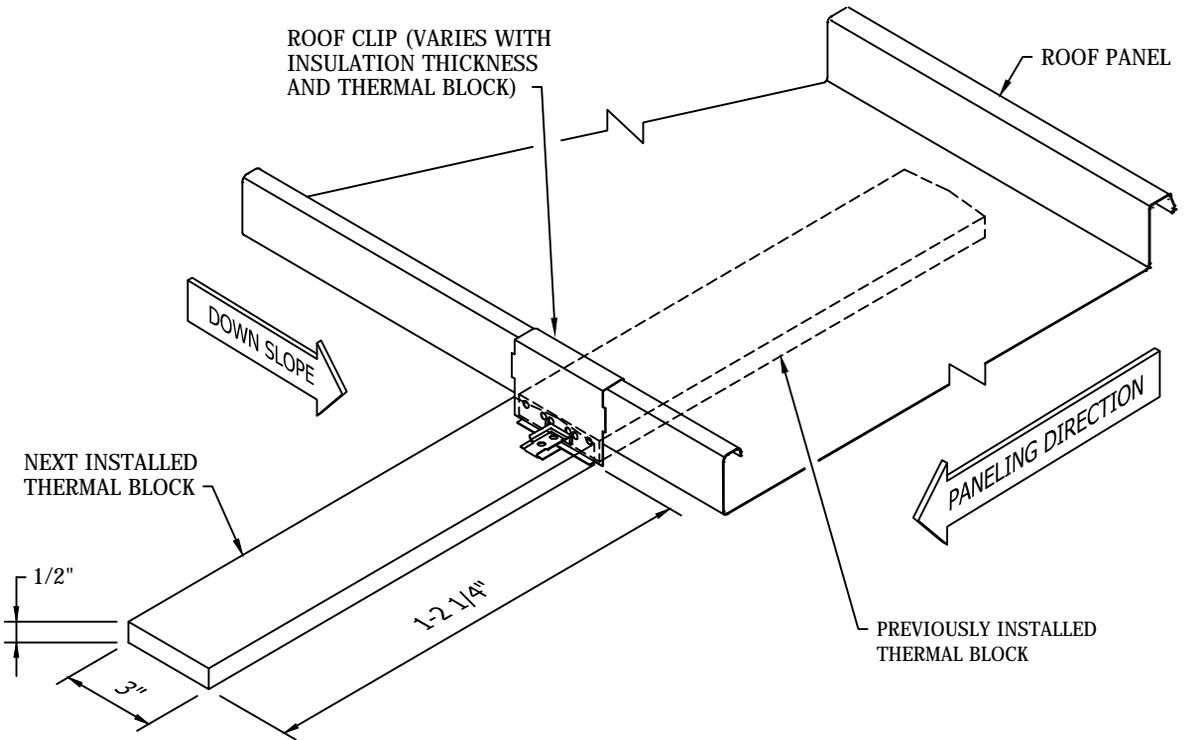
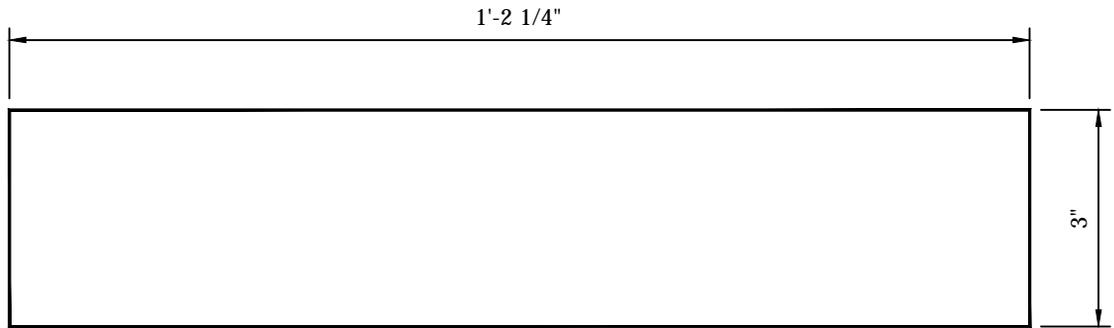
To install the next panel, engage the female hem to the adjacent male hem and rotate into place.



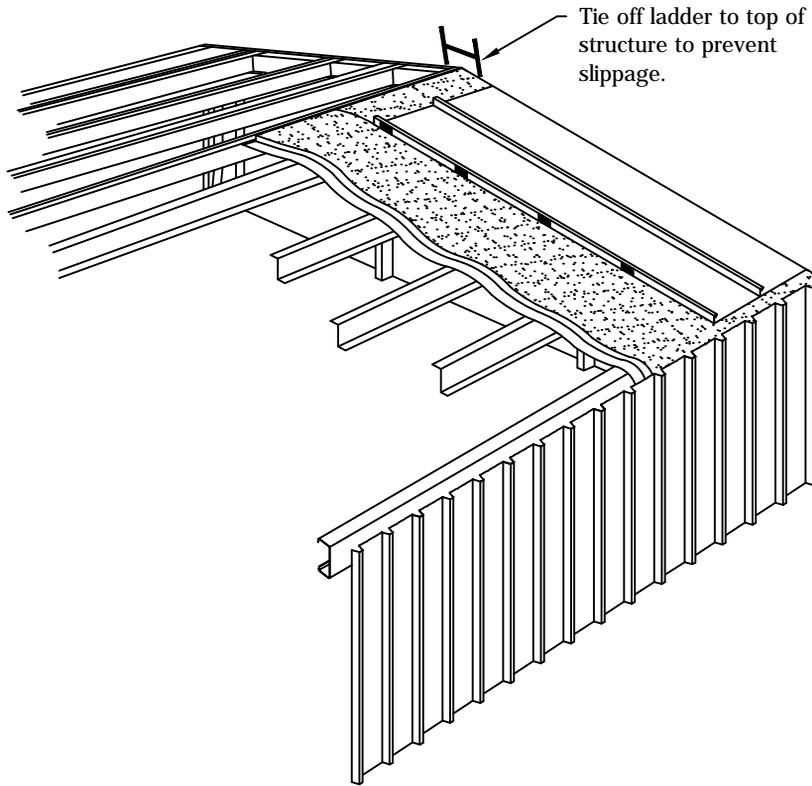
SECURE ROOF PANEL OR FLASHING WITH ROOF CLIPS BEFORE INSTALLING NEXT PANEL

**IMPORTANT:** Refer to standard erection drawings for more specific information regarding U.L. 90 installations.

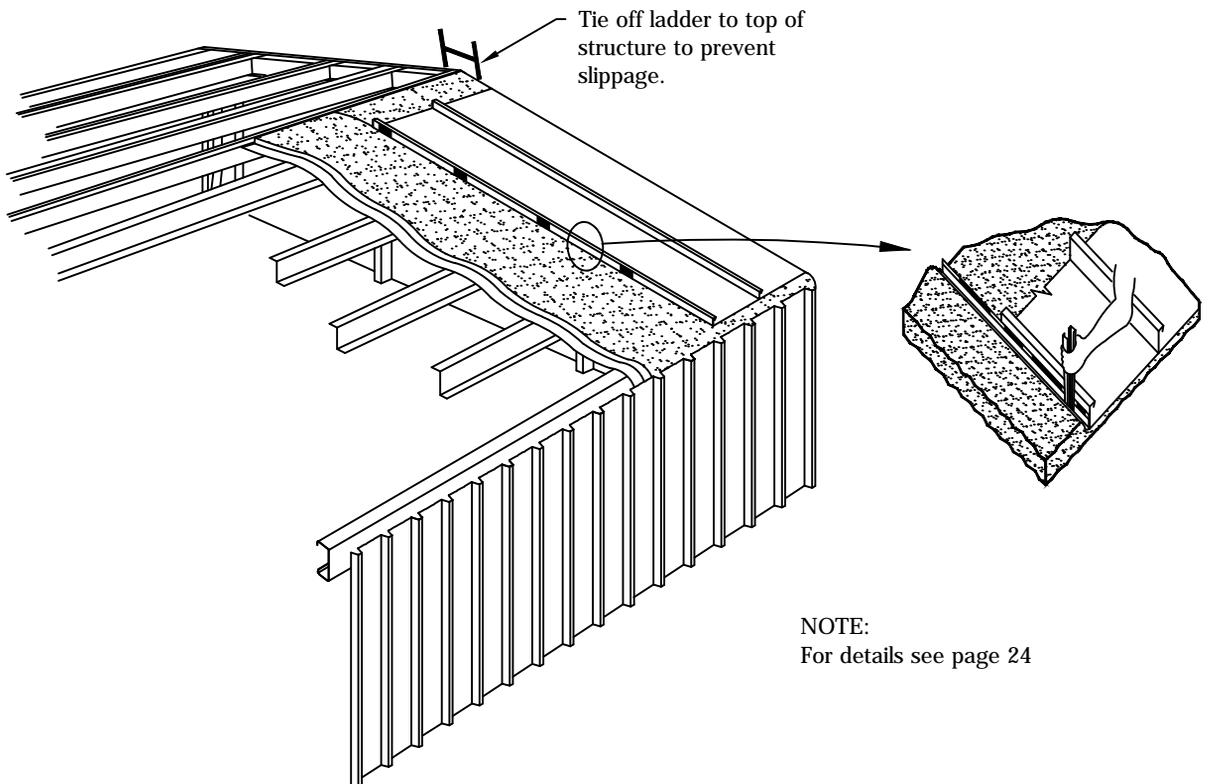




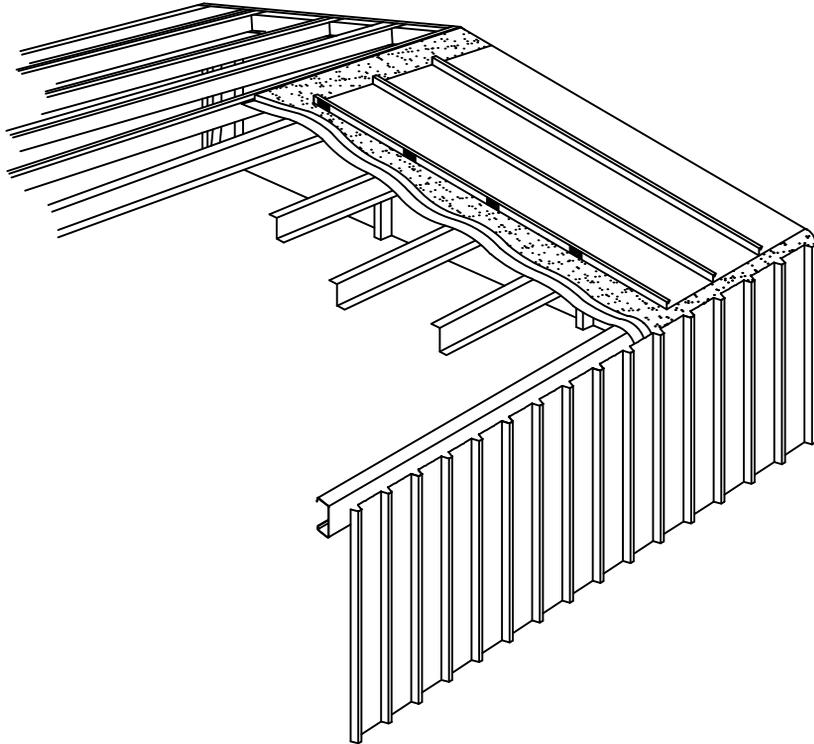
## POSITION SECOND INSULATION ROLL



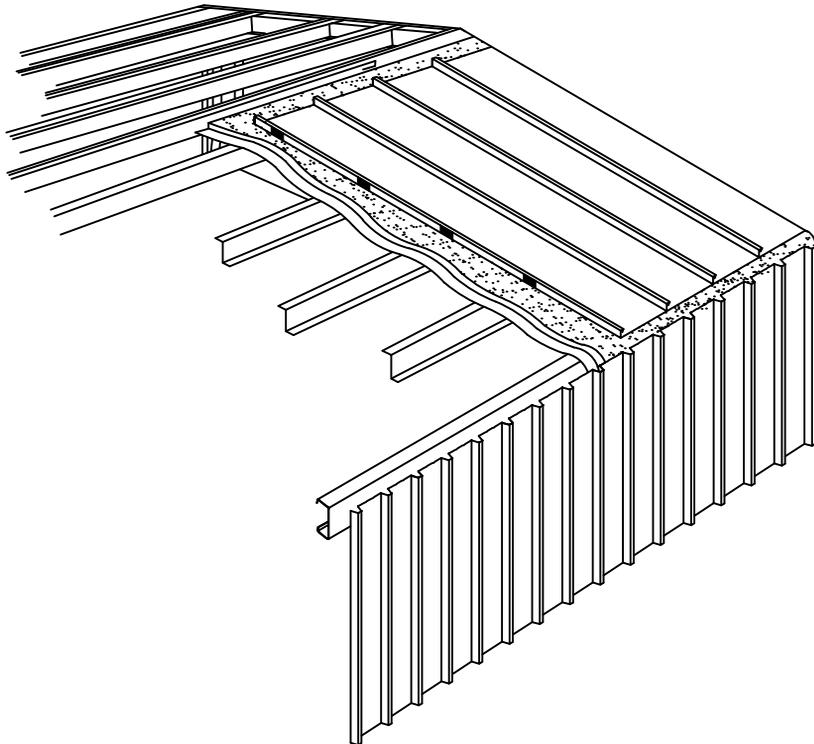
## STAPLING INSULATION



## INSTALLING THE THIRD PANEL

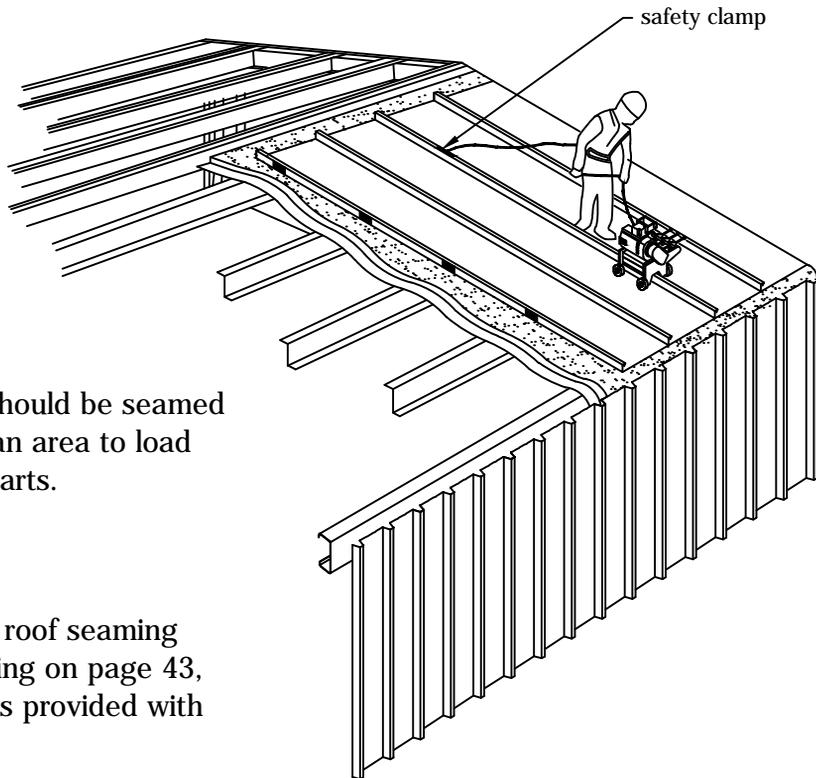


## INSTALLING THE FOURTH PANEL



# INSTALLATION OF PANELS

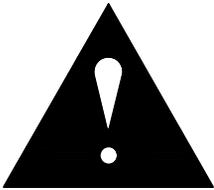
## SEAMING THE FIRST FOUR PANELS



These (4) panels should be seamed together to make an area to load other panels and parts.

### NOTE:

For details refer to roof seaming procedures beginning on page 43, and the instructions provided with the seamer.



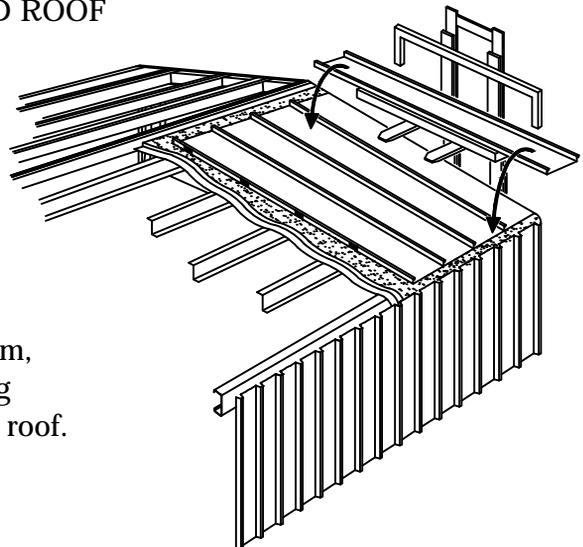
**WARNING:** For safety, the operator of the seamer must always use fall protection.

## STACK REMAINING PANELS ON FINISHED ROOF

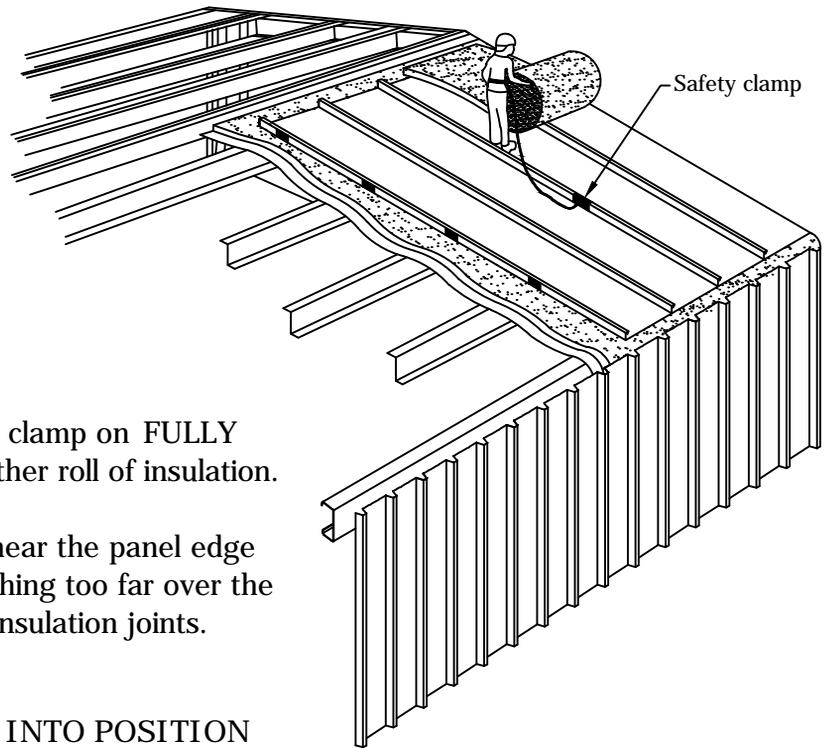
### IMPORTANT:

Use protective material beneath panels to avoid scratching painted surfaces.

Using a crane or forklift with platform, stack remaining panels from starting bundle of panels on finished side of roof.



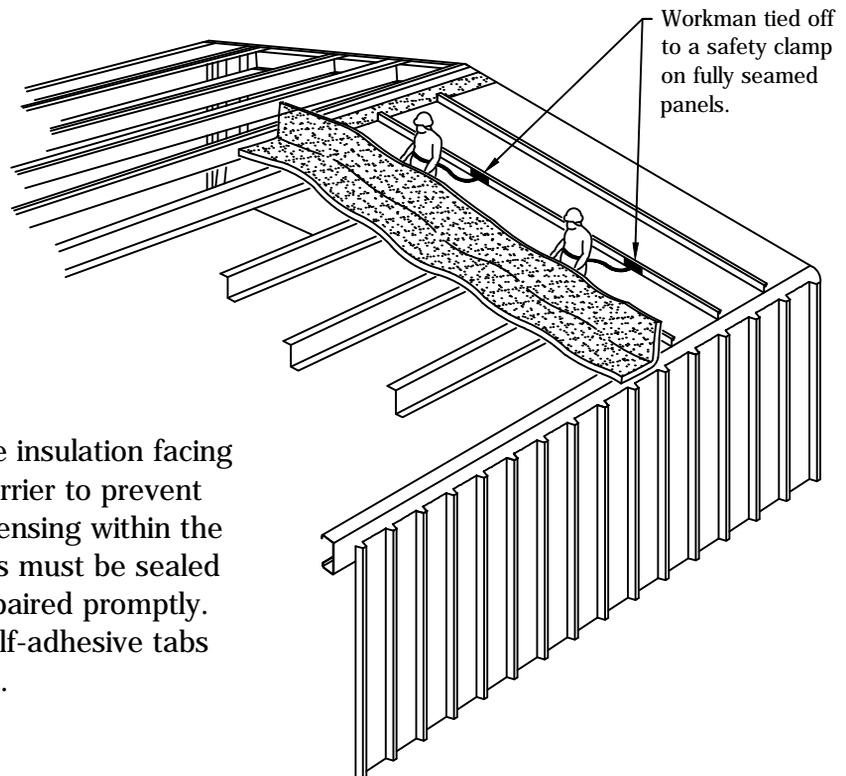
## UNROLLING THE NEXT INSULATION ROLL



Workman tied off to a safety clamp on FULLY SEAMED panels unrolls another roll of insulation.

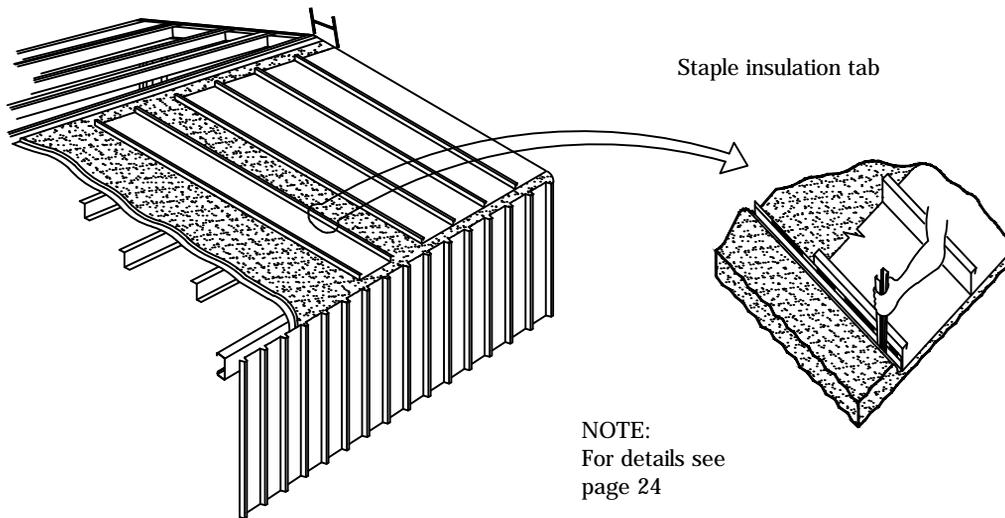
Keeping the insulation joint near the panel edge minimizes the hazard of reaching too far over the edge of the roof to seal the insulation joints.

## SHAKE OUT INSULATION INTO POSITION



**NOTE:** It is essential that the insulation facing provide a continuous vapor barrier to prevent airborne moisture from condensing within the insulation. All insulation joints must be sealed properly and any damage repaired promptly. Rolled and stapled tabs or self-adhesive tabs may be used for sealing joint.

## CONTINUE INSTALLING ROOF PANELS



Place panel from stack onto the insulation to hold in place while stapling the joint.

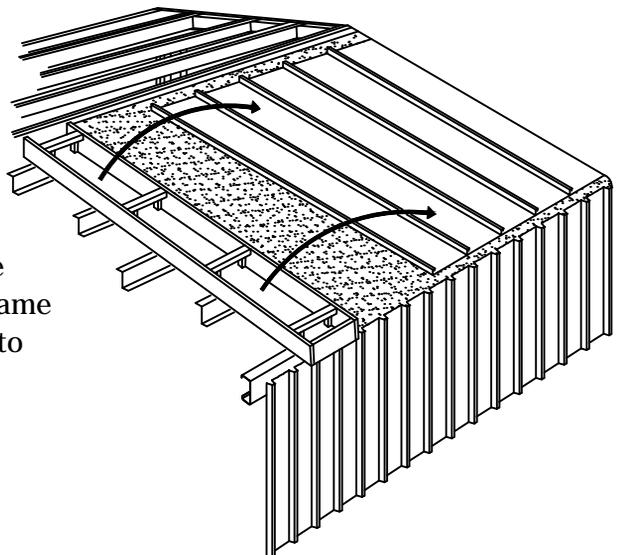
The balance of the panels are installed in the same manner: first, a roll of insulation; then, the spacer blocks when specified; the roof panel; sealant; and, finally, the panel clips at each purlin location.

The seaming operation must follow panel installation as closely as possible.

### WORK TO THE PRELOADED CRATE OF PANELS

Installed panels must be lock seamed before loading additional panels and parts on the roof. All panels must be seamed together before leaving each day.

The first crate of panels that were hand lined for lifted onto the roof should take the roofing activities up to the crate of panels that were preloaded at the frame line.

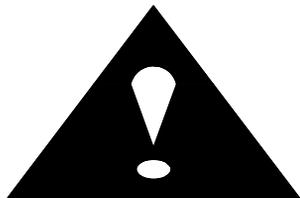


This crate can now be opened and the panels removed and stacked over a frame on the finished roof, back far enough to unroll the next roll of insulation.

# SEAMING PROCEDURES

Seaming must begin as soon as the first two rows of panels are in place to permit operation of the seamer without interference with the crew laying the panels.

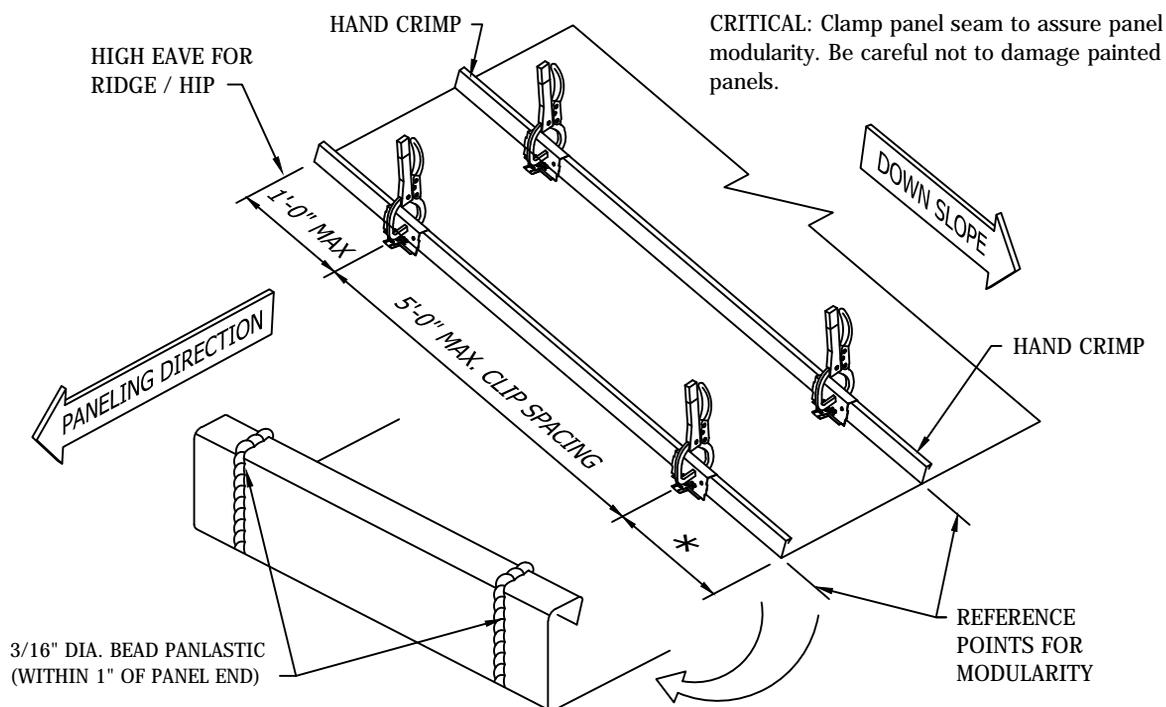
**IMPORTANT:** Refer to the operating instructions for the seamer shipped with each seamer for more specific information on maintenance, other operation tips, etc.



**WARNING:** Panels not fully seamed can collapse or slide out from under you. Always use fall protection when installing panels or working near roof edges. Make sure seaming follows laying of panels as closely as possible.

Panels and clips must be properly engaged and remain in position during the seaming operation. If necessary, use locking pliers to hold the panels in position.

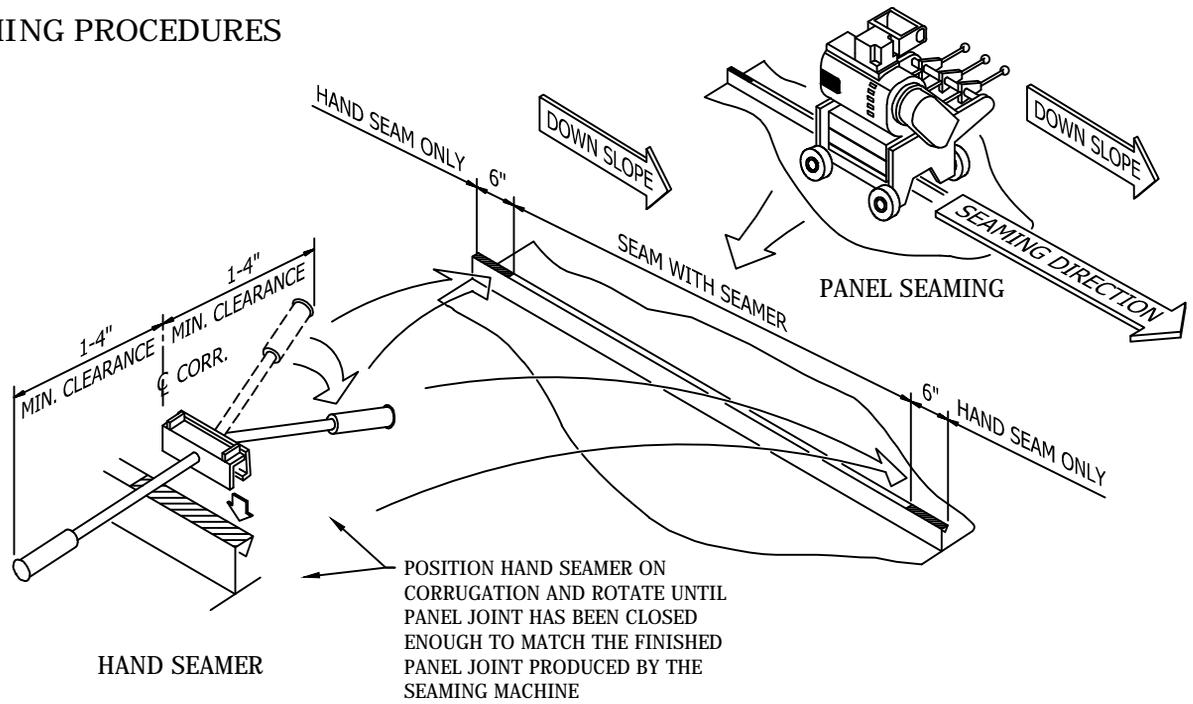
Before beginning the seaming operation, the ends of the panels must be hand crimped together. Check to be sure the pigtail of Panlastic sealant in the seam laps has been applied.



Make sure panel module falls on marked reference points. Make certain that previous seam is tight and adjacent roof clips are tight against male hem before securing with fasteners. Use clamp as shown.

\* At eave of building, the first roof clip must be located within 5'-0" from the eave attachment fasteners.

## SEAMING PROCEDURES



### IMPORTANT:

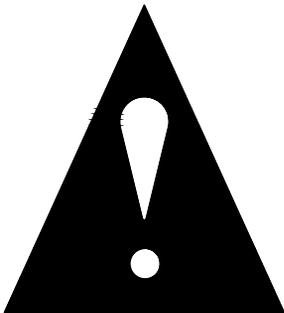
It is important to follow directly behind the installation of roof panels with the seaming operation to minimize any loose panels. All panels should be completely seamed at the end of each working period.

With panels nested properly, engage panel seamer approximately 6" from end of panel at starting position and begin seaming ribs together. Stop seamer approximately 6" from end of panel and disengage seamer. Complete seam at start and end of panel run with hand seamer. The operator's working position is slightly ahead and to the right of the seamer.

**NOTE:** Hand seam the ends of the panel corrugation to prevent mastic from coming in contact with seaming rolls. If mastic does make contact, clean seaming rolls immediately

### IMPORTANT:

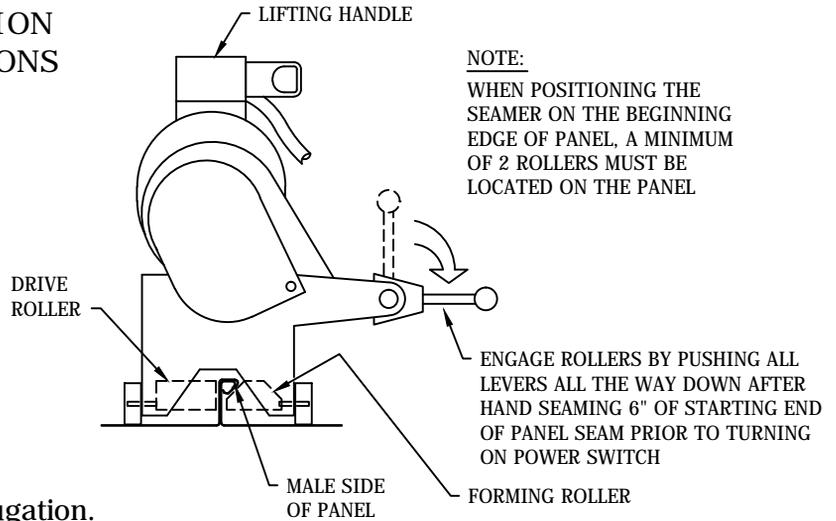
If seamer is allowed to encroach upon the 6" dimensions from either end of panel, the sealant pigtail and the field installed vertical strip of mastic within the panel rib will be forced from the panel ends causing potential leaks and interfering with the proper operation of the seamer.



**WARNING:** Never tie power cords together or to the seamer. Do not "ride" the seamer or block vents on the motor in any way.

**CAUTION:** Keep the path of the seamer clear at all times and power cords free of entanglement. A non-locking plug is supplied so that it will unplug itself should the power cord become entangled. Do not defeat this safety feature by tying the power cord to the motor lead or to the seamer. Towing of power cord(s) can also cause improper seams.

# SEAMING MACHINE OPERATION AND CLEARANCE RESTRICTIONS



**STEP 1**  
Position seamer onto panel corrugation.

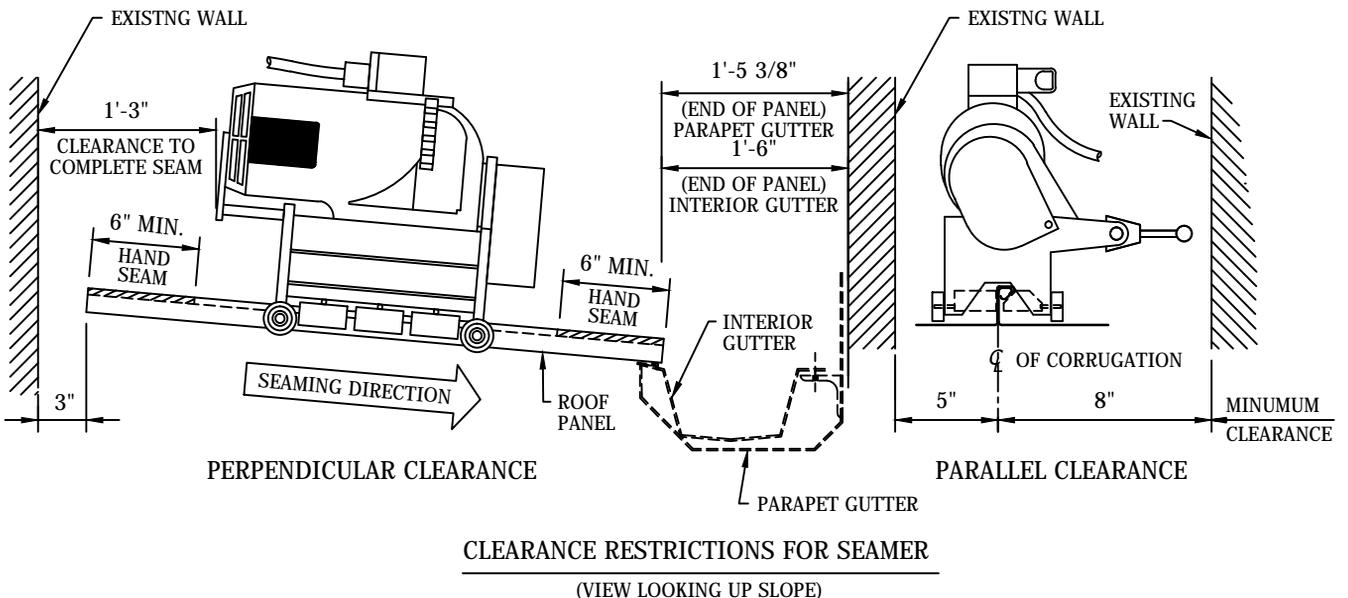
**STEP 2**  
With forming roll and drive wheel positioned properly at each side of panel corrugation, rotate all levers downward until they lock into position. This crimps the corrugation and the seamer is ready to seam.

**CAUTION:** Seamer can seam in either direction. Therefore, it is important to locate directional switch prior to activating seamer. **DO NOT ROLL SEAMER OFF ROOF.**

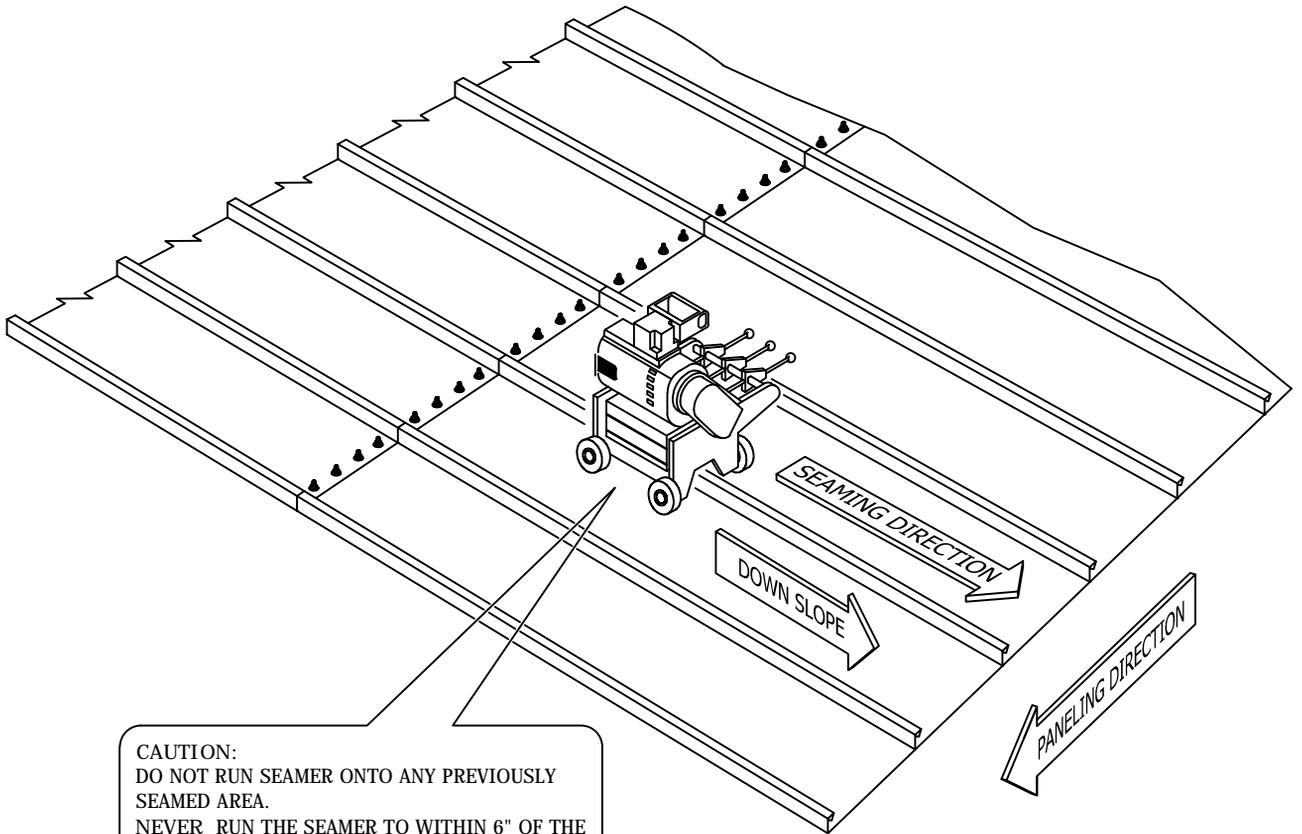
**STEP 3**  
Set directional switch towards direction of travel desired. Then throw toggle in the same direction to activate the seaming process when ready.

To terminate seaming process: set toggle switch vertical.

To remove seaming: Terminate seaming process and set all levers vertical. This disengages the forming roll and drive wheel from the panel seam allowing the seamer to be removed.



## SEAMING DIRECTION



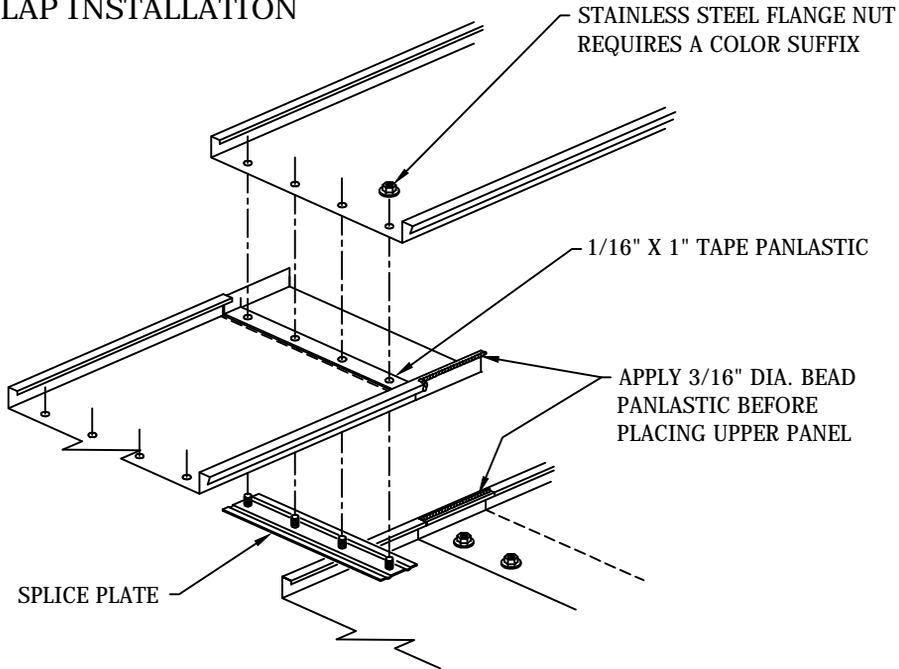
CAUTION:  
DO NOT RUN SEAMER ONTO ANY PREVIOUSLY SEAMED AREA.  
NEVER RUN THE SEAMER TO WITHIN 6" OF THE END OF A PANEL OR PREVIOUSLY SEAMED AREA, ALWAYS FINISH WITH HAND SEAMER

FOR ROOF WITH PANEL SPLICES  
In-line panel splice shown. Method for seaming staggered splice procedure is identical see important note below.

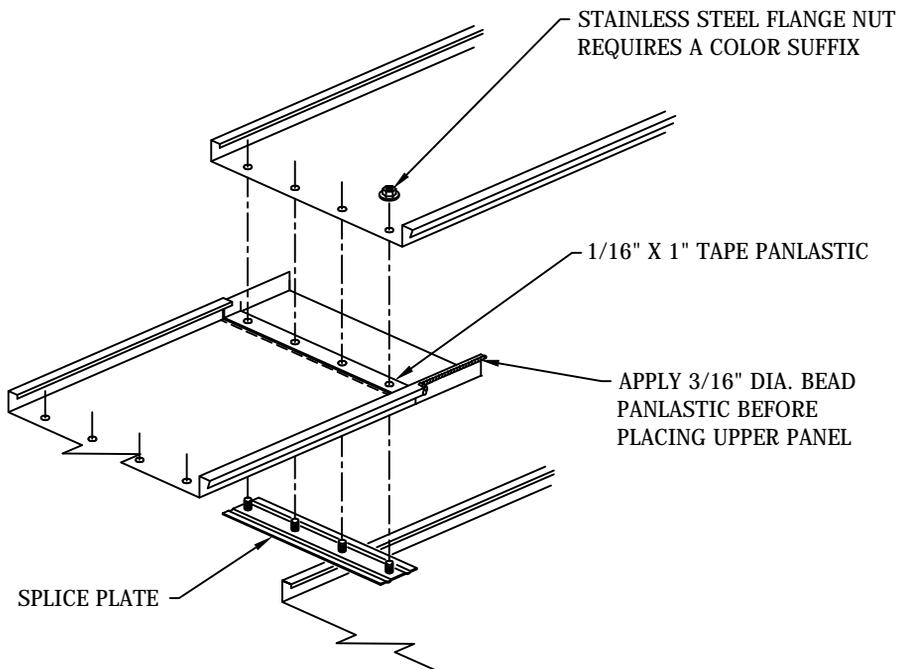
**IMPORTANT:**  
FOR ROOFS WITH PANEL SPLICES Seaming upslope at panel splice will damage panel and seamer. Always seam downslope at panel splice.

# PANEL END LAP

## IN-LINE END LAP INSTALLATION



## STAGGERED END LAP INSTALLATION



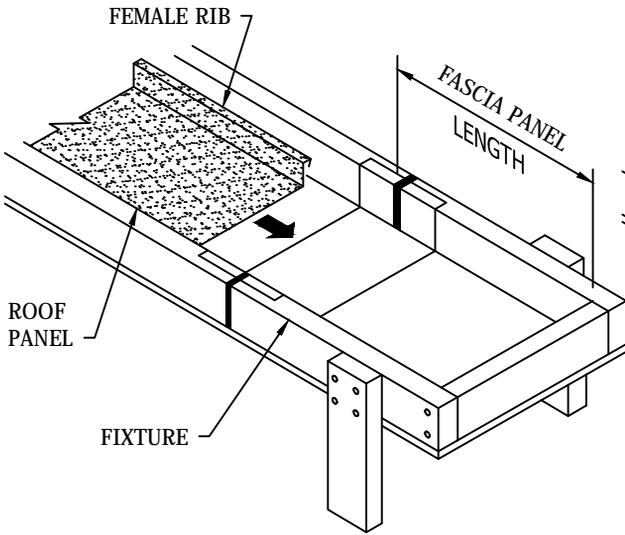
## INSTALLATION STEPS:

1. Locate splice plate thru factory holes in lower panel.
2. Apply Panlastic over holes and studs on lower panel.
3. Nest upper panel into place over studs and install flange nuts with speed handle only.
4. Apply 3/16" diameter bead Panlastic along notched area on adjacent panel.

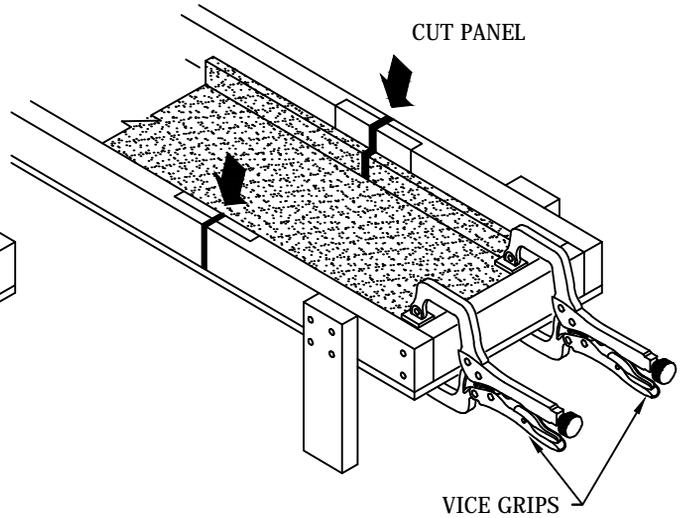
NOTE: Panel splices must be located over a structural member unless the panels are being installed over plywood or structural metal decking.

# FASCIA PANEL

## FASCIA PANEL FIXTURE



STEP 1



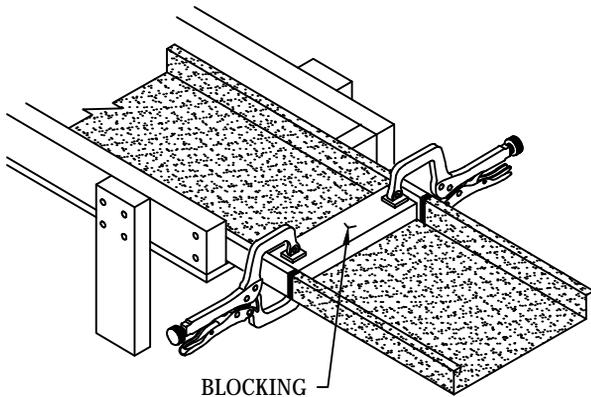
STEP 2

## FASCIA PANEL

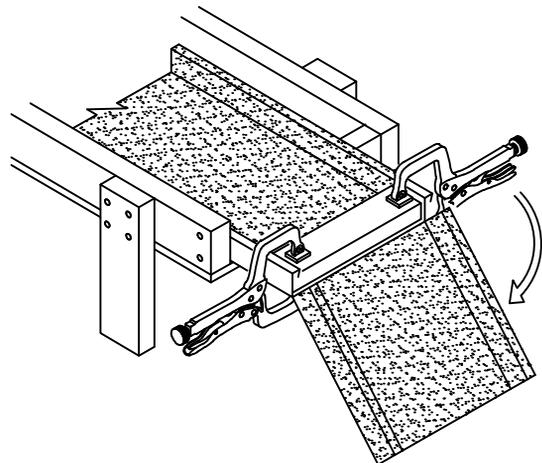
Determine and measure distance from end of panel to bend point, marking each high rib. Cut the upper flange and vertical leg of high rib to start of radius corner using a hand band saw.

**IMPORTANT:** When cutting corrugation - DO NOT cut down into panel flat.

Place panel on firm working area, allow panel section to be bent to extend over a rigid straight edge. Align cut of high ribs and bend panel to required angle, over bend and bring back to set crease. A fixture set up with clamps will help this procedure.

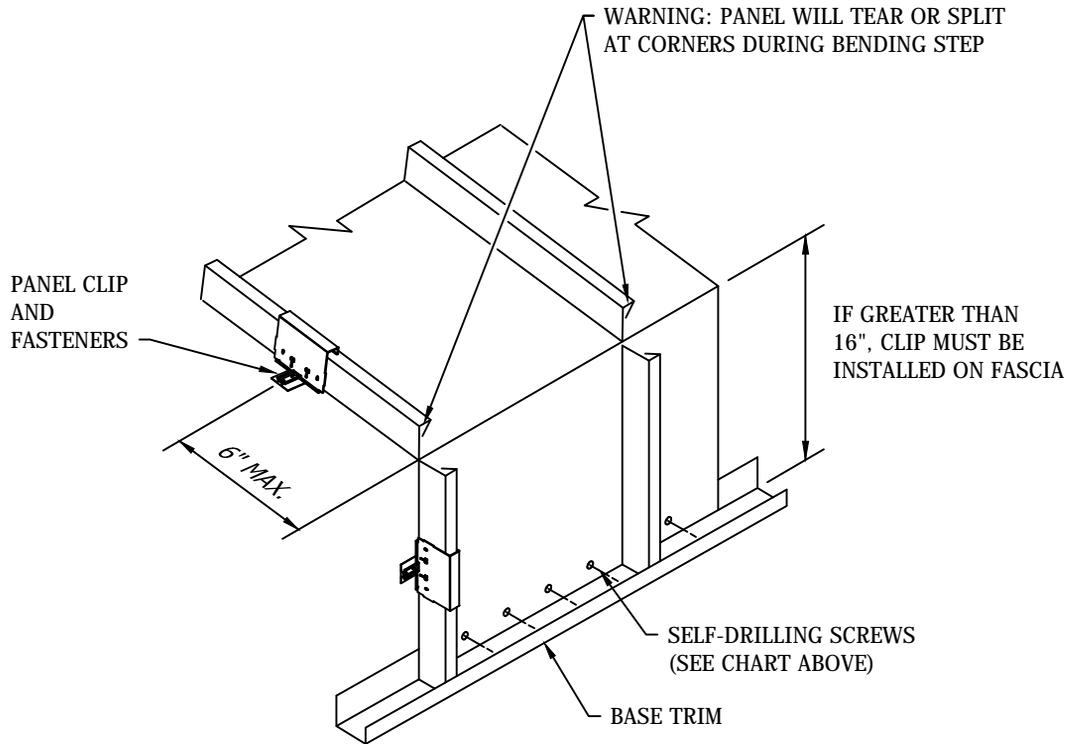


STEP 3



STEP 4

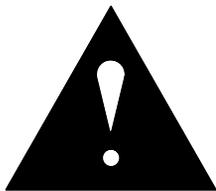
## FASCIA PANEL INSTALLATION



### INSTALLATION STEP:

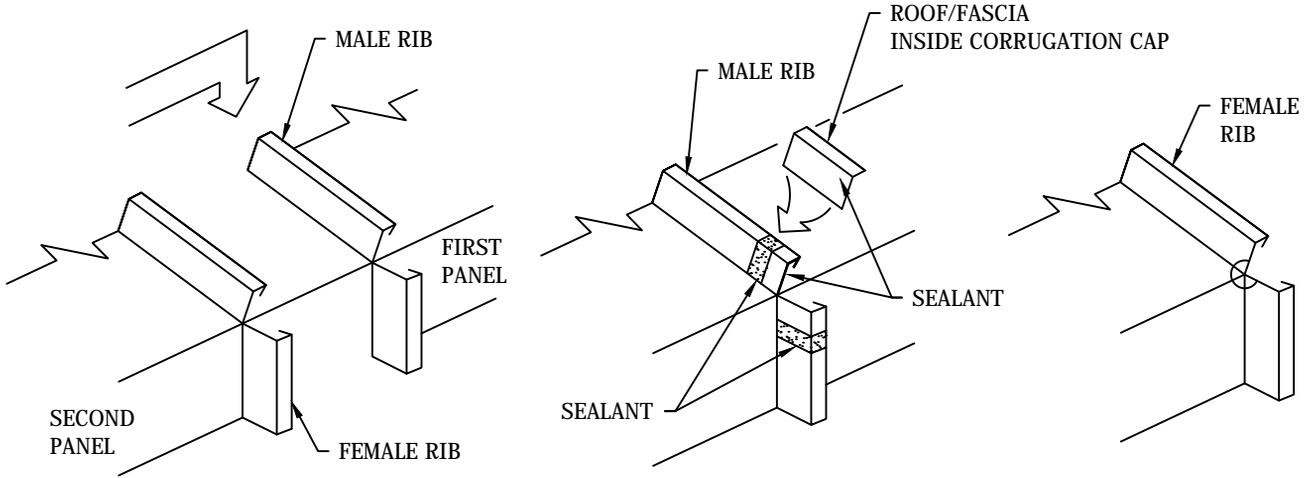
1. After roof panel is cut for fascia, locate roof panel as required and attach at eave.
2. Slide base trim between substrate and roof-fascia panel and attach at bottom of fascia.

**NOTE:** This detail is not recommended in snow / ice regions. Snow and ice build up may damage panels and corrugation caps.



**WARNING: ALWAYS USE FALL PROTECTION WHILE ON ROOF**

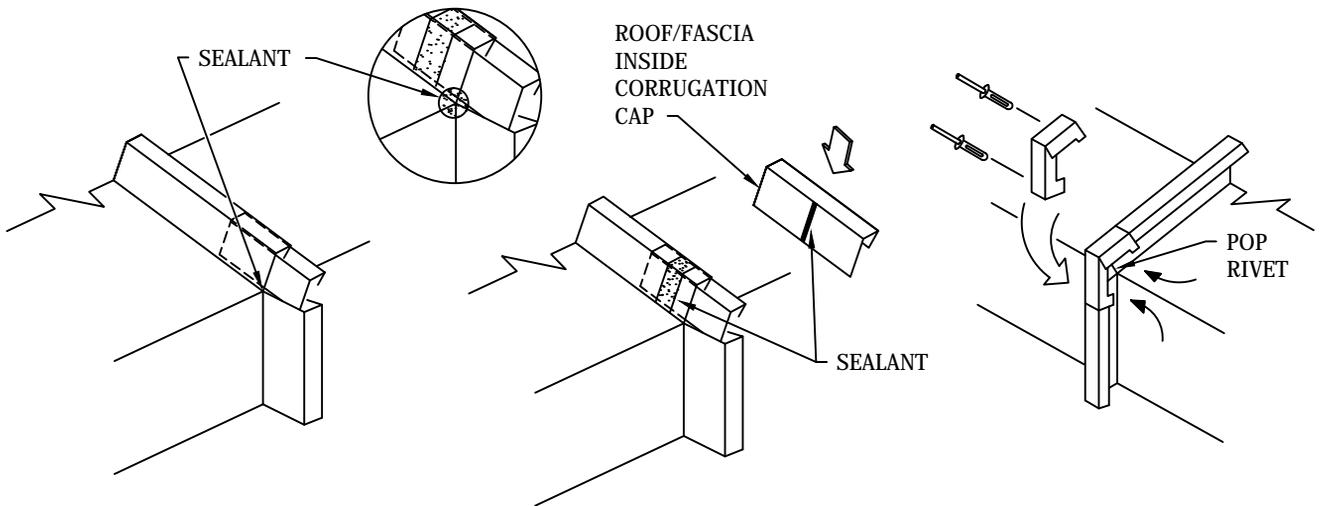
## EAVE CAP INSTALLATION



View showing panel ribs already cut and panel formed over eave building

Set first panel and locate eave cap under roof panel rib **IMPORTANT:** Be sure sealant has been added as indicated.

Nest next panel into place over male rib.



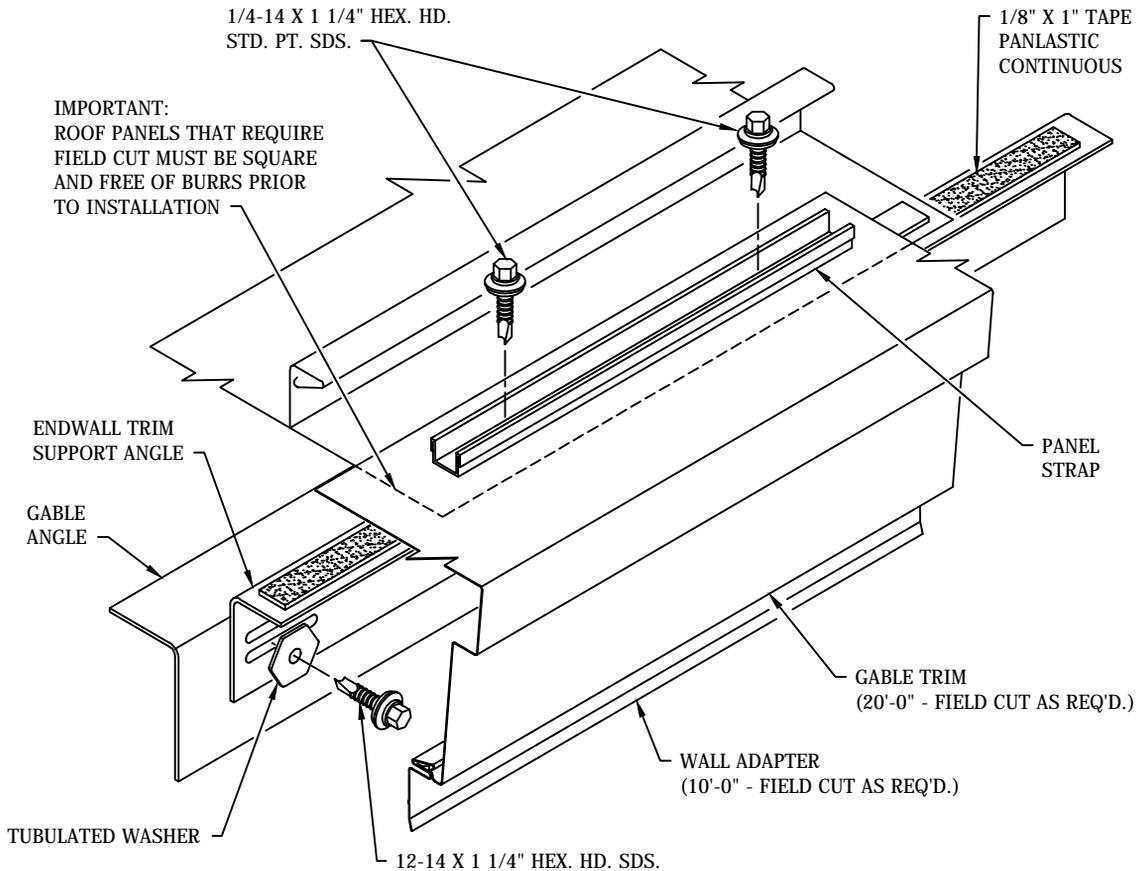
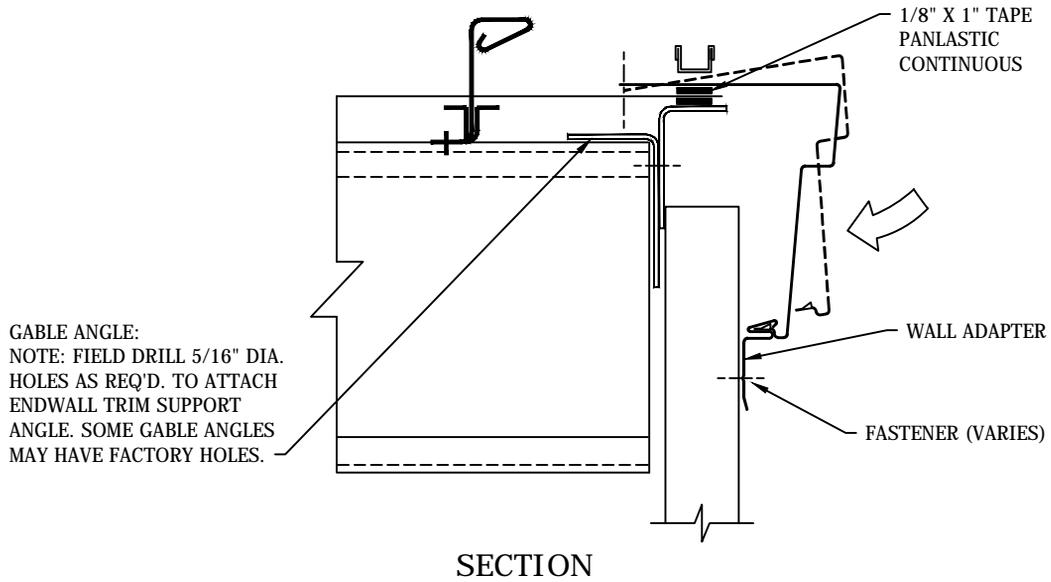
Completed view of panels nested together. Proceed with seaming operation after panel clips and panel attachment fasteners have been located.

Apply sealant on outside of corrugation cap lower leg. bend to match roof slope with upper leg overlapping lower leg to shed water and nest into place.

Bend tabs over corrugation and field drill 9/64" hole and install pop rivets. Use hand seaming tool to finish forming ribs.

**NOTE:** Do not seam within 6" of the end of any panel. Hand seam this portion.

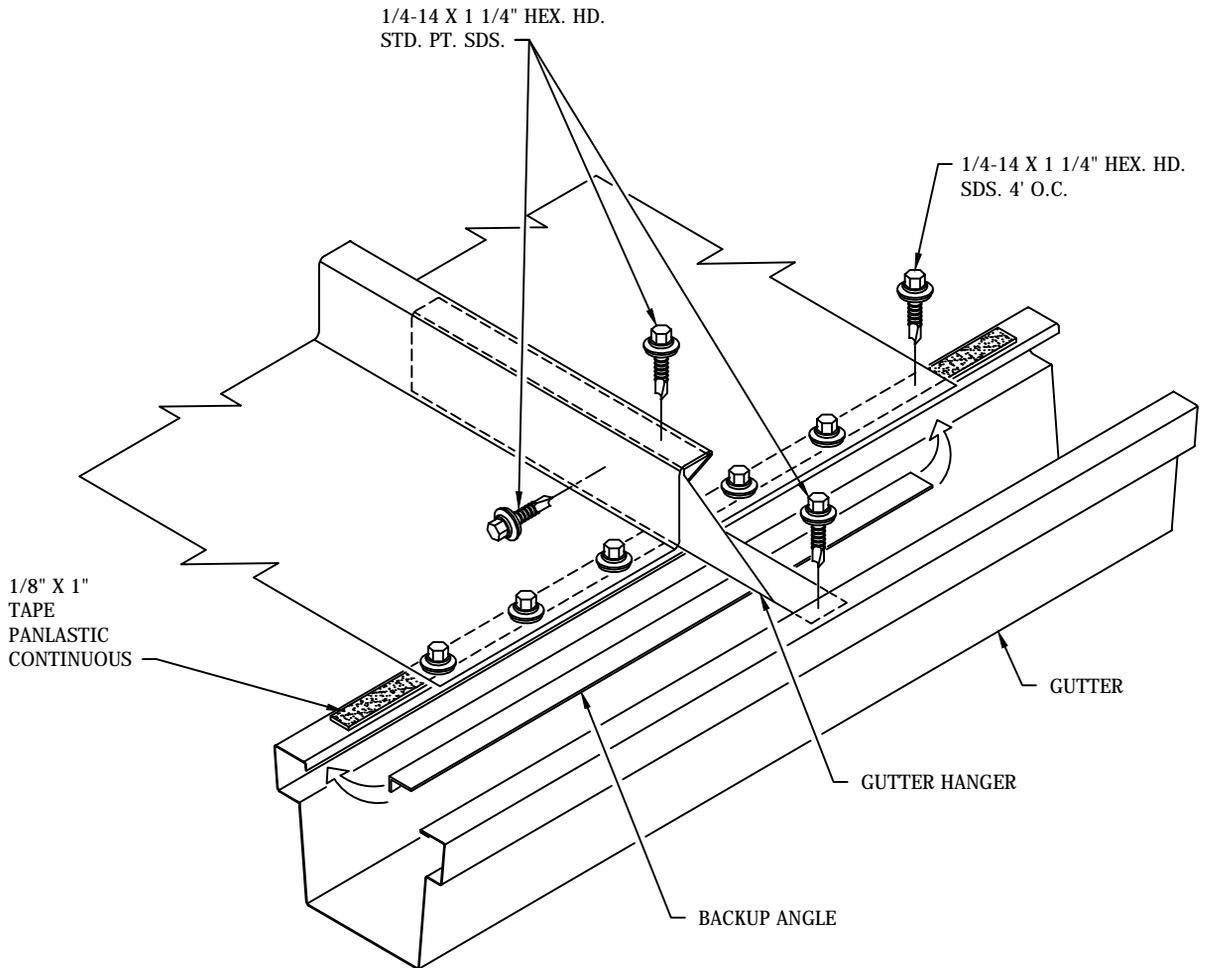
## ENDWALL TRIM INSTALLATION



### INSTALLATION STEPS:

1. Locate endwall trim support angle.
2. Field work roof panel at endwall as required and locate over panlastic tape.
3. Apply sealant to top surface of roof panel.
4. Set gable trim into place.
5. Locate panel strap directly over sealant and attach to support angle.

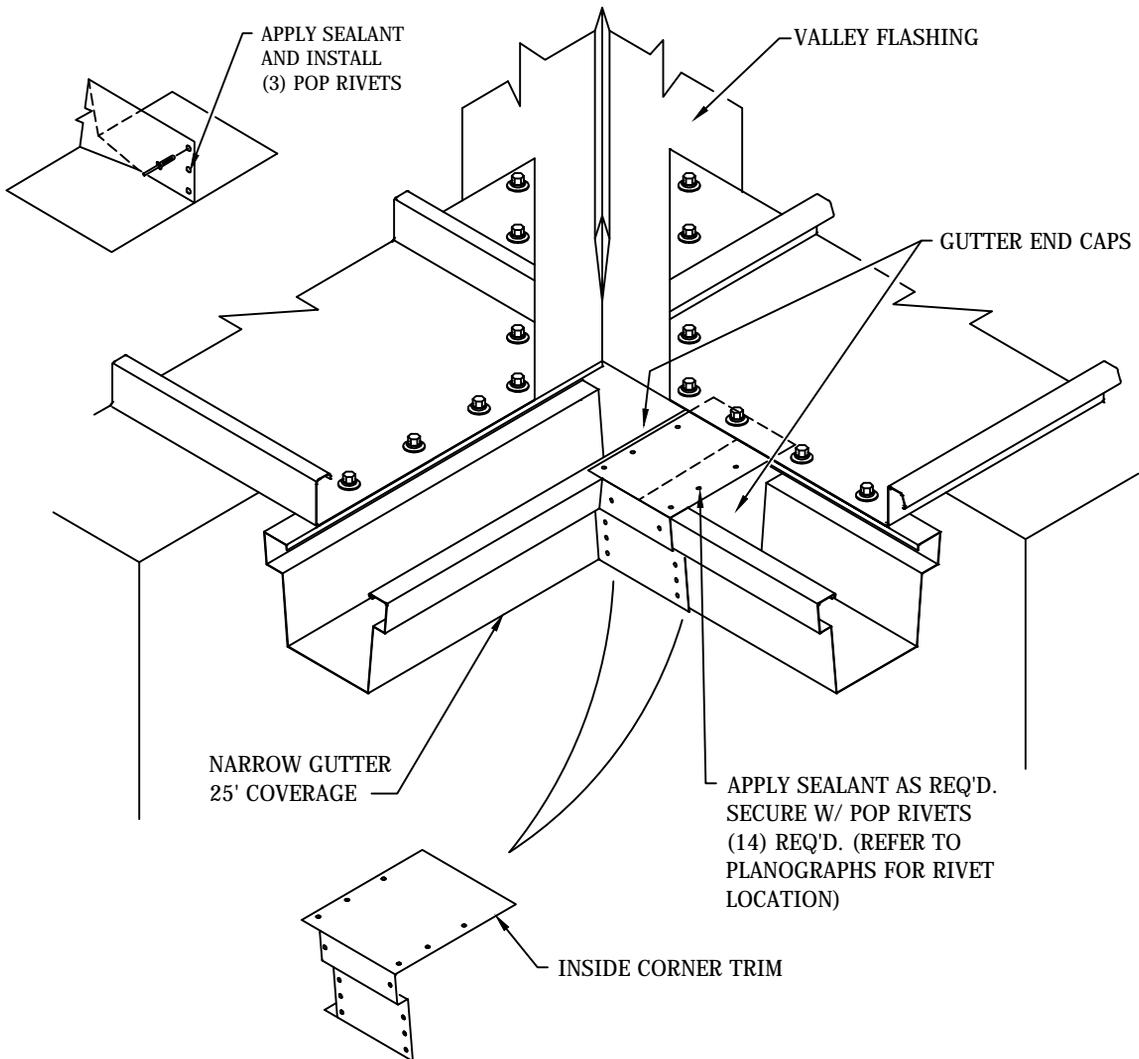
# NARROW GUTTER INSTALLATION



## INSTALLATION STEPS:

1. Apply panlastic continuous along gutter and attach to roof panels with self-drilling screws backup angle.
2. Slide gutter hanger into corrugation and attach with self-drilling screws as shown.

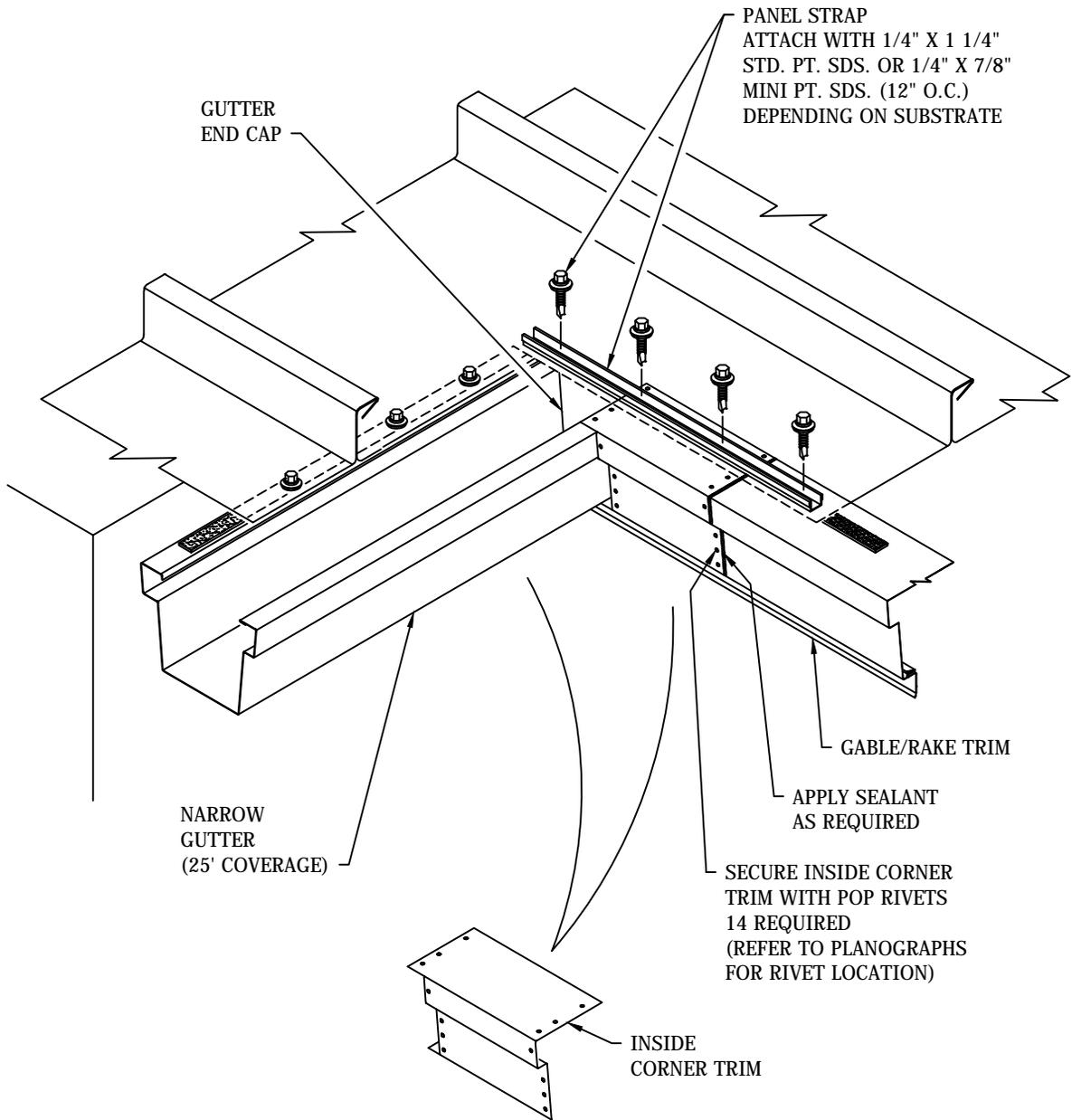
## INSIDE CORNER NARROW GUTTER TO GUTTER TRANSITION



### INSTALLATION STEPS:

1. With gutter end caps installed, place gutter for attachment to roof.
2. Locate and field work inside corner trim and install with sealant and pop rivets as required.

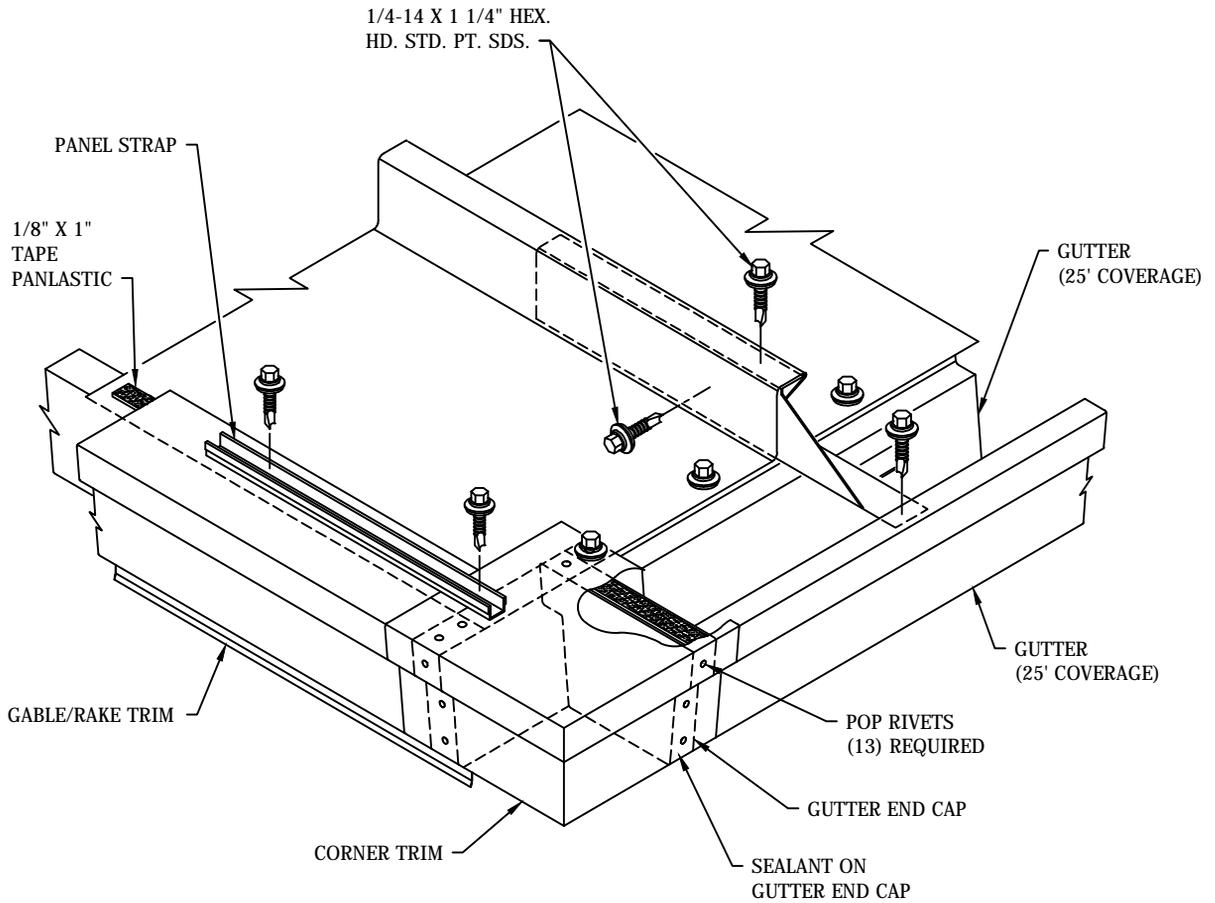
# INSIDE CORNER NARROW GUTTER TO GABLE TRIM



## INSTALLATION STEPS:

1. After placement of gutter and gable/rake trim install inside corner trim using sealant and pop rivets as shown.
2. Locate panel strap directly over sealant and attach to gable angle/channel.

## OUTSIDE CORNER GUTTER TO Gable/Rake TRIM

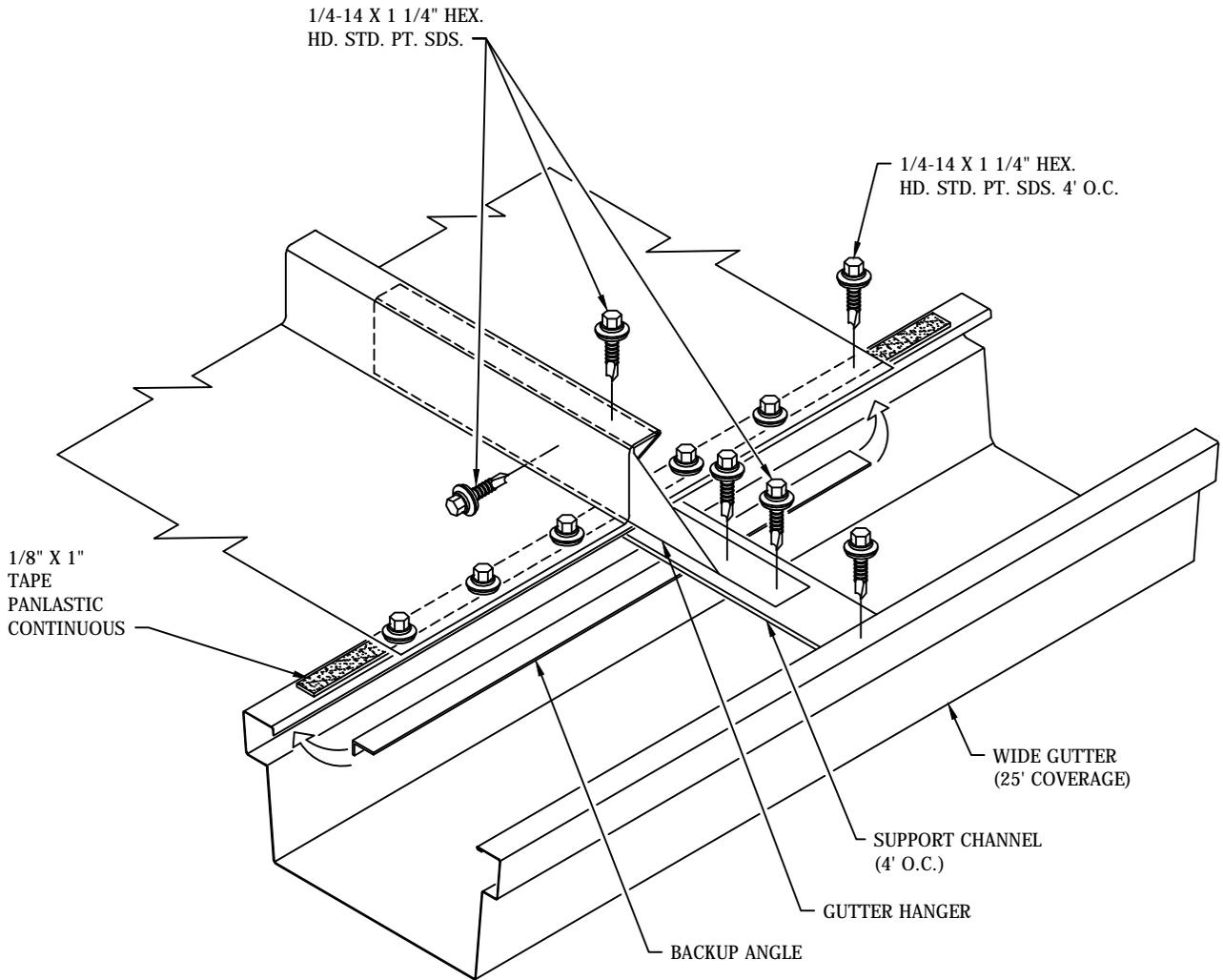


## STANDARD NARROW GUTTER

### INSTALLATION STEPS:

1. Slide gutter into corrugation and attach with self-drilling screws.
2. Apply panlastic continuous along gutter and attach to roof panels with self-drilling screws backup angle.
3. Apply sealant to top surface of roof panels.
4. Set gable trim into place.
5. Apply sealant as required and locate corner trim with pop rivets.
6. Locate panel strap directly over sealant and attach to gable angle/channel.

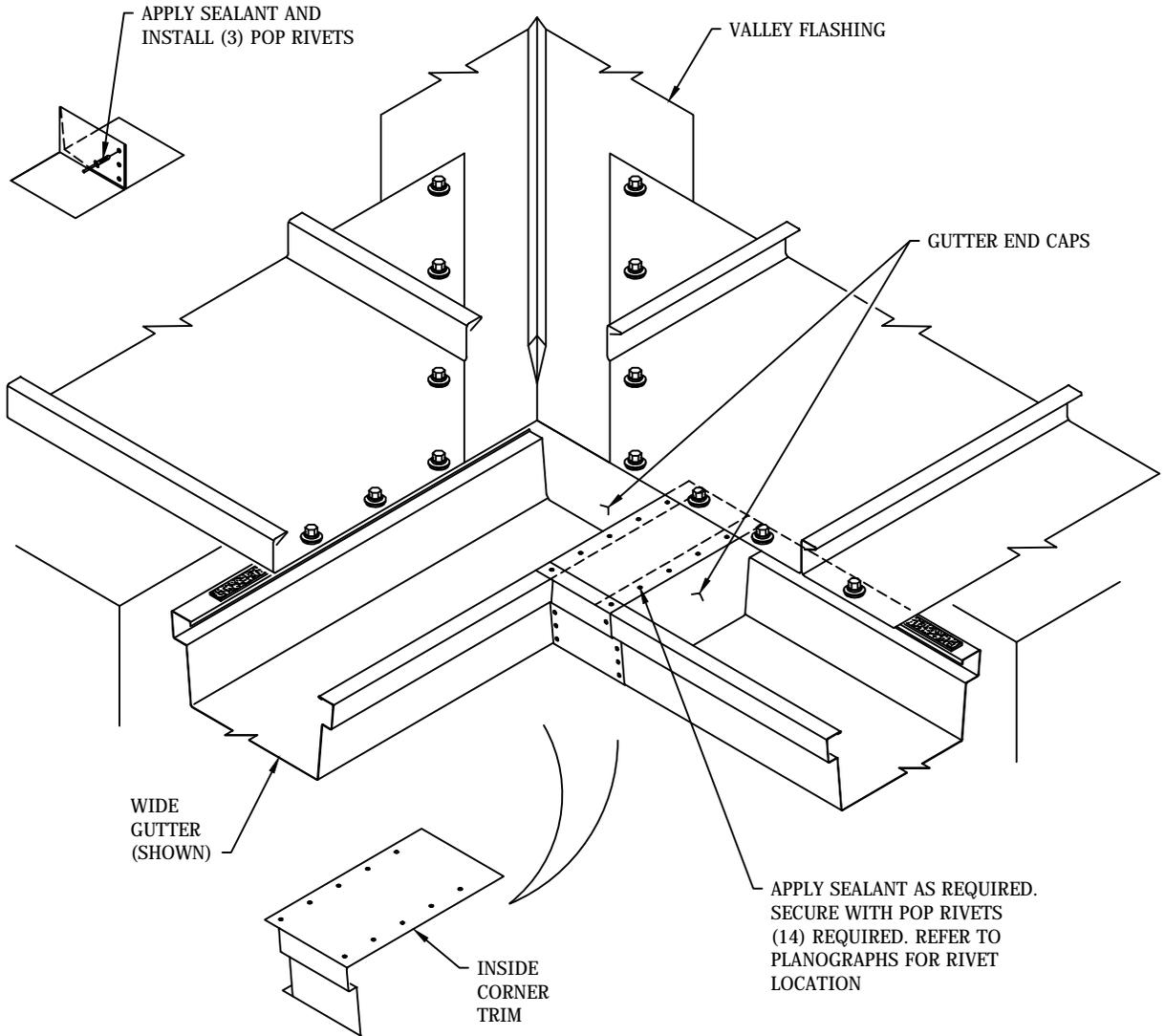
# WIDE CONTOUR GUTTER INSTALLATION



## INSTALLATION STEPS:

1. Slide gutter hanger into corrugation. Locate support channel and attach with self-drilling screws.
2. Apply Panlastic continuous along gutter and attach to roof panels with self-drilling screws and backup angle.
3. Gutter expansion joints may be required.

## INSIDE CORNER WIDE GUTTER TO GUTTER TRANSITION

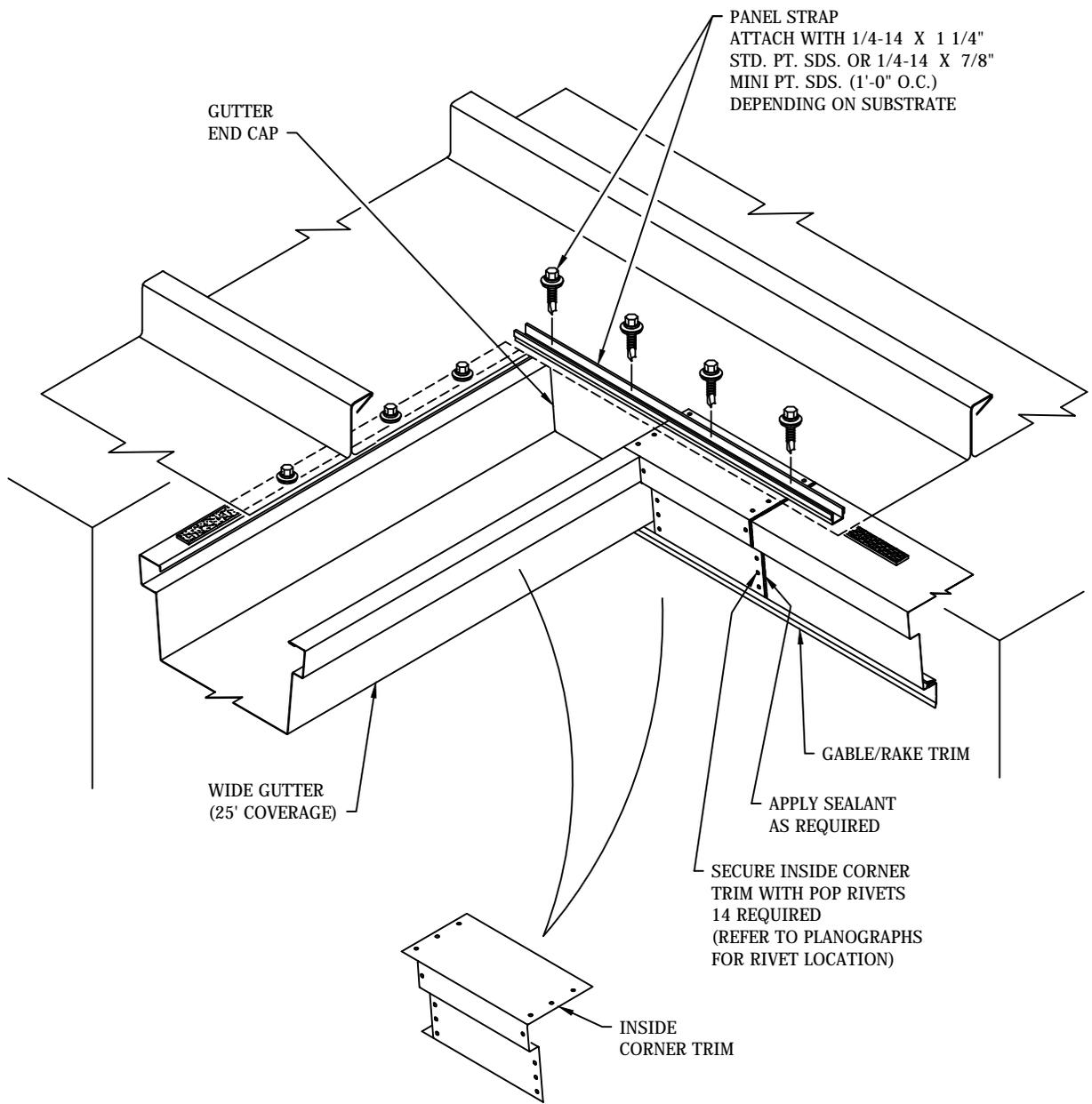


### WIDE GUTTER SHOWN

#### INSTALLATION STEPS:

1. With gutter end caps installed, place gutter for attachment to roof.
2. Locate and field work inside corner trim and install with sealant and blind rivets as required.
3. Expansion joints may be required.

## INSIDE CORNER WIDE GUTTER TO GABLE/RAKE TRIM

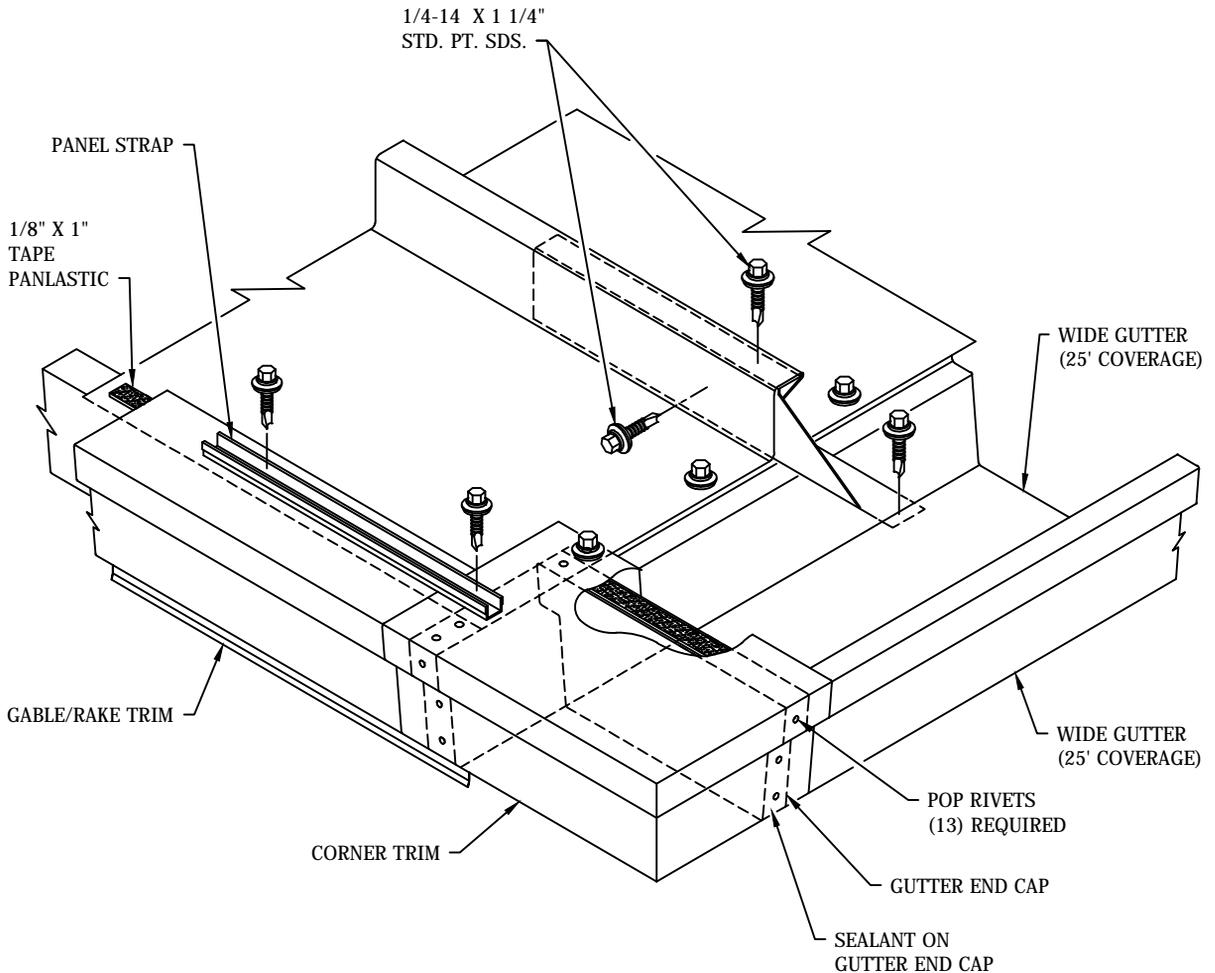


### WIDE CONTOUR GUTTER

#### INSTALLATION STEPS:

1. After placement of gutter and gable/rake trim install inside corner trim using sealant and blind rivets as shown.
2. Locate panel strap directly over sealant and attach to gable angle/channel.
3. Expansion joints may be required.

## OUTSIDE CORNER WIDE GUTTER TO ENDWALL TRIM

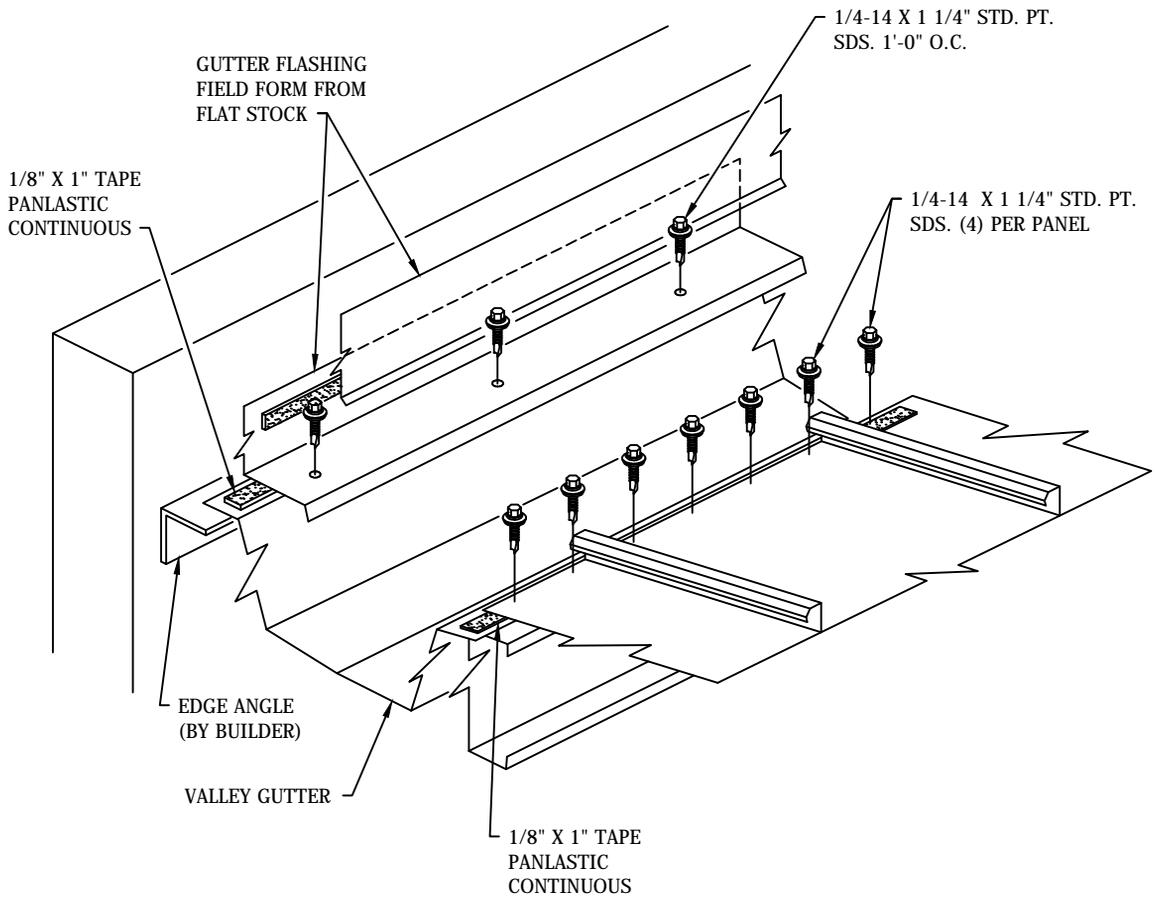


## WIDE CONTOUR GUTTER

### INSTALLATION STEPS:

1. Slide gutter hanger into corrugation. Locate support channel and attach with self-drilling screws.
2. Apply panlastic continuous along gutter and attach to roof panels with self-drilling screws and backup angle.
3. Apply sealant to top surface of roof panels.
4. Set gable trim into place.
5. Apply sealant as required and locate corner trim with pop rivets.
6. Locate panel strap directly over sealant and attach to gable angle.

# VALLEY GUTTER INSTALLATION



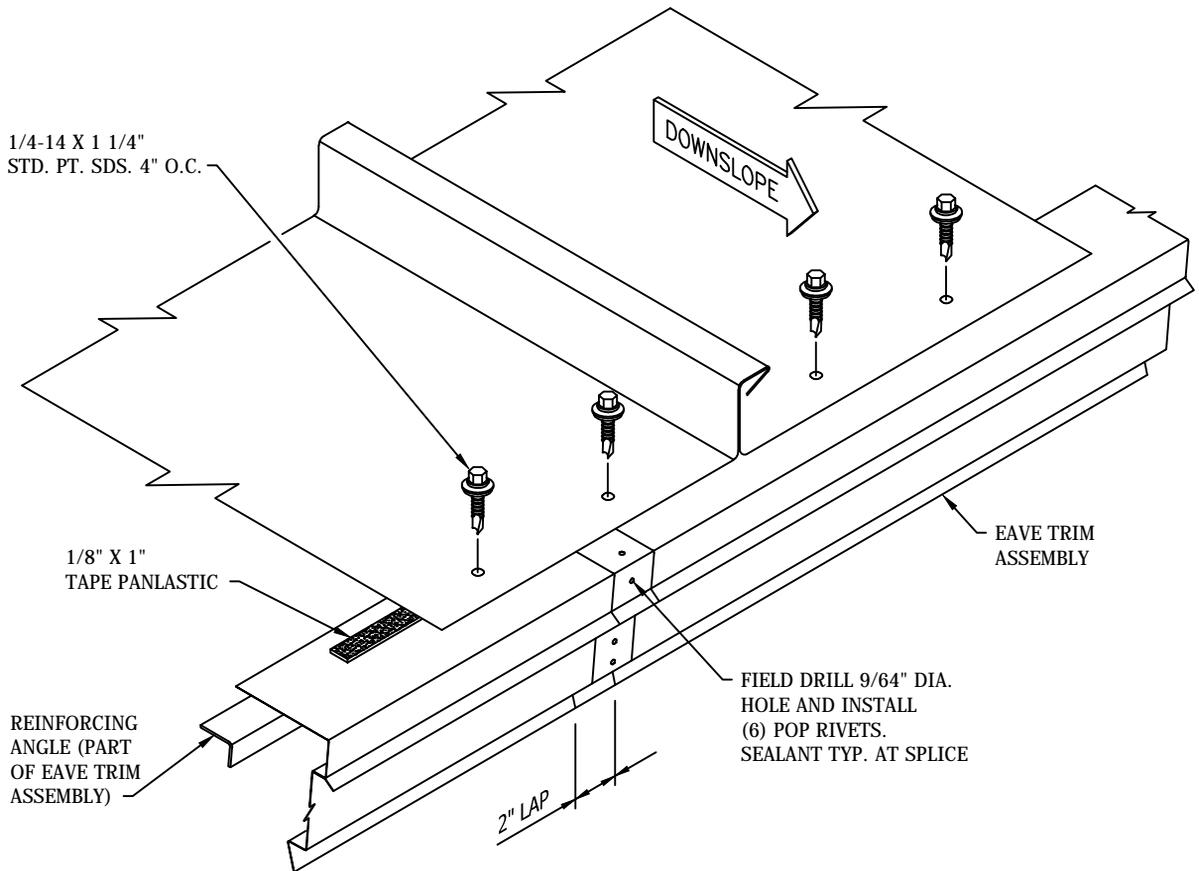
## INSTALLATION STEPS:

1. Locate gutter over available structurals.
2. Install gutter stops and weld all gutter end laps before roofing.
3. Apply tape Panlastic continuous at gutter flange.
4. Locate roof panels and apply pigtail of sealant at male hem of panel before installing adjacent panel. Attach with self-drilling screws at 4" O.C.
5. Locate tape panlastic and gutter flashings (field form). Attach at 1'-0" O.C.

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered)

# EAVE TRIM INSTALLATION

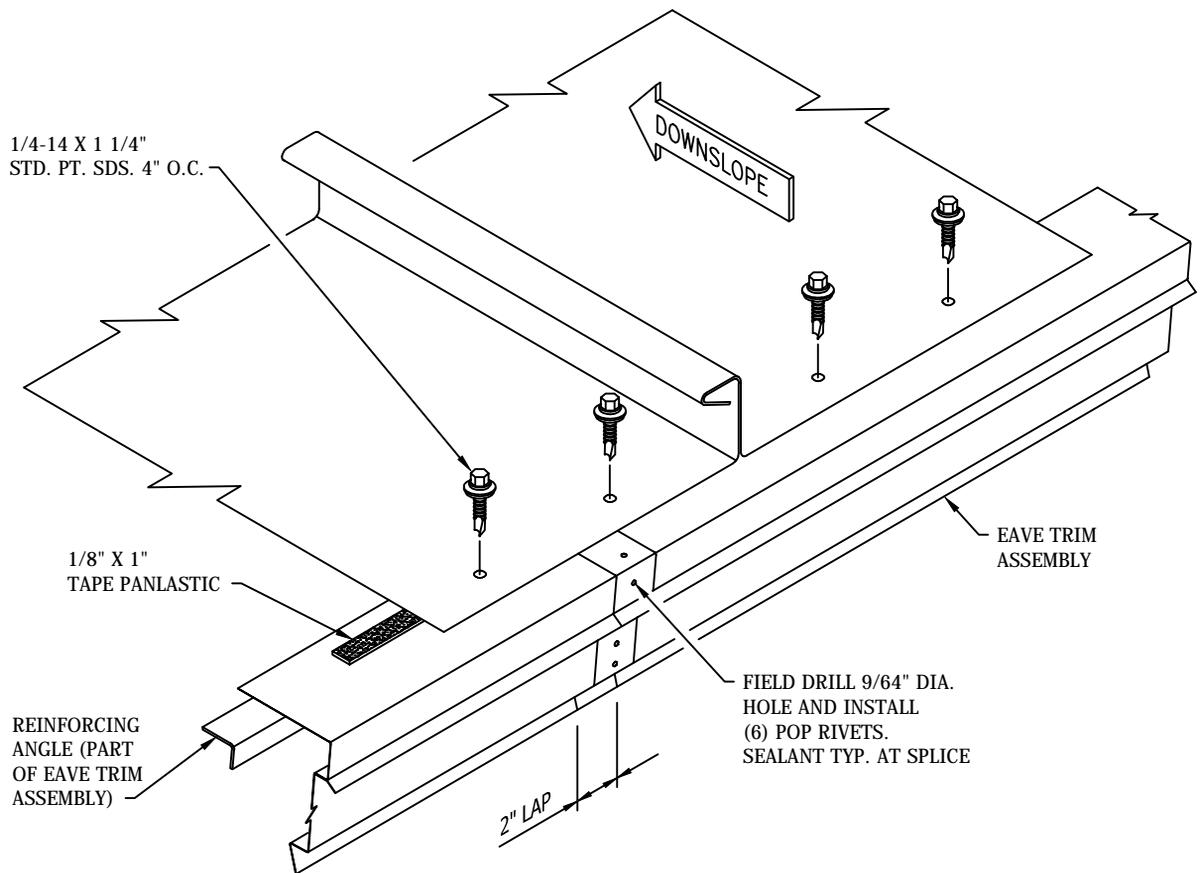
## LOW EAVE TRIM INSTALLATION



### INSTALLATION STEPS:

1. Apply Panlastic to top surface of eave trim assembly.
2. Set eave trim assembly into place and secure with self-drilling screws as required.

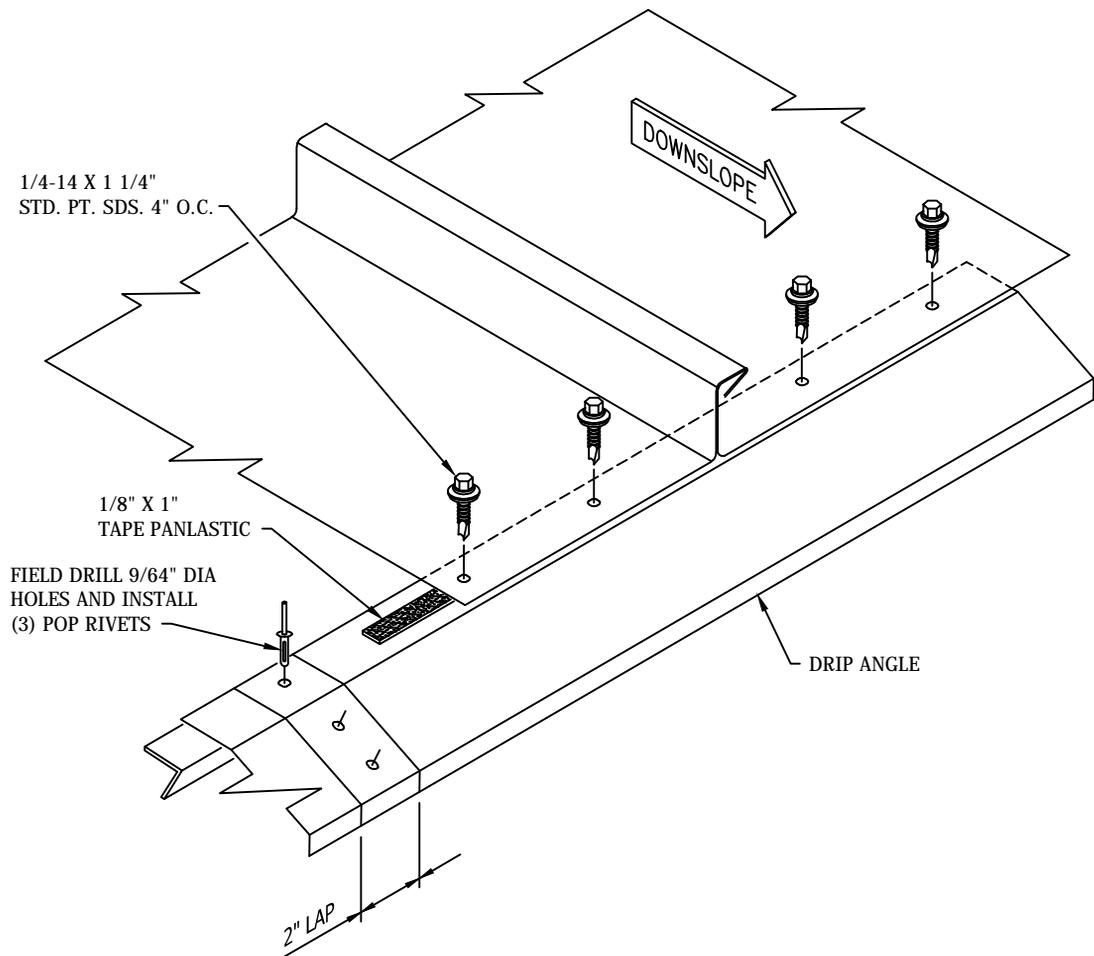
## HIGH EAVE TRIM INSTALLATION



### INSTALLATION STEPS:

1. Apply panlastic to top surface of eave trim assembly.
2. Set eave trim assembly into place and secure with self-drilling screws as required.

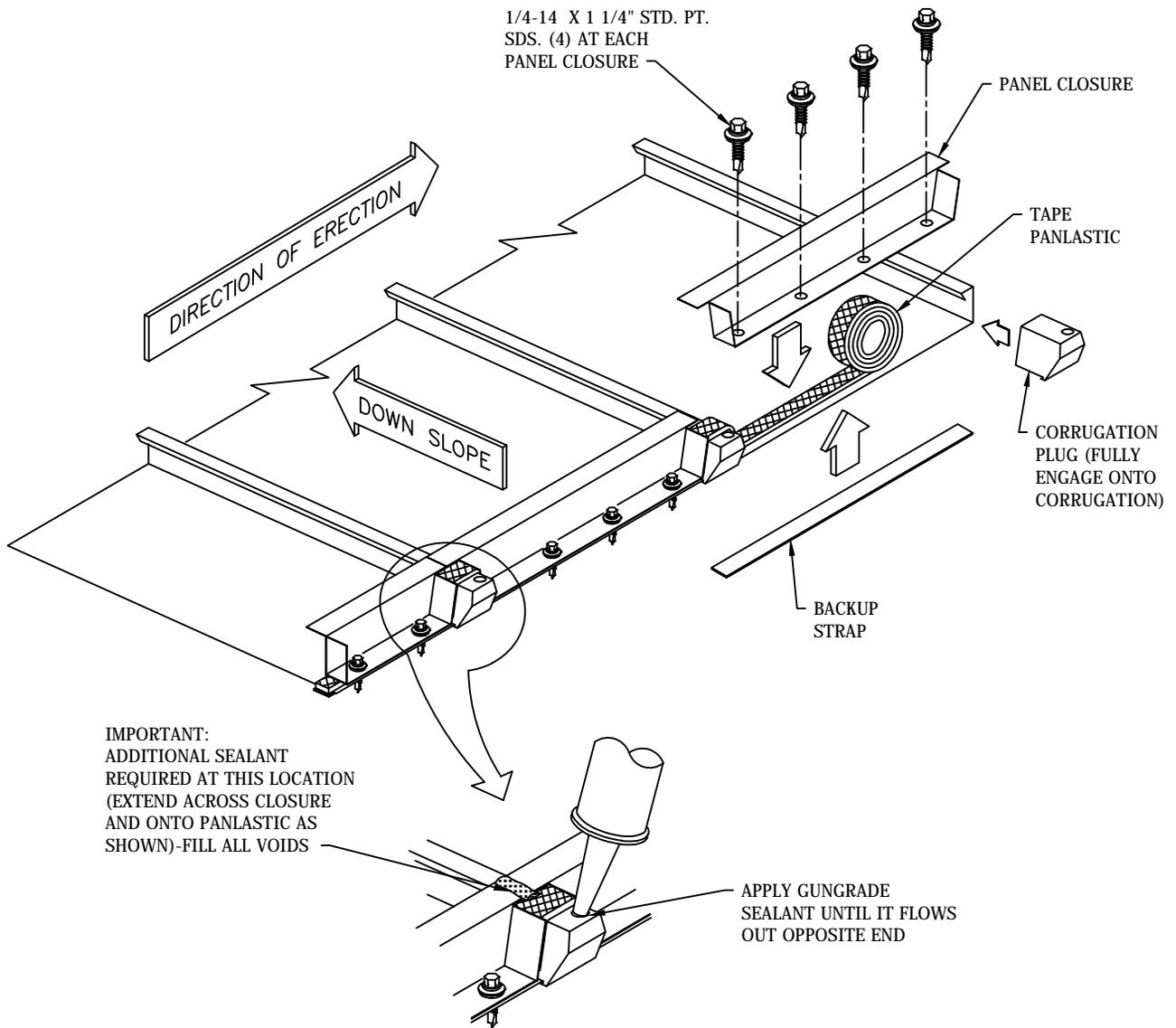
## BARE EAVE TRIM INSTALLATION



### INSTALLATION STEPS:

1. Apply panlastic to top surface of drip angle.
2. Set drip angle into place and secure with self-drilling screws as required through backup angle.

# PANEL END CLOSURE INSTALLATION



## INSTALLATION STEPS:

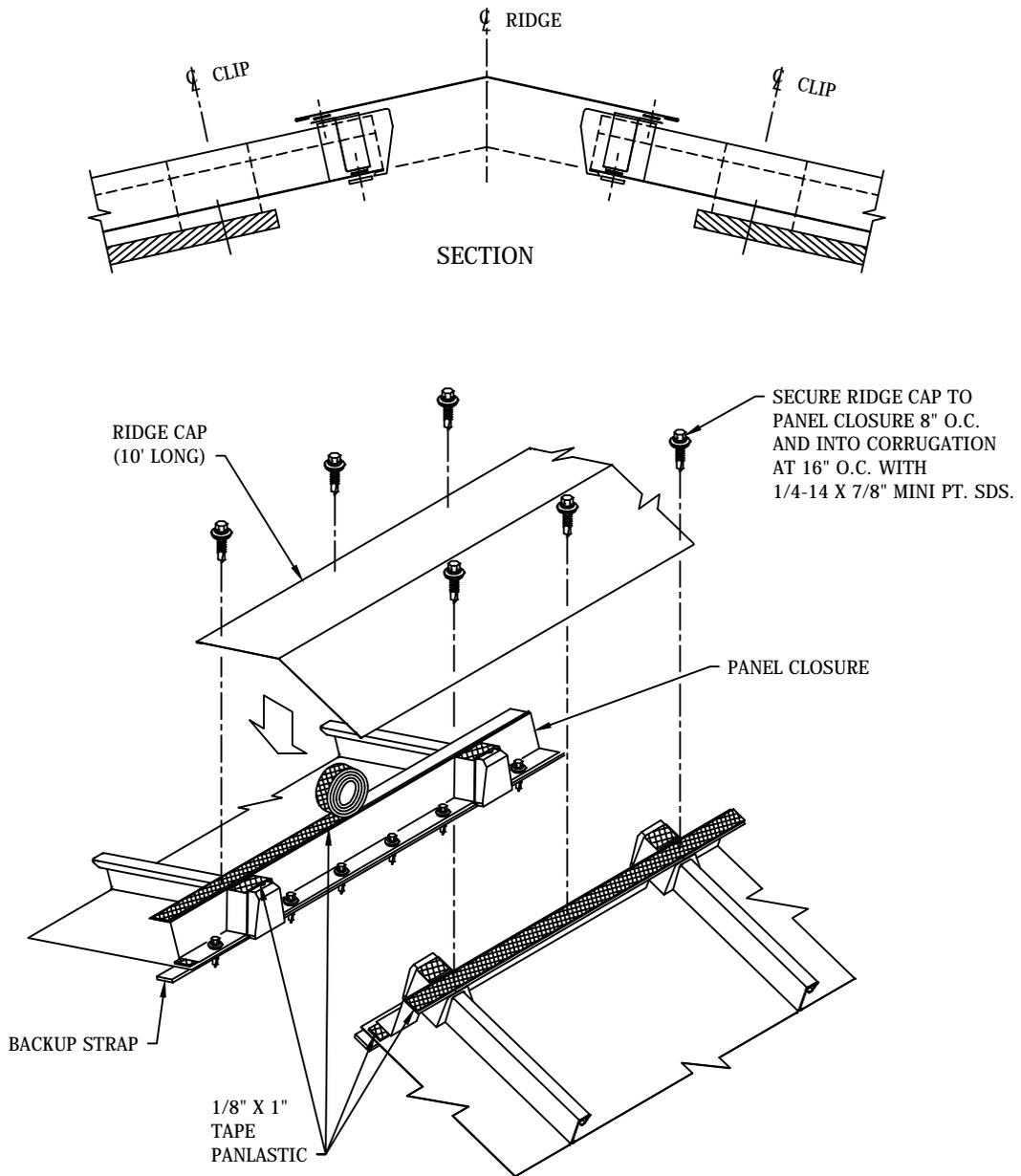
1. Install corrugation plugs at roof panel corrugations.
2. Apply tape Panlastic along edge of panels and over plugs (Use care in locating tape panlastic so that once the panel closure has been installed, the tape is centered under the bottom flange).
3. Install closures. Use gun grade sealant around joints over corrugation plugs.
4. Fill all plugs with gun grade sealant until it flows out opposite end.

## GENERAL NOTES:

Do not install panel closure on end panels until endwall trim has been installed. Some field work is required at all end locations where it is necessary for the end of the closure to align with a particular flashing detail or ridge end condition.

# LOW PROFILE RIDGE COVER INSTALLATION

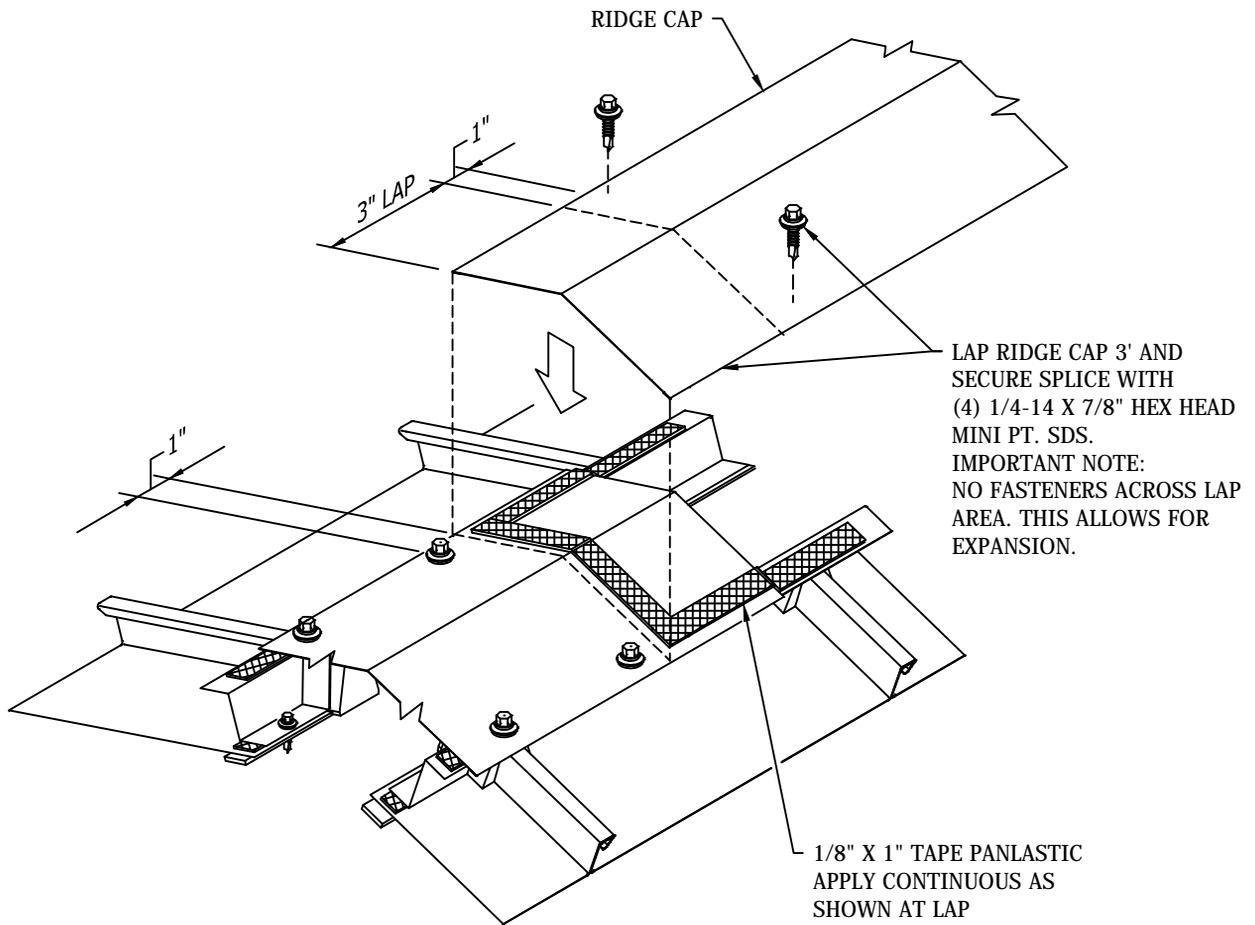
## RIDGE CAP INSTALLATION



### INSTALLATION STEPS:

1. First apply tape Panlastic to top of panel closure.
2. Then position ridge cap and press in place then fasten.

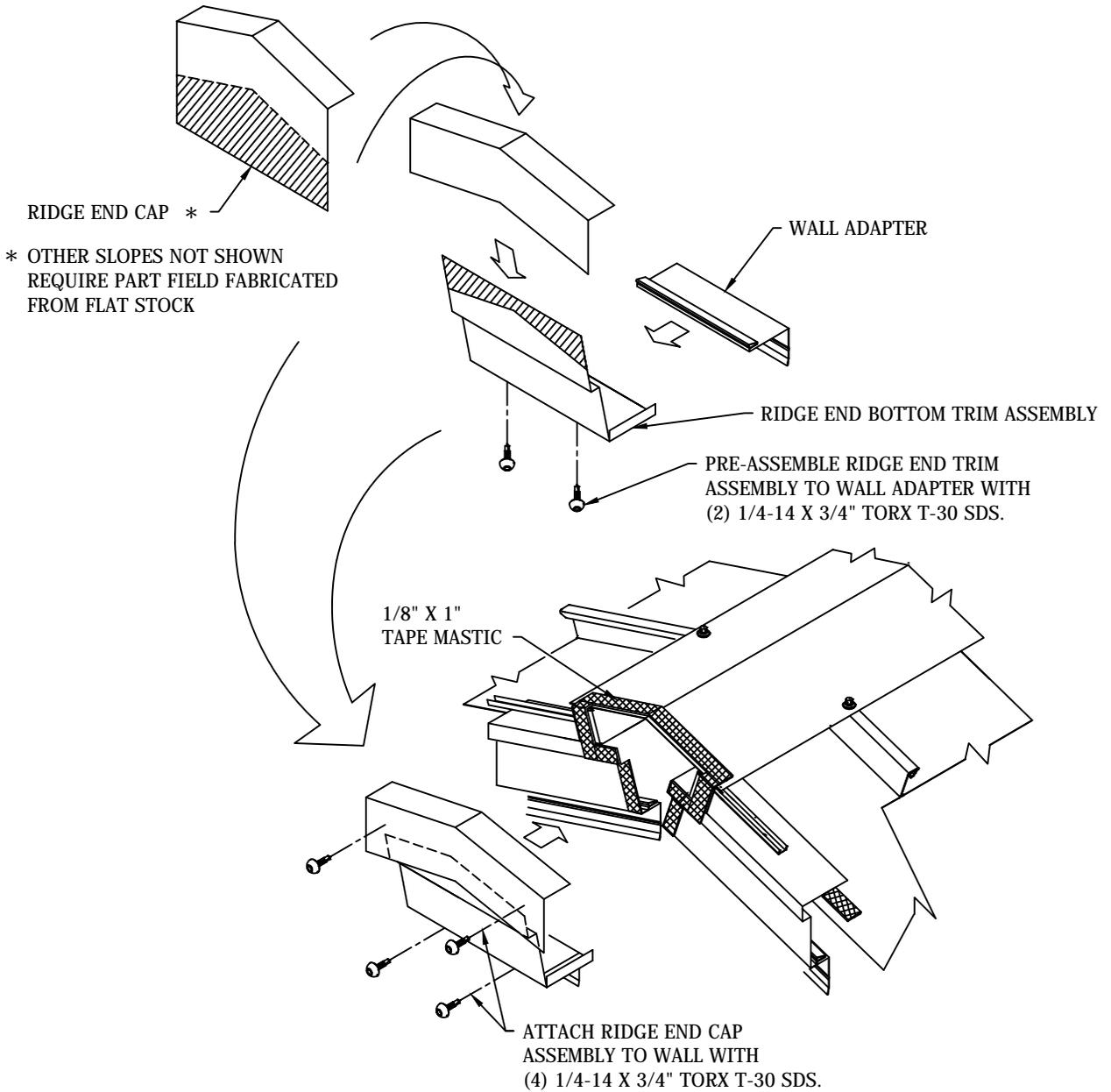
## RIDGE CAP SPLICE INSTALLATION



### INSTALLATION STEPS:

1. First apply tape panlastic as shown to accommodate a 3" lap.
2. Then position next segment of ridge cap and press in place and fasten.

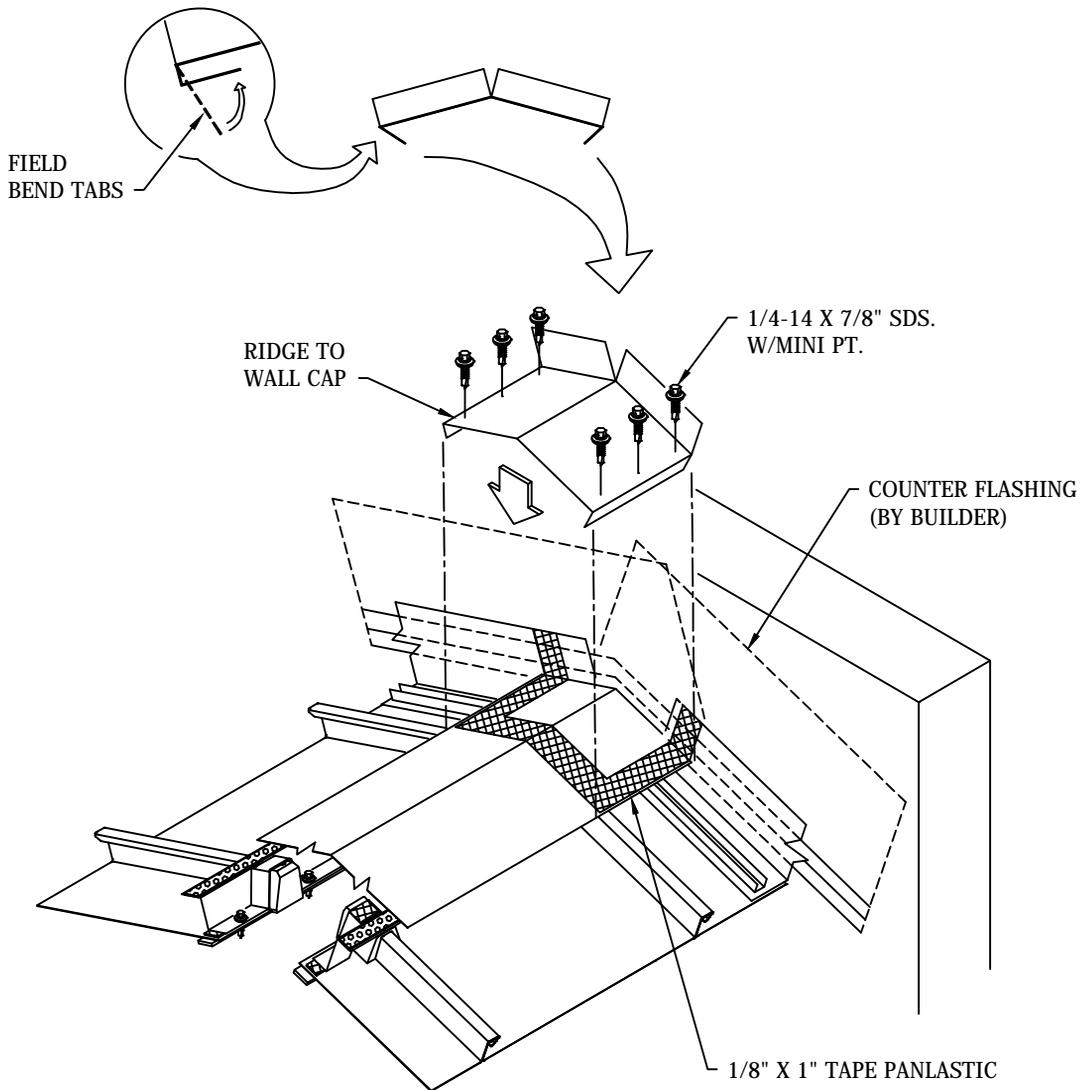
## END CAP INSTALLATION



### INSTALLATION STEPS:

1. Preassemble ridge end cover assembly as shown above. Field cut each component as required per slope.
2. Apply mastic as shown to receive ridge end cover assembly.
3. Install ridge end cover assembly and secure with self-drilling screws.

## RIDGE TO WALL TRANSITION INSTALLATION

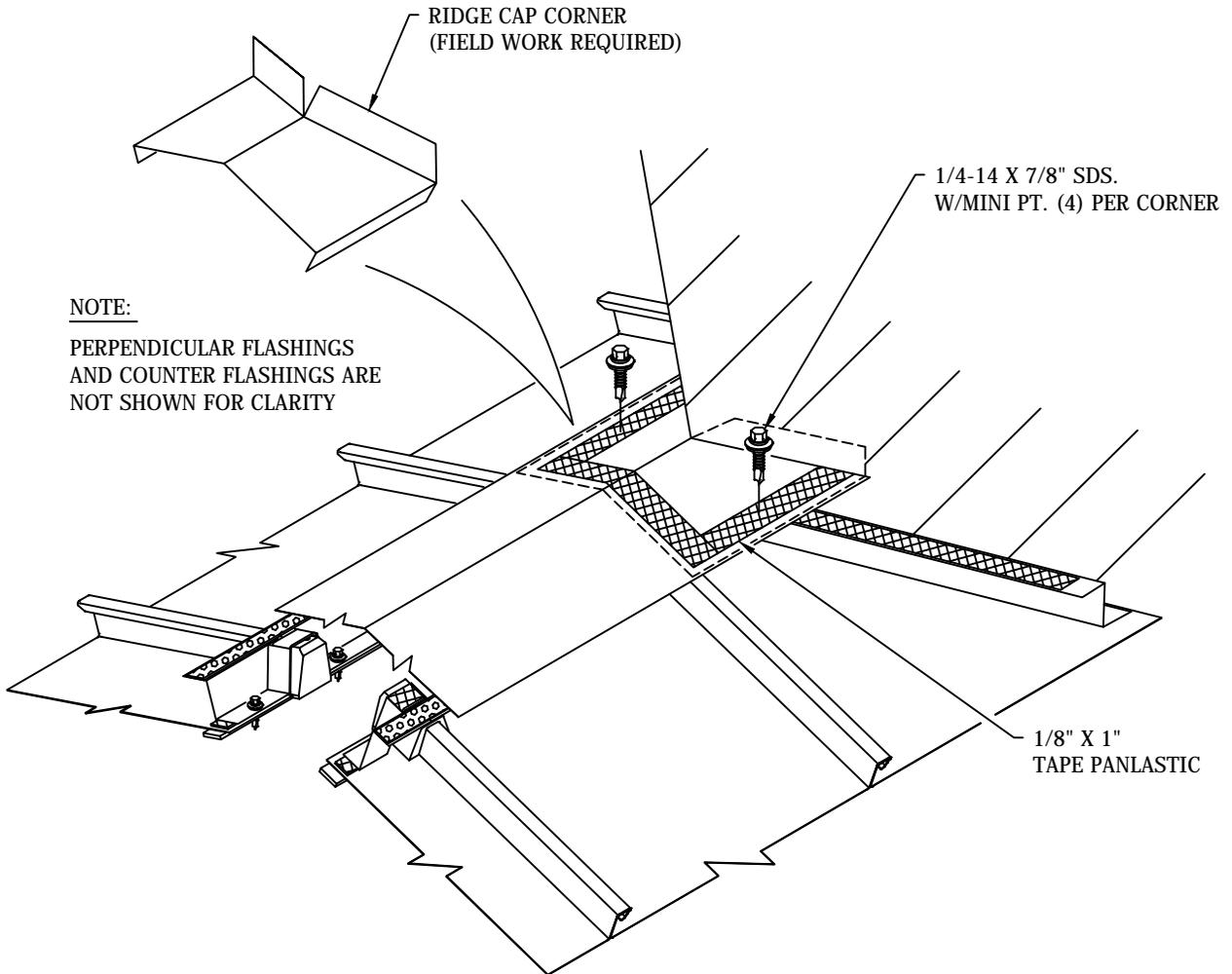


### INSTALLATION STEPS:

1. Apply tape Panlastic to top of ridge cap to receive ridge to wall cap.
2. Secure ridge to wall cap with self-drilling screws.
3. Crimp edge of ridge to wall cap as shown.
4. Install counter flashing as required being certain to apply tape Panlastic between parallel flashing and counter flashing.

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered.)

## RIDGE TO WALL TRANSITION AT 45 °



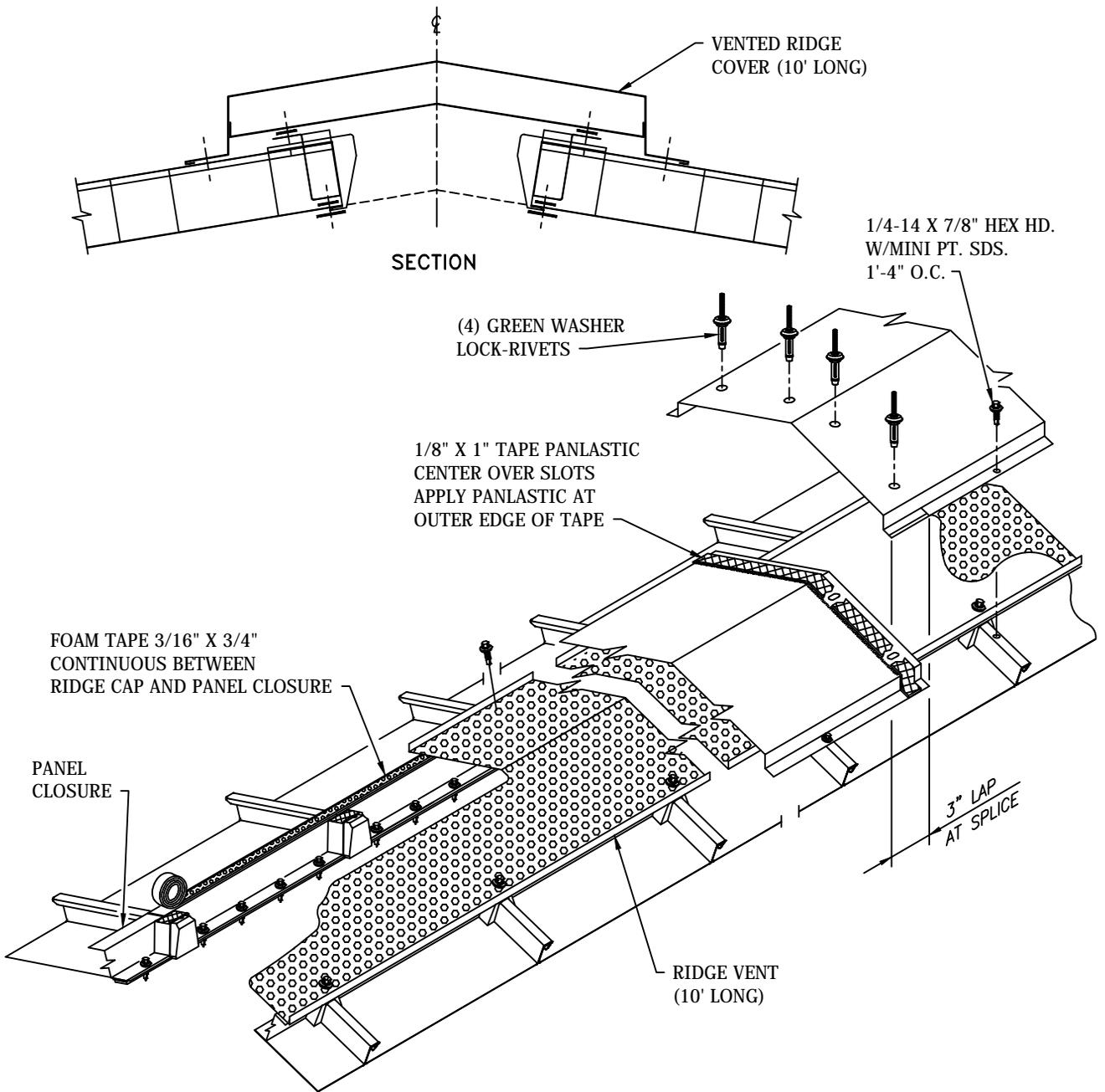
### INSTALLATION STEPS:

1. Perpendicular counter flashing must be installed prior to ridge cap corner.
2. Apply sealant as required to end of ridge cover.
3. Nest ridge end cap corner over ridge cap and crimp edges to retain.
4. Complete final run of ridge cap and attach.
5. Apply sealant as required and locate counter flashing. (Field cut around ridge cap corner.)

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered.)

# VENTED RIDGE INSTALLATION

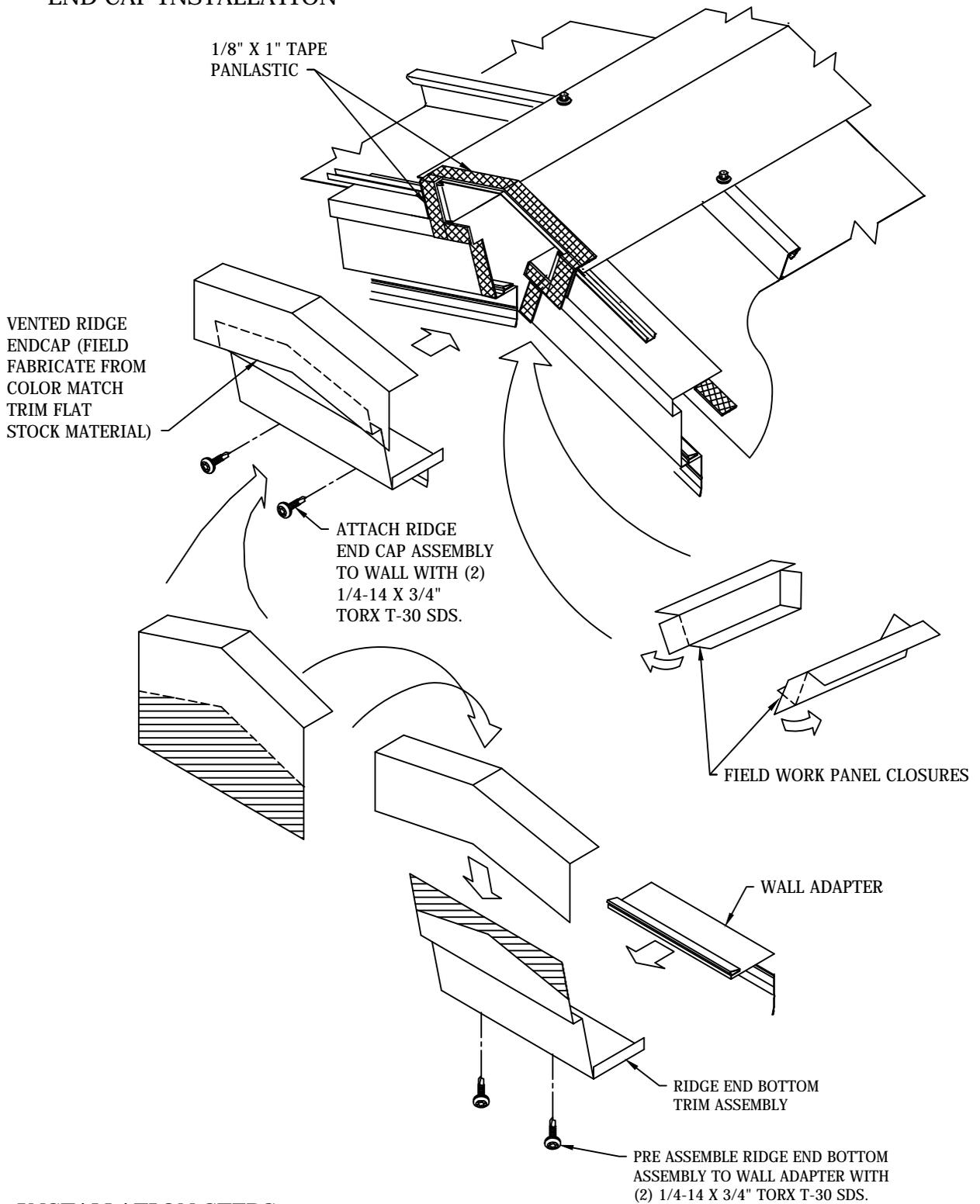
## RIDGE VENT, RIDGE COVER AND SPLICE INSTALLATION



### INSTALLATION STEPS:

1. First apply a continuous foam tape to top of panel closure. Next position ridge vent and fasten.
2. Install vented ridge cover.
3. Apply tape Panlastic and sealant bead to accommodate a 3" lap then position next section of ridge cover and fasten with Lock-Rivets.

# END CAP INSTALLATION

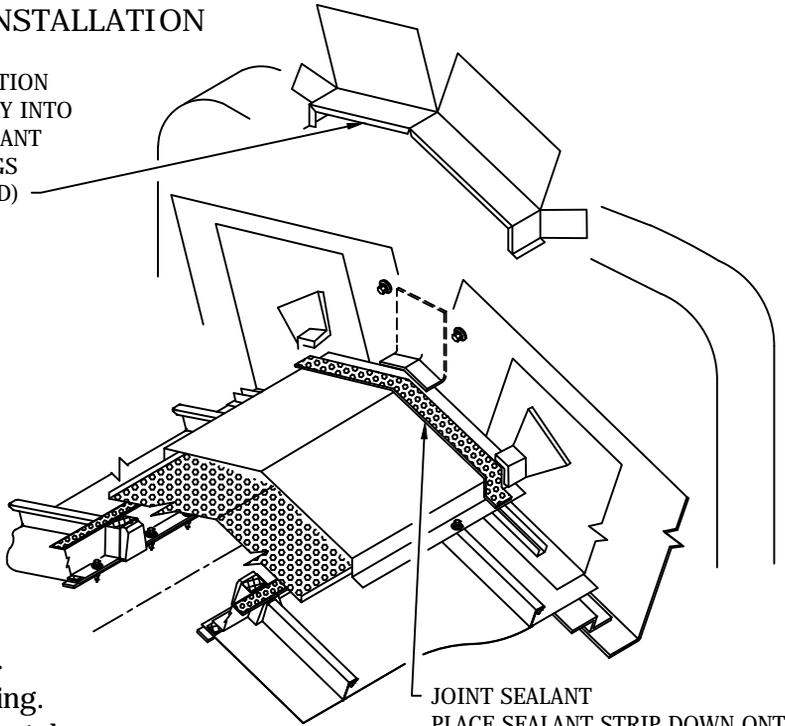


## INSTALLATION STEPS:

1. Field work and assemble vented ridge end cap.
2. Apply sealants at ridge cap and gable/rake trim.
3. Locate end cap assembly.

## RIDGE TO WALL TRANSITION INSTALLATION

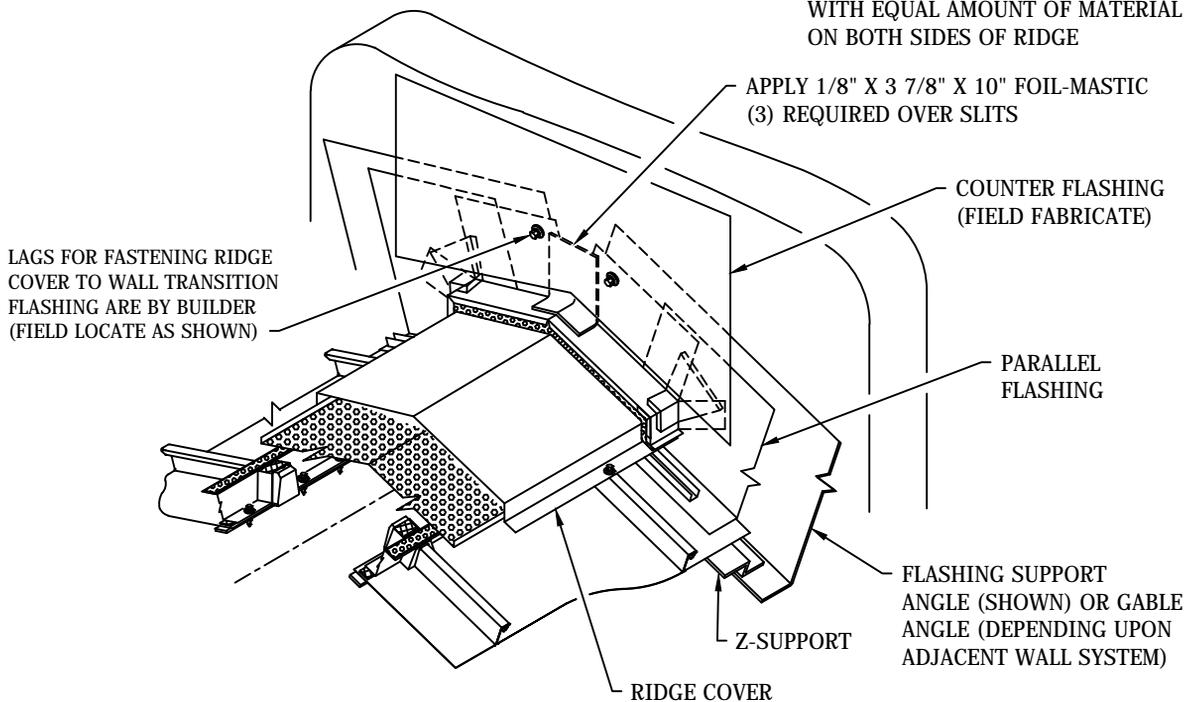
RIDGE TO WALL TRANSITION FLASHING (PRESS FIRMLY INTO PLACE OVER JOINT SEALANT BEFORE INSTALLING LAGS INTO WALL AS REQUIRED)



### INSTALLATION STEPS:

1. Apply joint sealant over ridge cover.
2. Secure ridge to wall transition flashing, pressing joint sealant to make watertight.

JOINT SEALANT  
PLACE SEALANT STRIP DOWN ONTO COUNTOUR OF METAL RIDGE COVER WITH EQUAL AMOUNT OF MATERIAL ON BOTH SIDES OF RIDGE



APPLY 1/8" X 3 7/8" X 10" FOIL-MASTIC (3) REQUIRED OVER SLITS

COUNTER FLASHING (FIELD FABRICATE)

LAGS FOR FASTENING RIDGE COVER TO WALL TRANSITION FLASHING ARE BY BUILDER (FIELD LOCATE AS SHOWN)

PARALLEL FLASHING

FLASHING SUPPORT ANGLE (SHOWN) OR GABLE ANGLE (DEPENDING UPON ADJACENT WALL SYSTEM)

RIDGE COVER

Z-SUPPORT

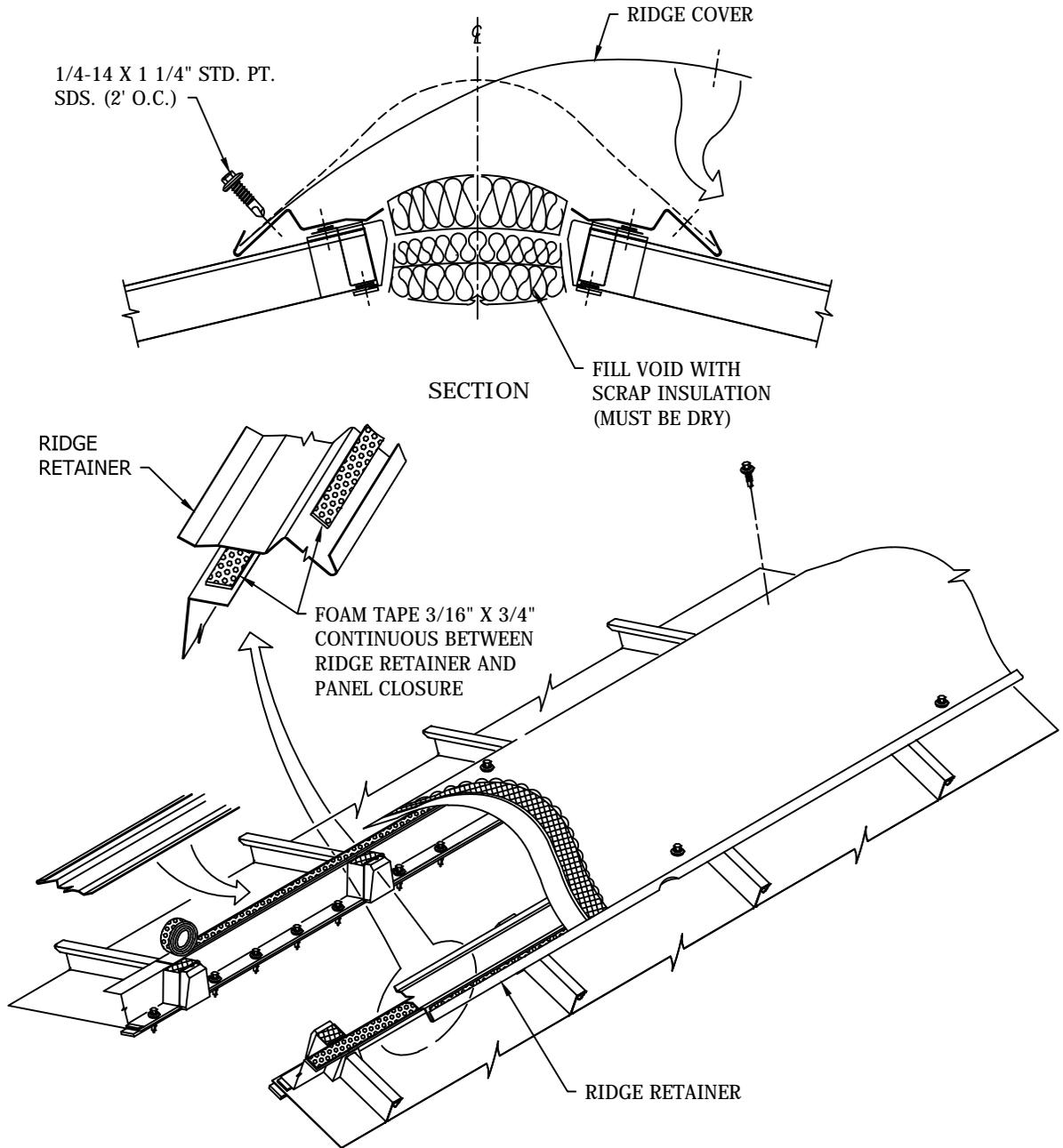
### INSTALLATION STEPS:

3. Apply foil-mastic over slits to make watertight.
4. Install counter flashing.

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered.)

# EXPANSION RIDGE COVER

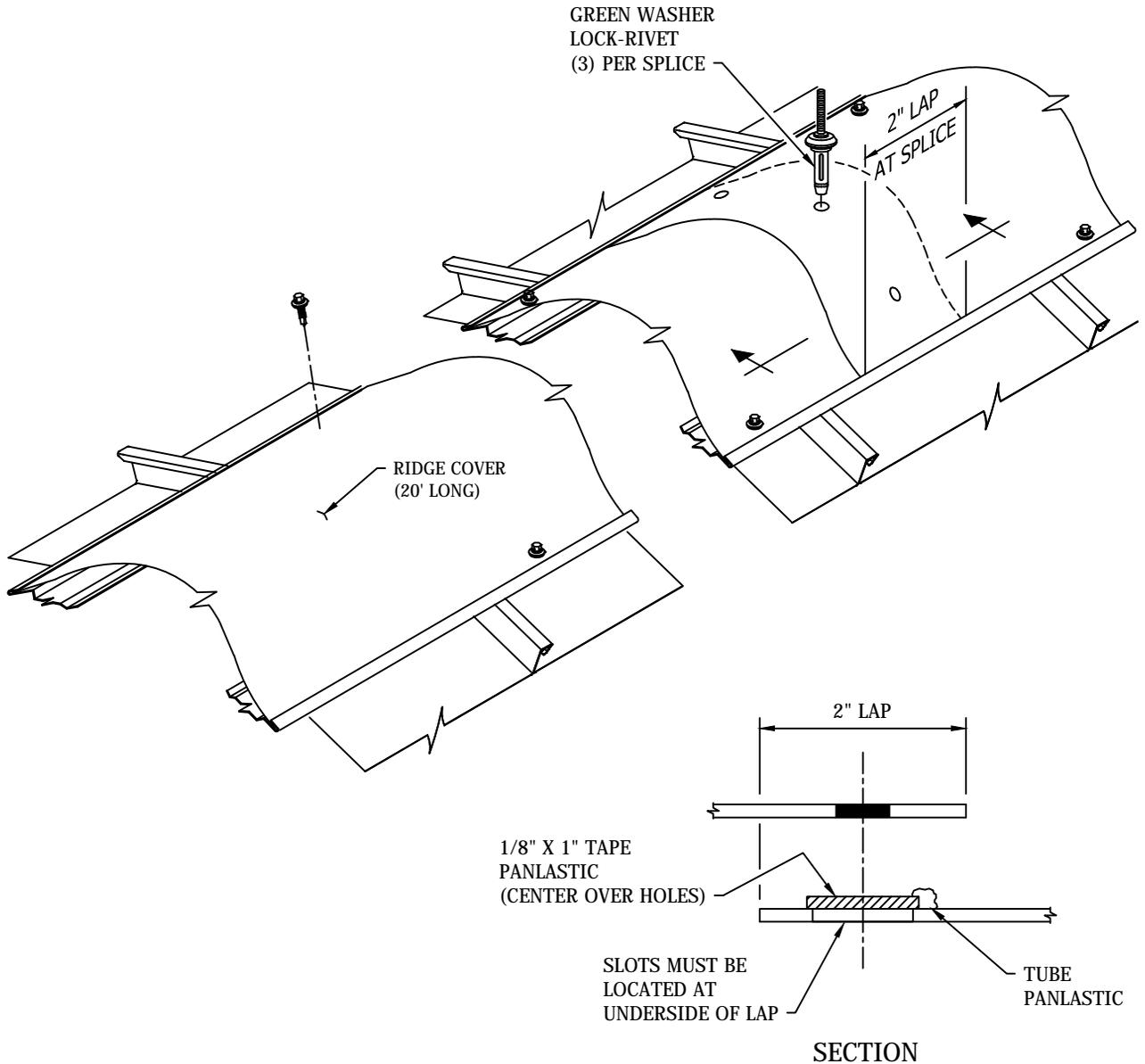
## RIDGE RETAINER / RIDGE COVER INSTALLATION



### INSTALLATION STEPS:

1. Apply foam tape continuous over panel closures and attach ridge retainer.
2. Apply foam tape continuous over ridge retainers and attach ridge cover.

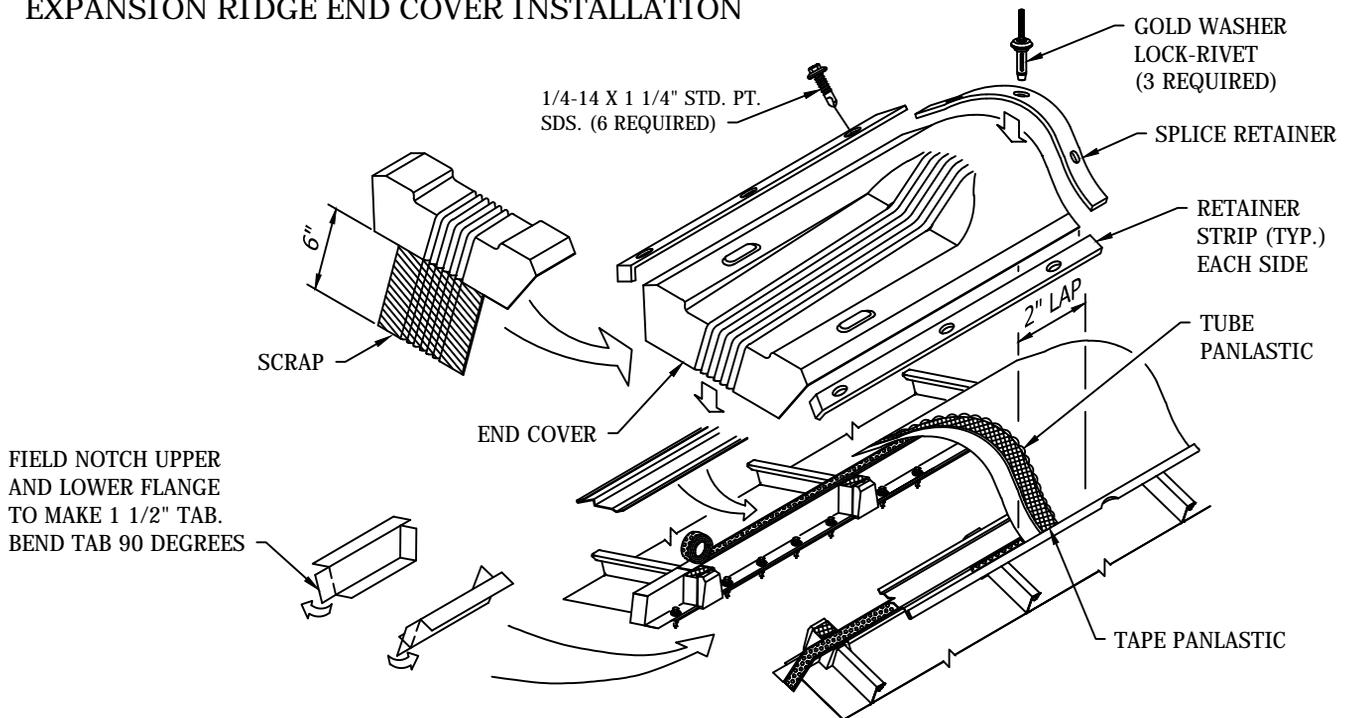
# RIDGE COVER SPLICE INSTALLATION



## INSTALLATION STEPS:

1. Apply Panlastic continuous centered over slots.
2. Apply Panlastic along inside edge of tape Panlastic.
3. Locate adjacent ridge cover and attach.

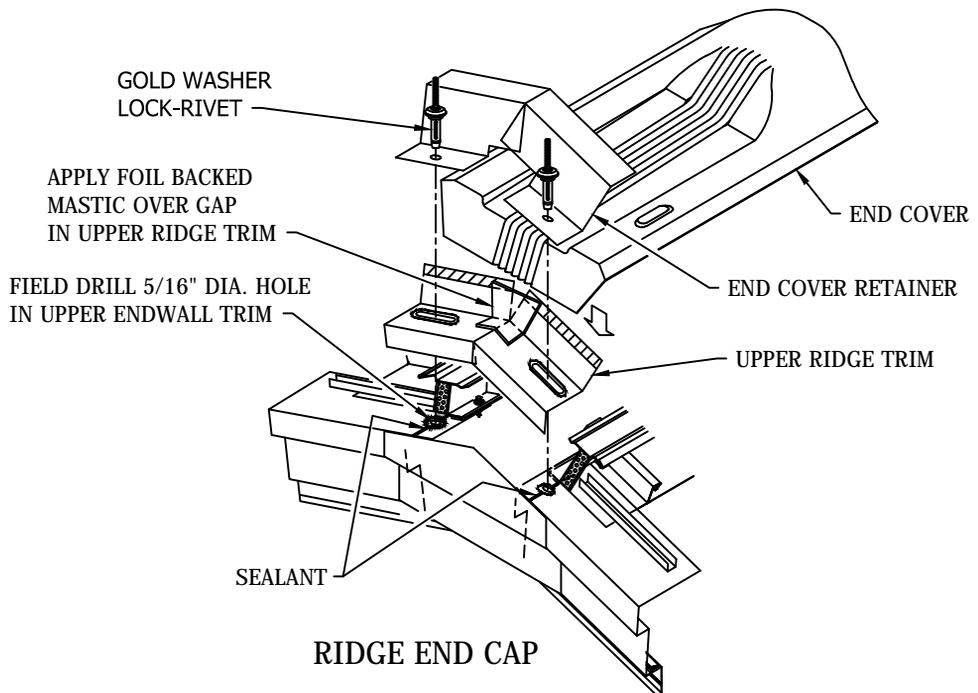
## EXPANSION RIDGE END COVER INSTALLATION



### INSTALLATION STEPS:

1. Field work ridge end cover.
2. Apply sealant to lap ridge cover and attach end cover as shown.

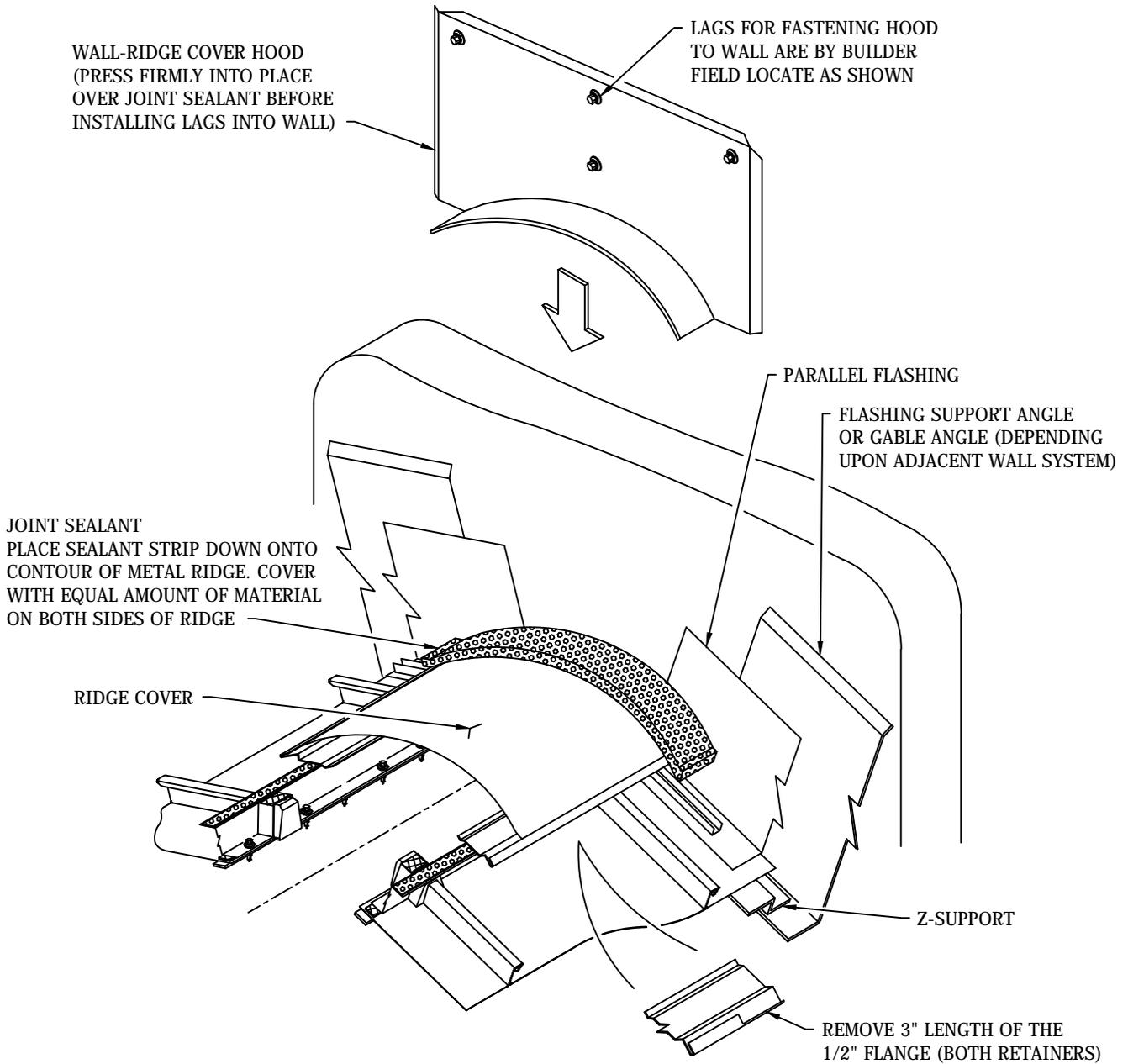
## EXPANSION RIDGE END CAP INSTALLATION



### INSTALLATION STEPS:

1. Field work wall adapter and ridge end bottom trim assembly. Apply sealant and attach.
2. Apply sealants and locate both upper ridge trim and the end cover retainer with Lock-Rivets.

## EXPANSION RIDGE TO WALL TRANSITION

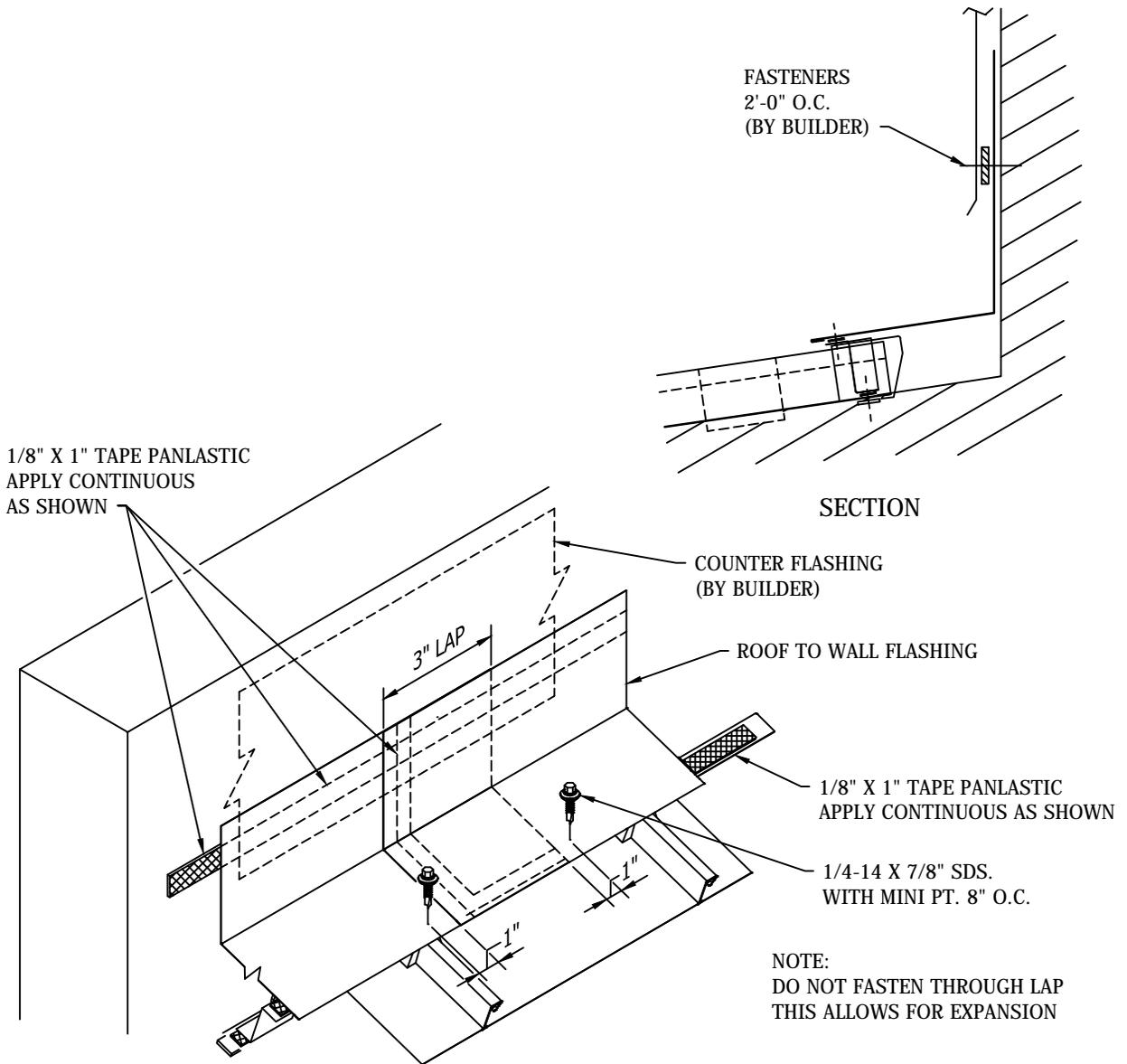


### INSTALLATION STEPS:

1. Install parallel flashing as required being certain to apply tape Panlastic between flashing and roof.
2. Install panel closures.
3. Attach ridge retainer, field notch lip of retainer to accept joint sealant.
4. Install ridge cover. Apply joint sealant over ridge cover.
5. Secure wall-ridge cover hood at wall Panel / ridge location.
6. Crimp edge of ridge to wall cap as shown. (If required.)

# PERPENDICULAR ROOF TO WALL TRANSITION FIXED

## ROOF TO WALL FLASHING INSTALLATION

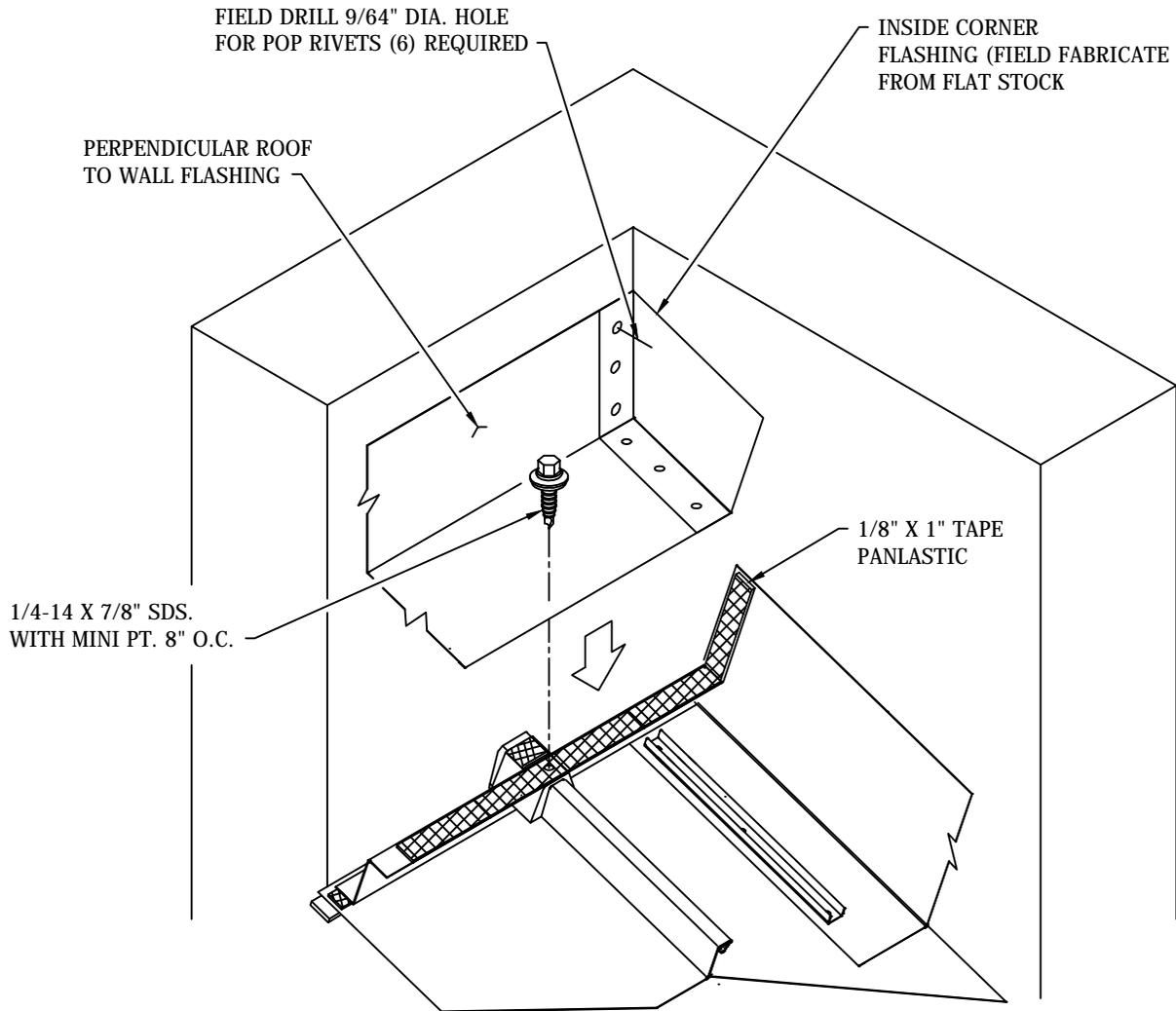


### INSTALLATION STEPS:

1. Locate corrugation plugs on end of panels.
2. Apply tape Panlastic continuously along panel end and over corrugation plugs.
3. Secure panel closures.
4. Fill corrugation plugs with gungrade Panlastic.
5. Apply a continuous run of tape Panlastic to top of panel closure. Locate roof to wall flashing and attach to panel corrugation thru panel closure and corrugation plug.
6. Apply a strip of tape panlastic at the splice as shown allowing for a 3" lap. Secure the splice on either side with self-drilling screws.
7. Install counter flashing.

NOTE: Field form counter flashing from flat stock. (Flat stock not included unless ordered.)

## INSIDE CORNER FLASHING INSTALLATION

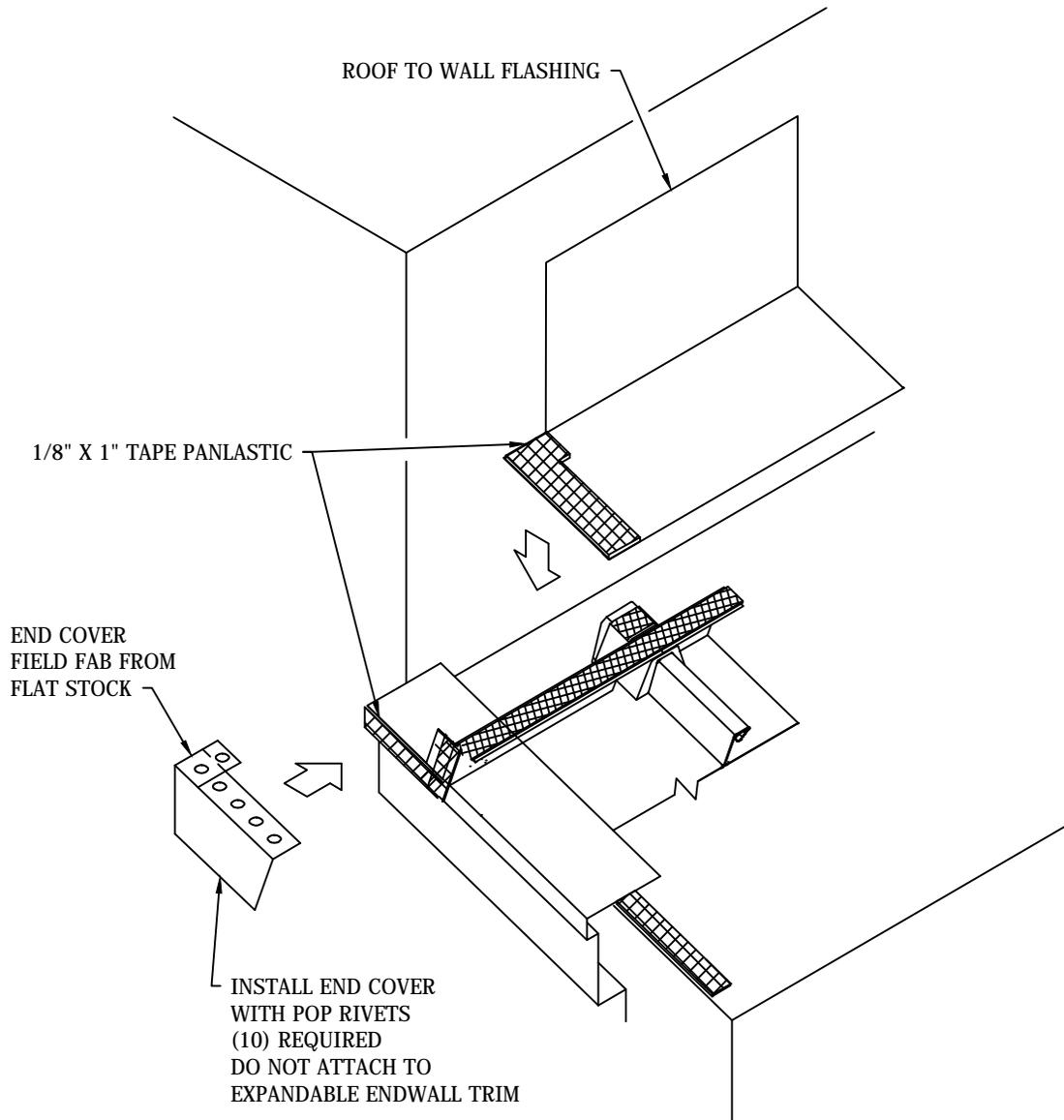


### INSTALLATION STEPS:

1. Apply tape Panlastic to top surface of panel closures.
2. Install perpendicular roof to wall flashing. Install inside corner flashing with pop rivets as shown.
3. Install counter flashing.

NOTE: Field form counter flashing and corner flashing from flat stock material. (Flat stock not included unless ordered.)

## END COVER INSTALLATION



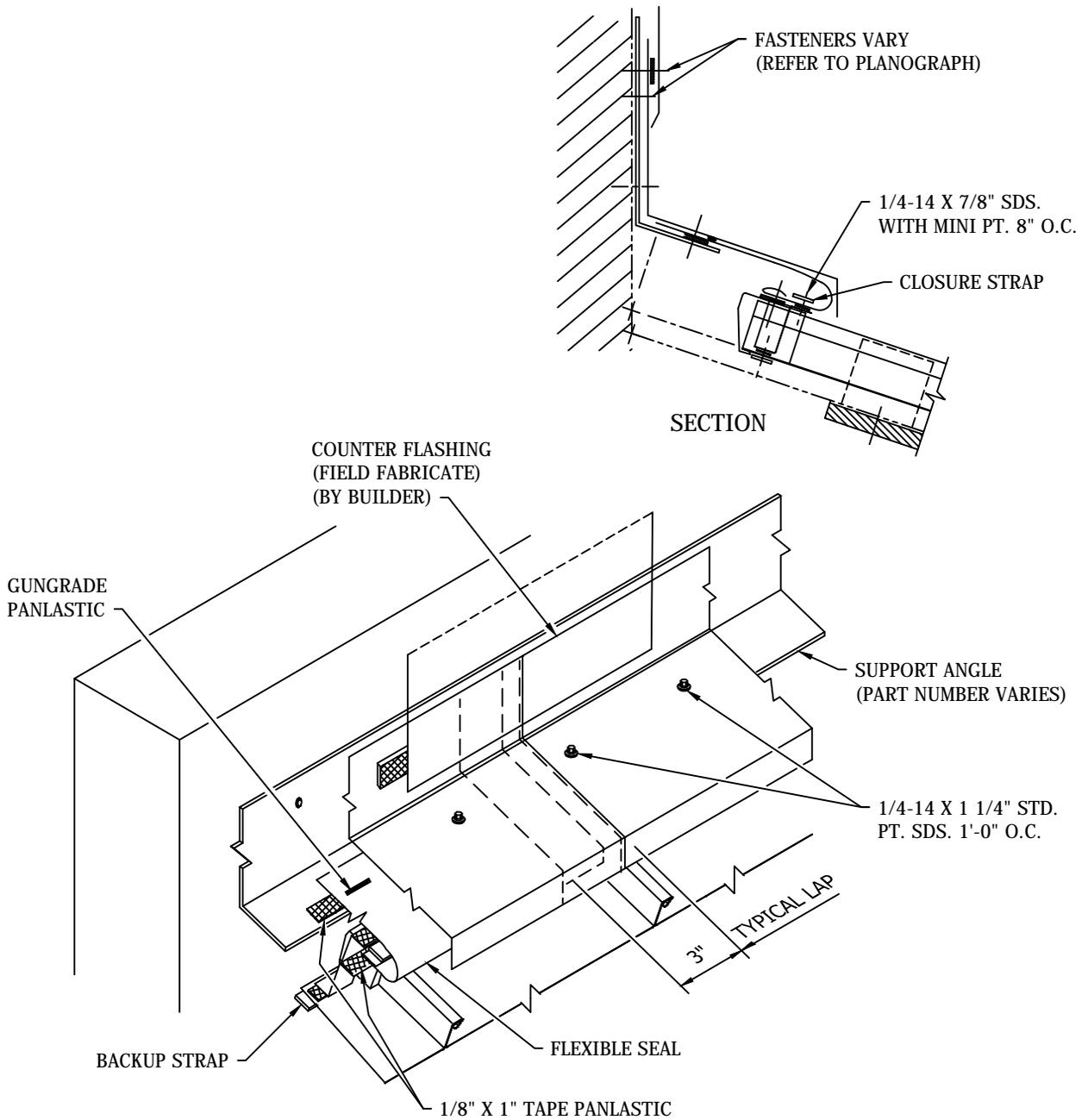
### INSTALLATION STEPS:

1. Apply tape panlastic as shown and install perpendicular roof to wall flashing.
2. Field fabricate end cover and install with pop rivets.
3. Install counter flashing.

NOTE: Field form counter flashing and end cover from flat stock material. (Flat stock not included unless ordered.)

# PERPENDICULAR ROOF TO WALL TRANSITION MOVABLE

## ROOF TO WALL FLASHING INTALLATION

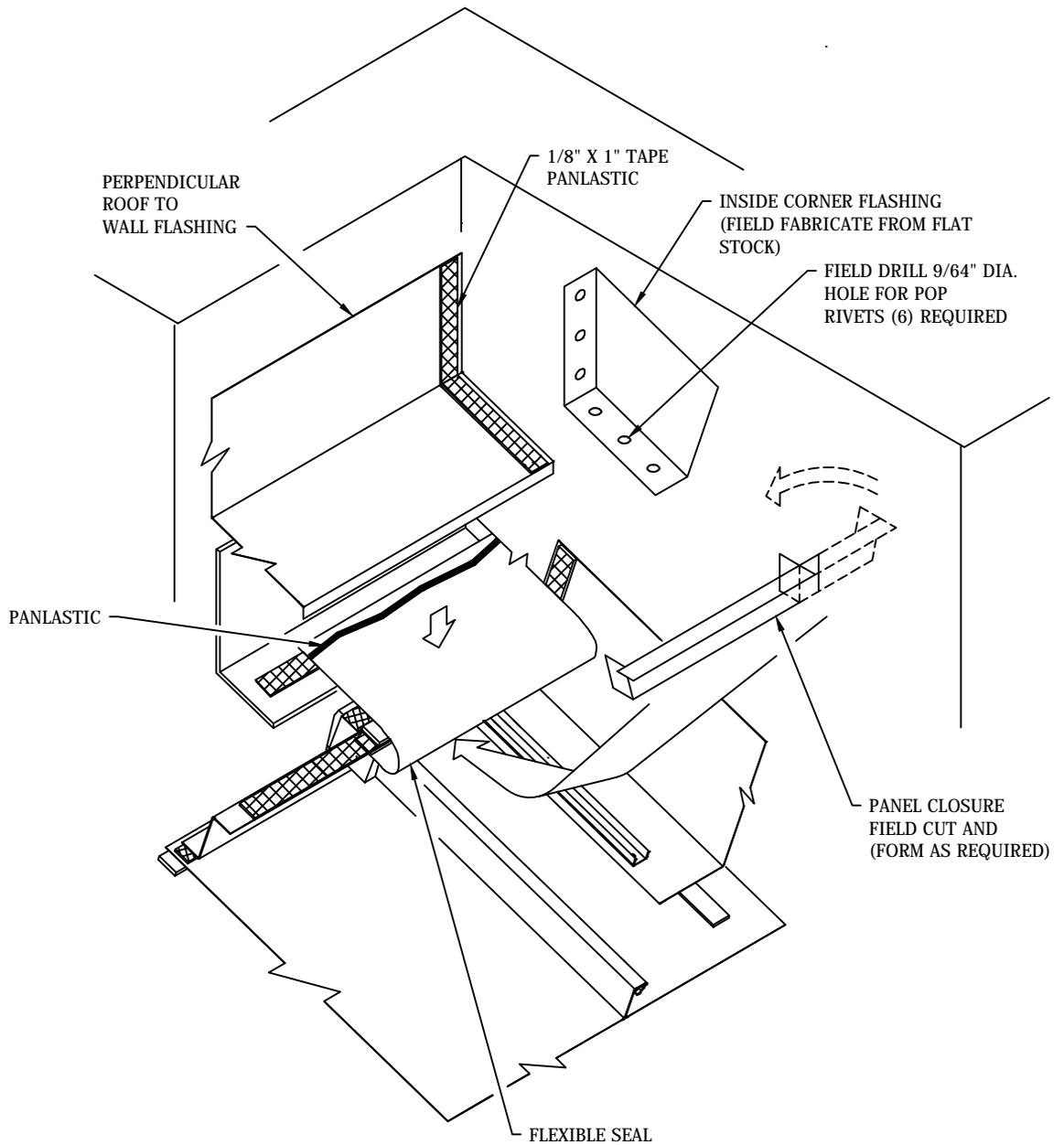


### INSTALLATION STEPS:

1. With panel closure installed locate flexible seal. Apply sealant continuous and fasten with self-drilling screws through closure strap.
2. Attach support angle, apply sealant to retain flexible seal.
3. Apply continuous bead of sealant over flexible seal then attach roof to wall transition.
4. Apply sealant and locate counter flashing.

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered.)

## INSIDE CORNER FLASHING INSTALLATION

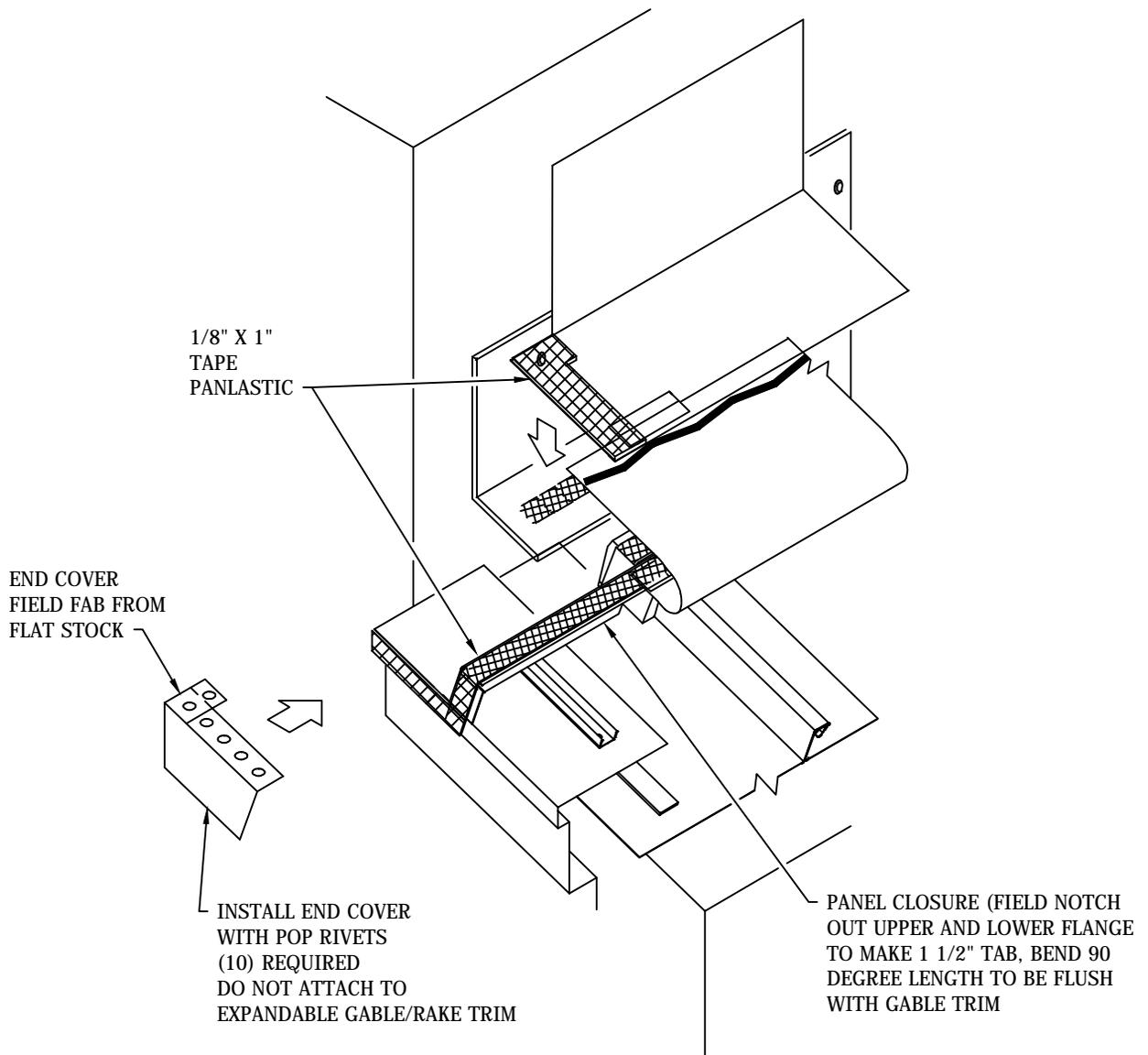


### INSTALLATION STEPS:

1. Apply Panlastic to top surface of flexible seal.
2. Install inside corner flashing with pop rivets as shown.
3. Install perpendicular roof to wall flashing.
4. Install counter flashing.

NOTE: Field form counter flashing and corner flashing from flat stock material. (Flat stock not included unless ordered.)

## EAVE COVER INSTALLATION



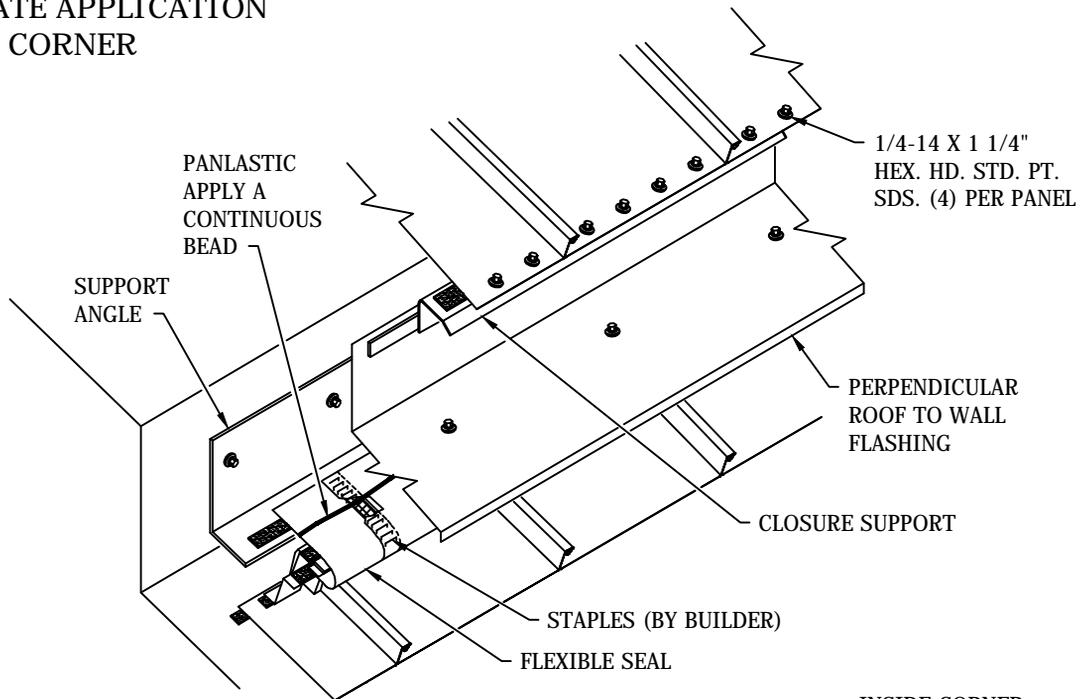
### INSTALLATION STEPS:

1. Field work end of panel closure and install.
2. Apply tape Panlastic as shown and install perpendicular roof to wall flashing.
3. Field fabricate end cover and apply sealant as required then install end cover with pop rivets.
4. Install counter flashing.

NOTE: Field form counter flashing and end cover from flat stock material. (Flat stock not included unless ordered.)

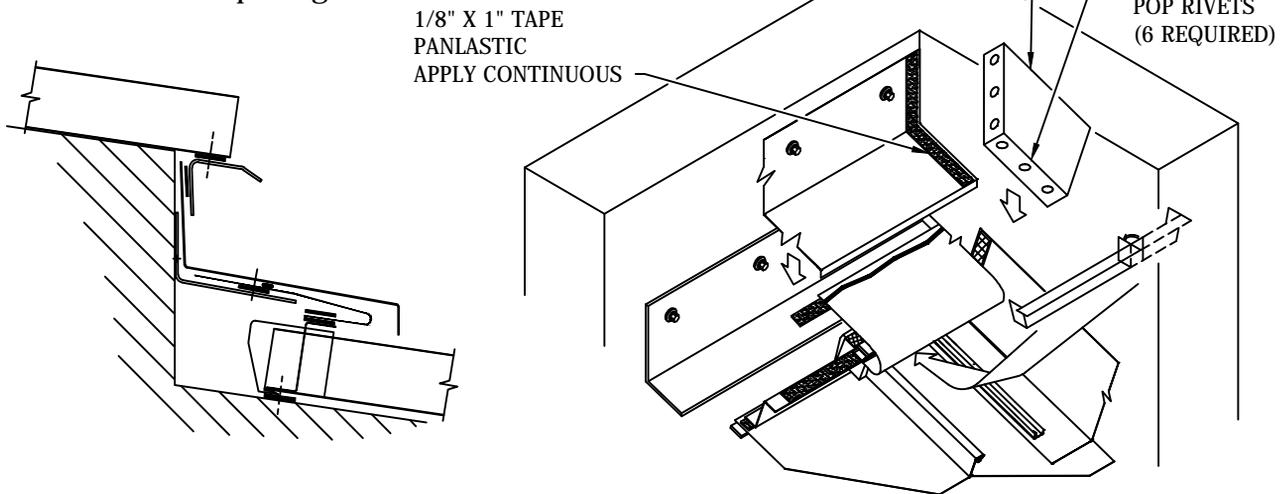
# STEPPED ROOF TRANSITION INSTALLATION

## INTERMEDIATE APPLICATION AND INSIDE CORNER



### INSTALLATION STEPS:

1. Install panel closures and corrugation plugs. Locate and attach flexible seal with closure straps along the entire length of the transition. When splice is required apply sealant and staple together.

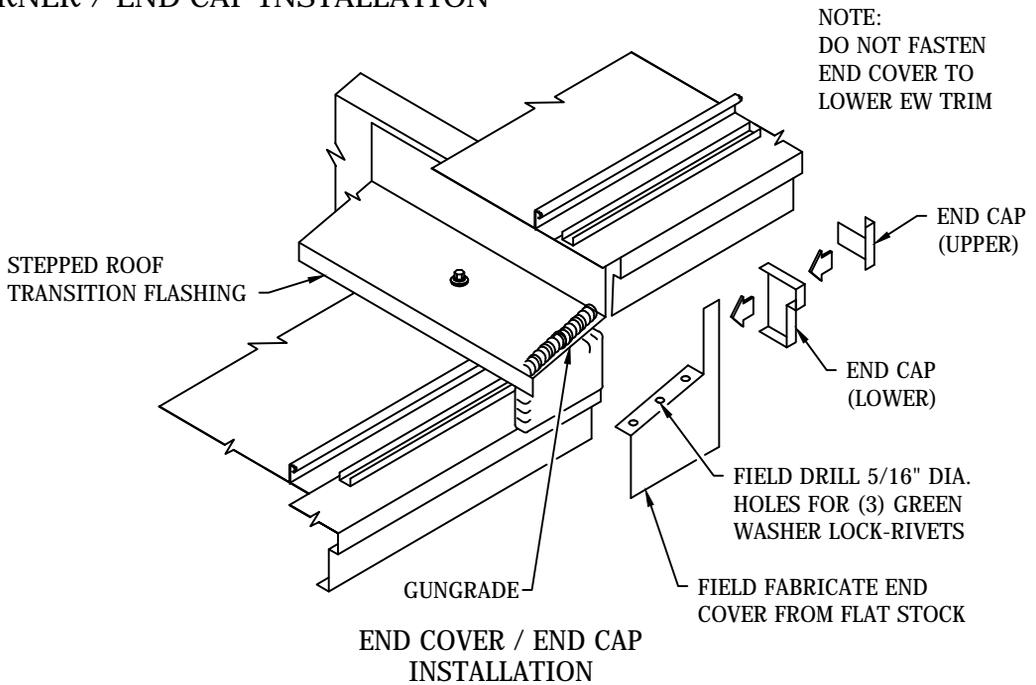


### INSTALLATION STEPS:

2. Allow enough flexible seal material to turn up several inches above the corrugation. Bend closure strap up to hold flexible seal in position.
3. Field cut perpendicular roof to wall flashing to length. Apply Panlastic as shown. Field fabricate inside corner flashing and install.
4. Apply Panlastic and attach closure support.

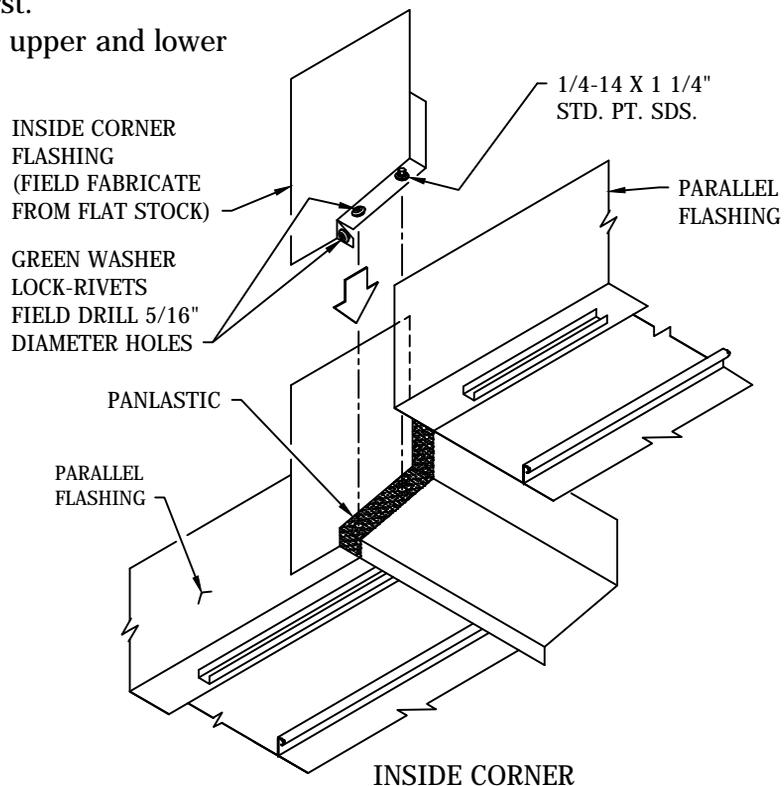
NOTE: Field fabricate inside corner flashing from flat stock material. (Flat stock not included unless ordered.)

## INSIDE CORNER / END CAP INSTALLATION



### INSTALLATION STEPS:

1. Stepped roof flashing and endwall gable trim must be installed first.
2. Apply sealant and install upper and lower end caps.

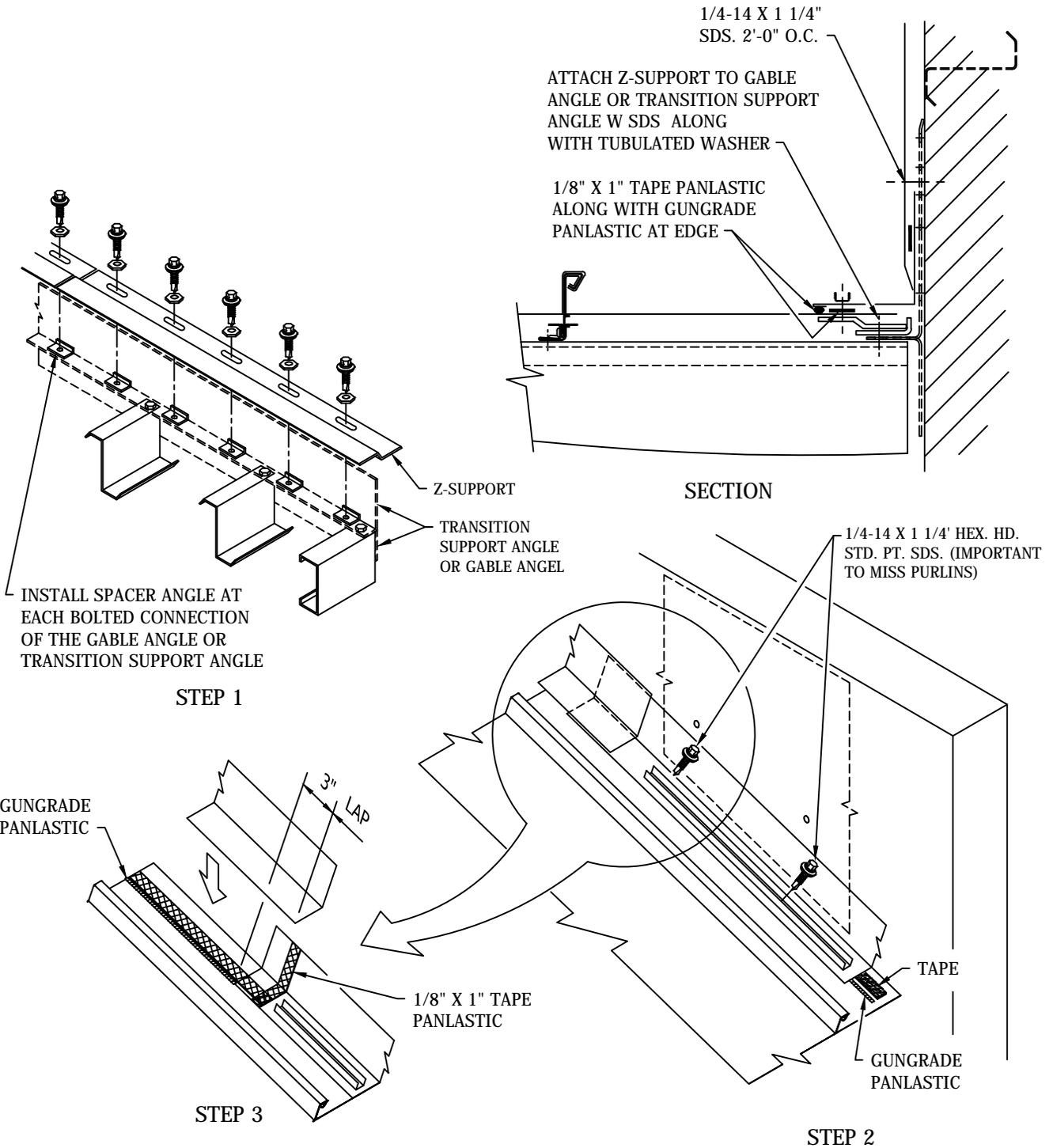


### INSTALLATION STEPS:

1. Stepped roof and parallel flashing must be installed first.
2. Field form and install inside corner flashing.

NOTE: Field form end cover and inside corner flashing from flat stock material. (Flat stock not included unless ordered.)

# EXPANDABLE ROOF TO WALL TRANSITION INSTALLATION



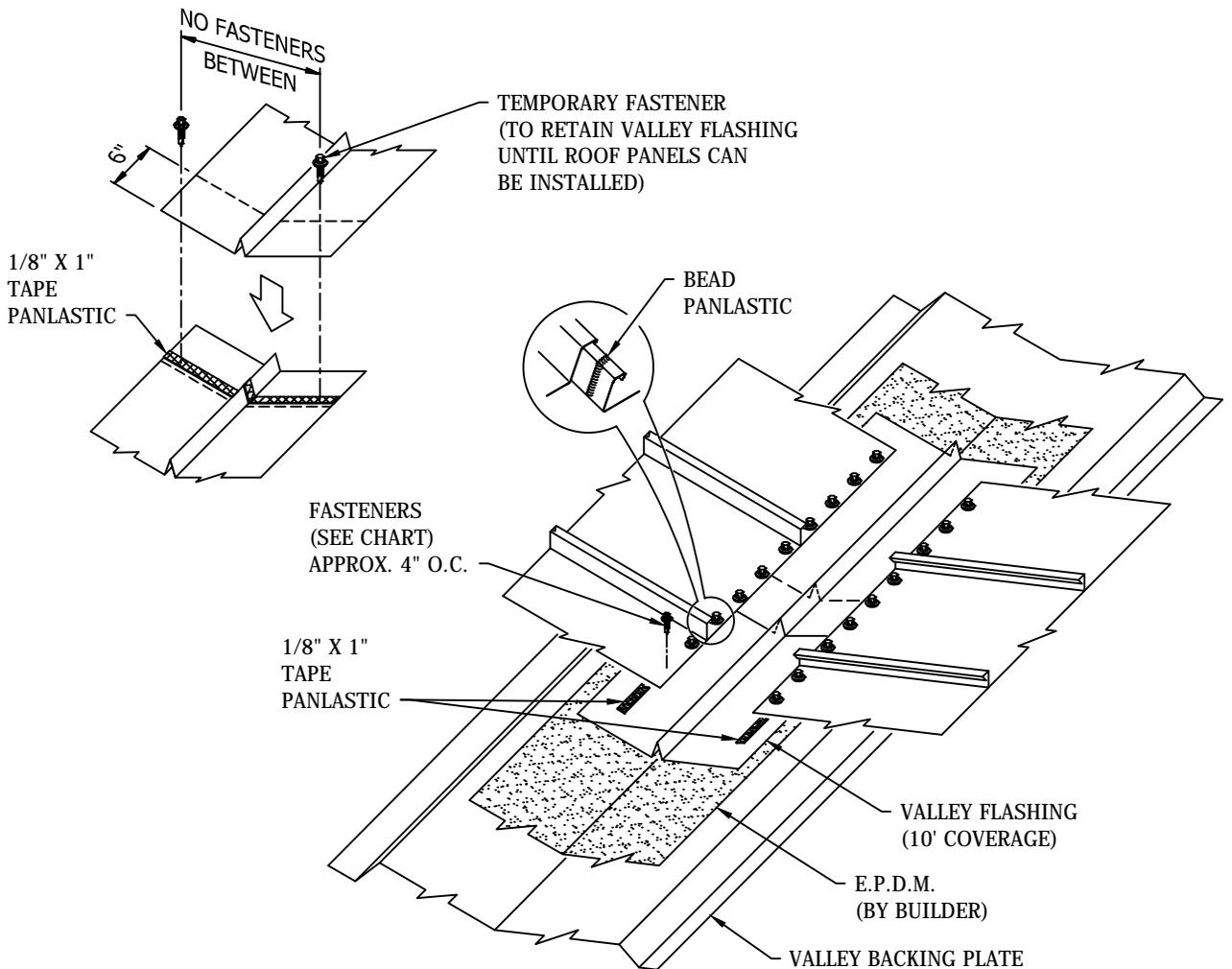
## INSTALLATION STEPS:

1. Attach Z-support to gable angle with spacer angle acting as shim.
2. With roof panel in place apply sealant continuous at top surface.
3. Attach parallel flashing and splice as required.
4. Install counter flashing.

NOTE: Field form counter flashing from flat stock material. (Flat stock not included unless ordered.)

# VALLEY FLASHING INSTALLATION

## VALLEY FLASHING AND SPLICE INSTALLATION

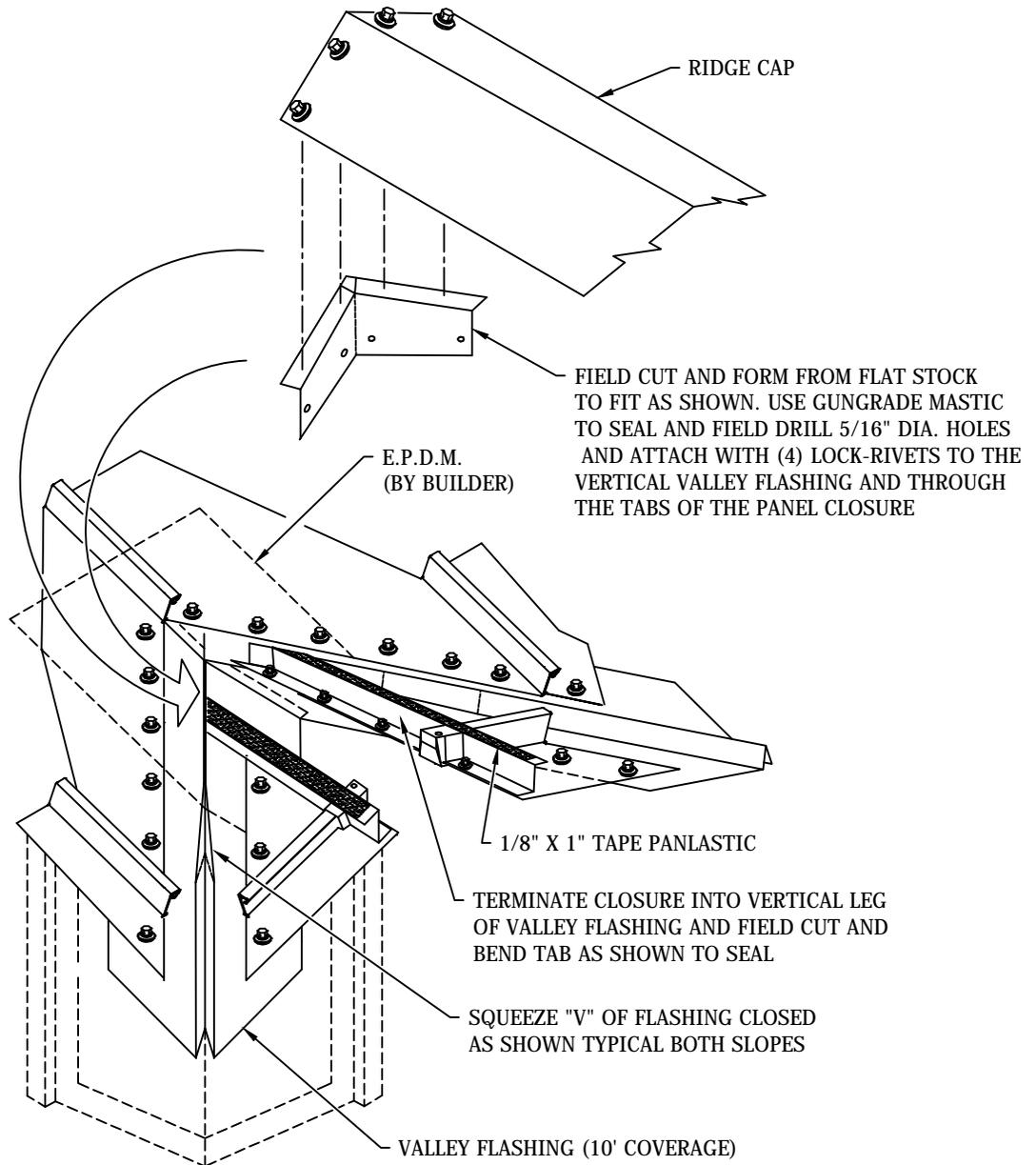


FASTENER CHART	
DESCRIPTION	STRUCTURE
1/4-14 X 7/8" MINI PT. SDS.	LIGHT STEEL OR WOOD (< .035)
1/4-14 X 1 1/4" STD. PT. SDS.	HVY. STL. ( ≥ .035 THK.)

### INSTALLATION STEPS:

1. Once E.P.D.M. is layed, begin installing valley flashing at eave of building and work up slope. Lap upper valley flashing 6" applying tape Panlastic as shown. Temporarily secure valley flashing at corner as shown.
2. Field cut roof panels on miter and clean all burrs from Panel edge. Stringline edge of roof Panel. Apply the tape Panlastic continuously as show. Install the cut roof panels by applying bead Panlastic at corrugation and then fastening Panel as shown.

## VALLEY FLASHING INTERSECTION

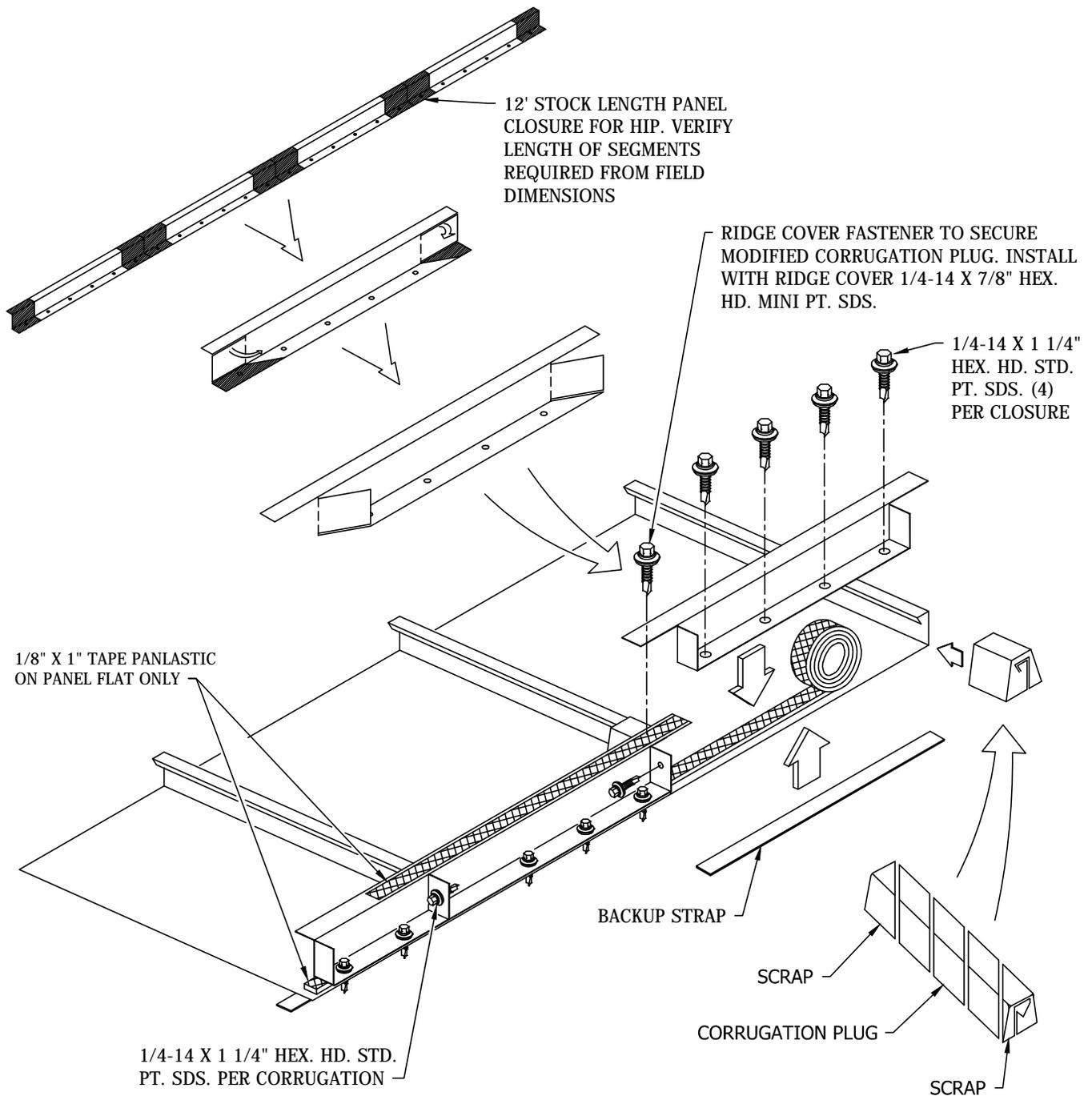


### INSTALLATION STEPS:

1. Field form and locate inside corner flashing to valley flashing and modify panel closures.
2. Apply sealant continuous at top surface of panel closures and attach ridge cap.

NOTE: Field form inside corner flashing from flat stock material. (Flat stock not included unless ordered.)

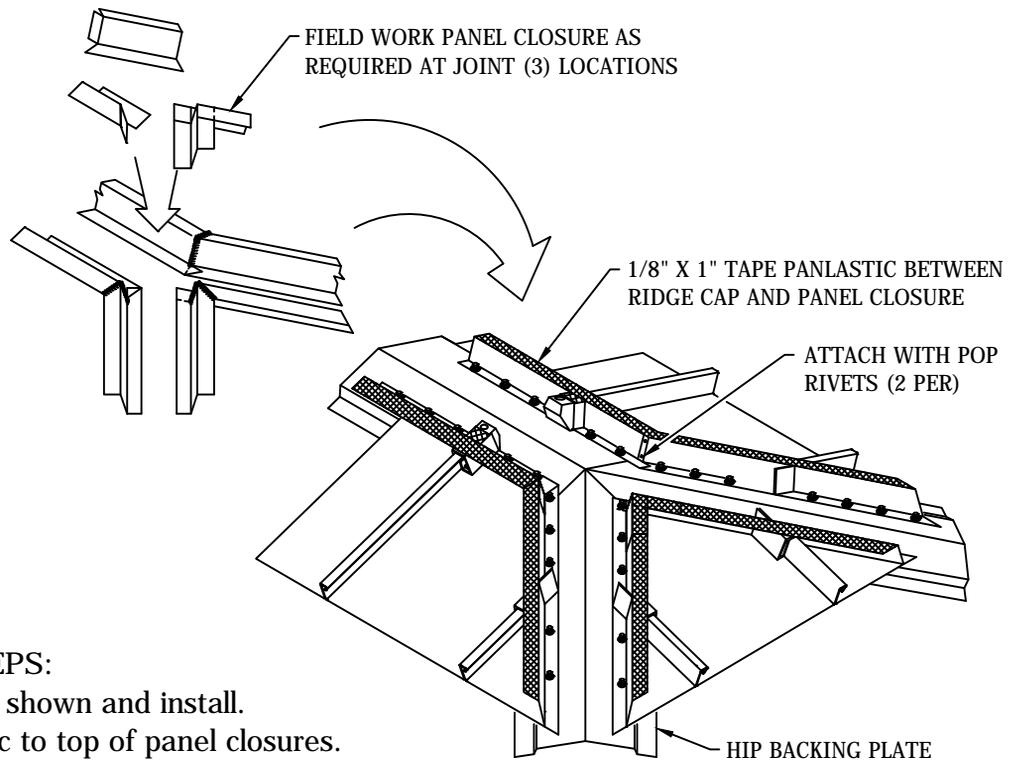
# HIP CLOSURE / PANEL INSTALLATION



## INSTALLATION STEPS:

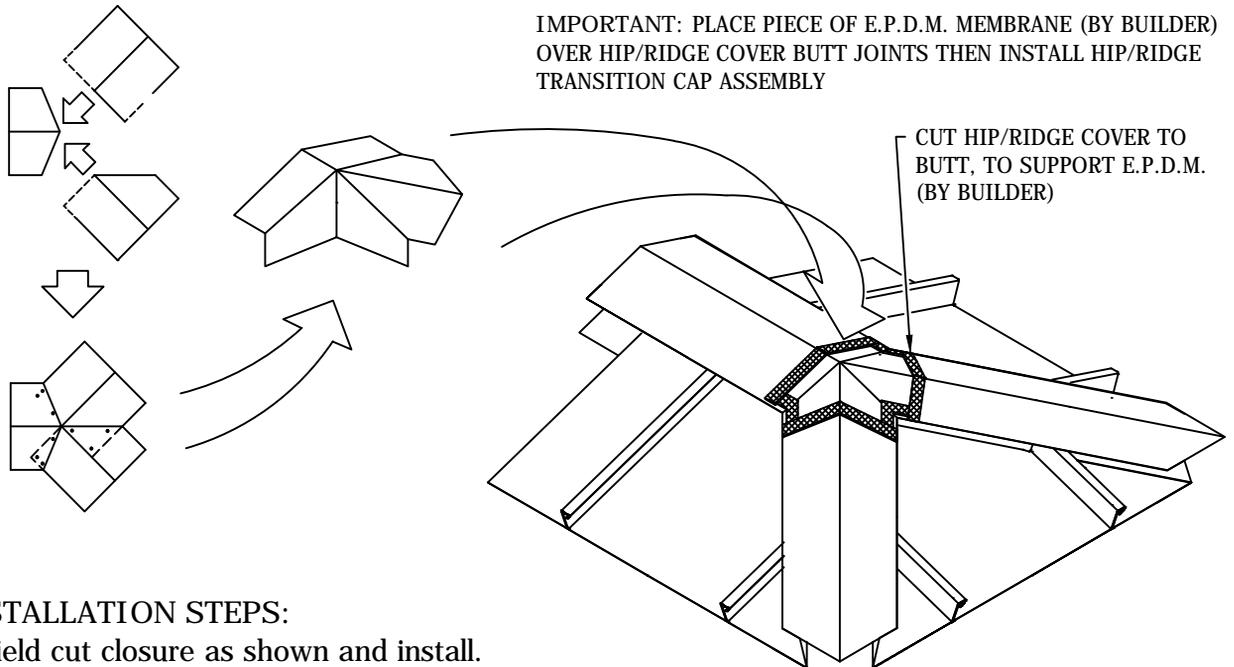
1. Once panels have been field mitered and notched. "Dry Fit" panel closure and cut plug.
2. Then, apply tape Panlastic along edge of mitered roof panel continuous over notched corrugation. Applying additional tape as required, align so that Panlastic is center in approximate location of panel closure bottom flange.
3. Next, install field mitered panel closure along with backup straps using self-drilling screws in all pilot hole locations of bottom flange.
4. Last, push mitered corrugation plugs up to panel closure.

# HIP / RIDGE TRANSITION INSTALLATION LOW PROFILE RIDGE



## INSTALLATION STEPS:

1. Field cut closure as shown and install.
2. Apply tape Panlastic to top of panel closures.

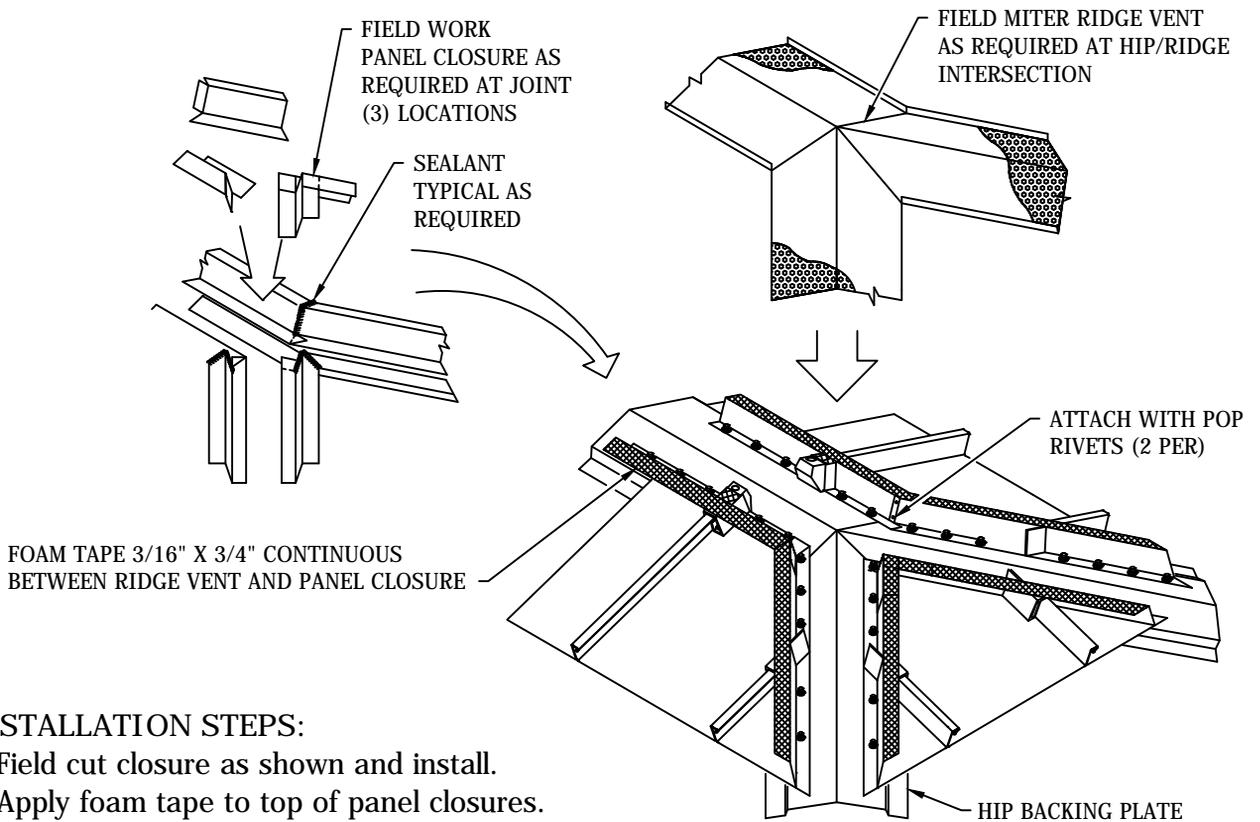


## INSTALLATION STEPS:

1. Field cut closure as shown and install.
2. Apply tape Panlastic to top of panel closures.
3. Field fab hip / ridge cover.
4. Apply tape Panlastic to top of panel closure to receive E.P.D.M..
5. Apply hip / ridge transition cap assembly over E.P.D.M..
6. Attach hip / ridge transition cap.

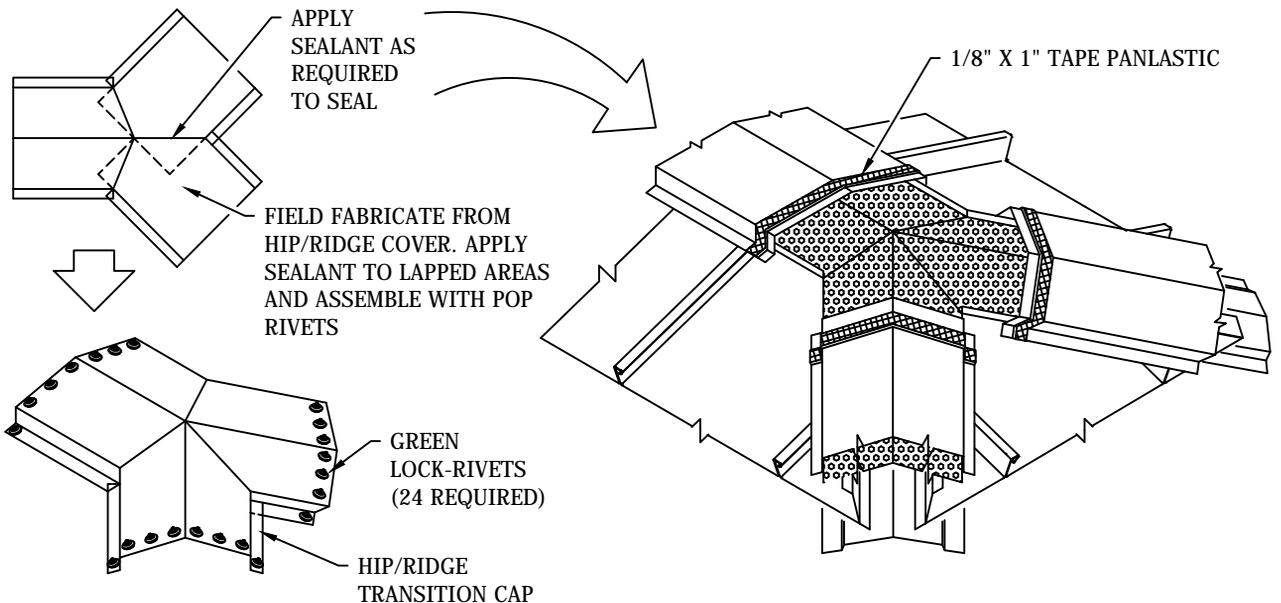
NOTE: Field fabricate hip / ridge cover from ridge cap material.

# HIP / RIDGE TRANSITION INSTALLATION VENTED RIDGE



## INSTALLATION STEPS:

1. Field cut closure as shown and install.
2. Apply foam tape to top of panel closures.
3. Field miter ridge vent and install.

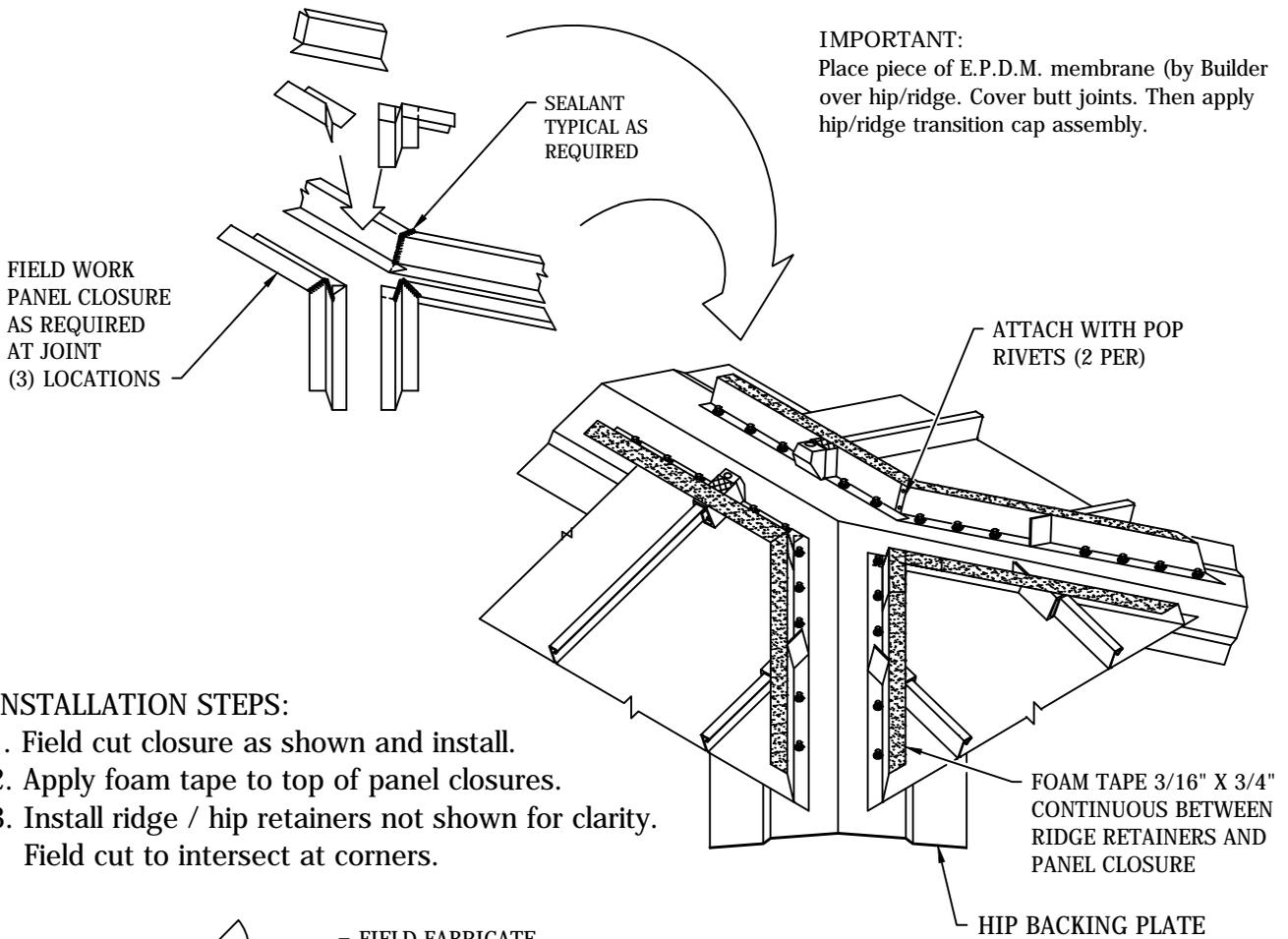


## INSTALLATION STEPS:

4. Field fab hip / ridge cover.
5. Install hip / ridge covers.
6. Apply tape Panlastic to top of hip / ridge covers to receive hip / ridge transition cap.

NOTE: Field fabricate hip / ridge transition cap from ridge cover material.

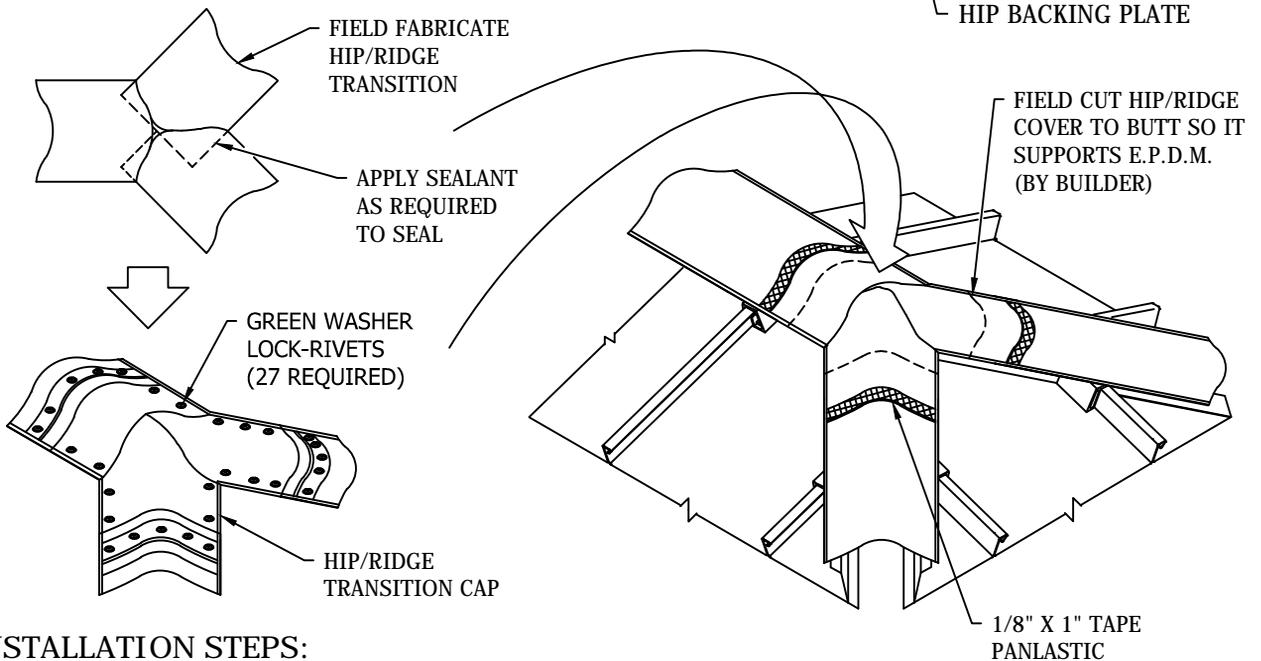
# HIP / RIDGE TRANSITION INSTALLATION EXPANSION RIDGE



**IMPORTANT:**  
Place piece of E.P.D.M. membrane (by Builder over hip/ridge. Cover butt joints. Then apply hip/ridge transition cap assembly.

## INSTALLATION STEPS:

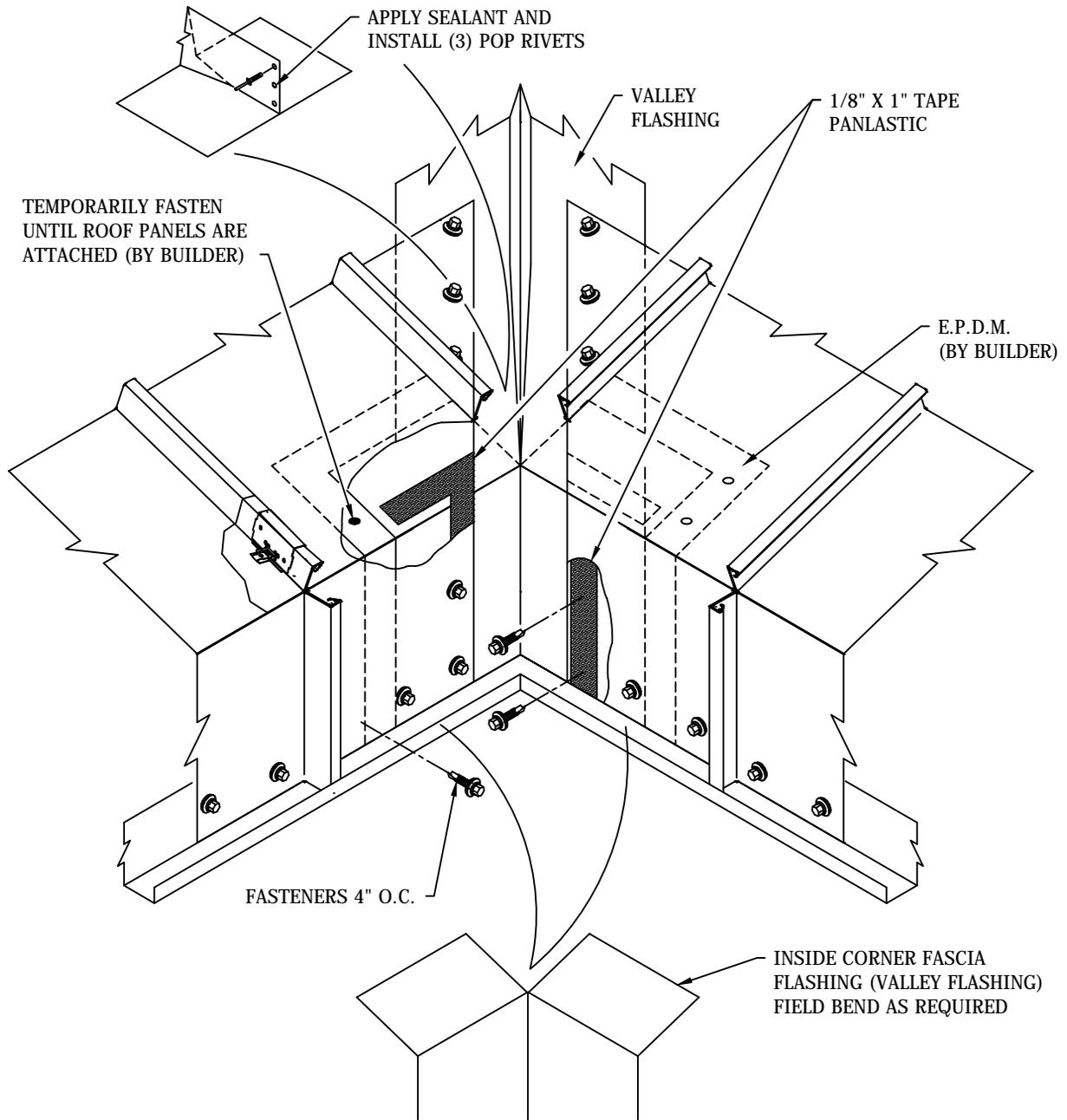
1. Field cut closure as shown and install.
2. Apply foam tape to top of panel closures.
3. Install ridge / hip retainers not shown for clarity.  
Field cut to intersect at corners.



## INSTALLATION STEPS:

4. Field fab hip / ridge transition cap from hip / ridge cover.
5. Apply tape panlastic to top of panel closure to receive EPDM.
6. Apply hip / ridge transition cap assembly over E.P.D.M..
7. Apply hip / ridge transition / cap.

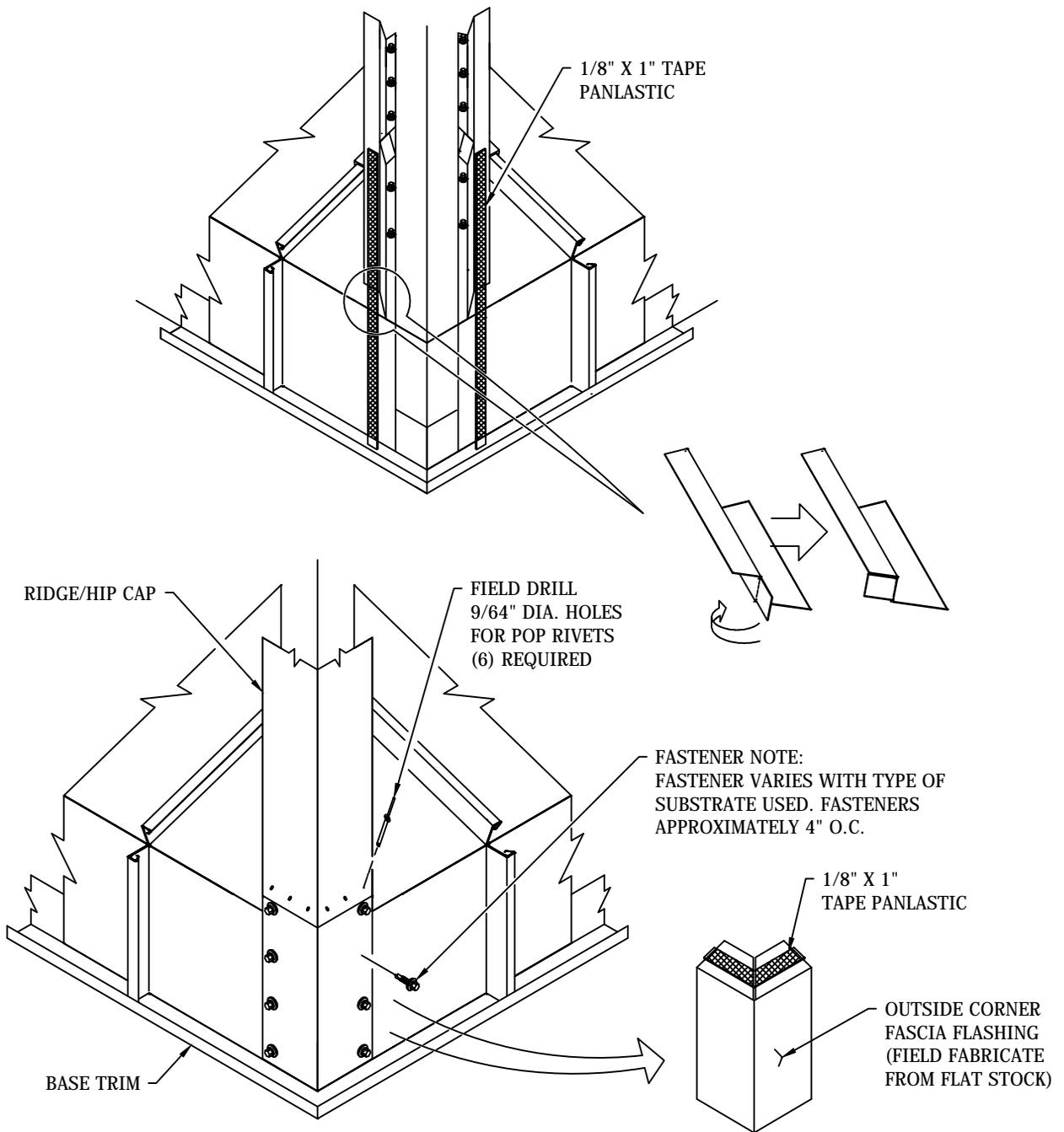
# FASCIA - INSIDE CORNER INSTALLATION AT VALLEY FLASHING



## INSTALLATION STEPS:

1. Apply E.P.D.M. continuous down valley and fascia.
2. Field fabricate inside corner of fascia flashing from valley flashing.
3. Install inside corner fascia flashing and fasten temporarily.
4. Apply a continuous run of tape Panlastic to top of flashing as shown to receive valley flashing.
5. Beginning at low eave and working upslope field cut valley flashing and install over corner flashing. Crimp valley flashing "V" at edge of roof.
6. Apply a continuous run of tape Panlastic from valley to corner flashing to receive / fascia panels.

# FASCIA - OUTSIDE CORNER INSTALLATION LOW PROFILE RIDGE



## INSTALLATION STEPS:

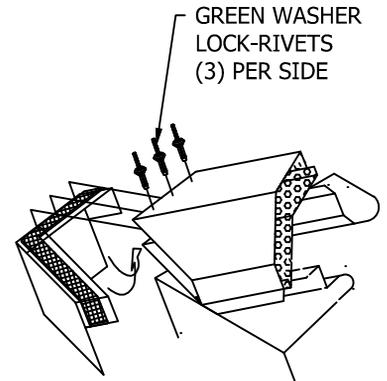
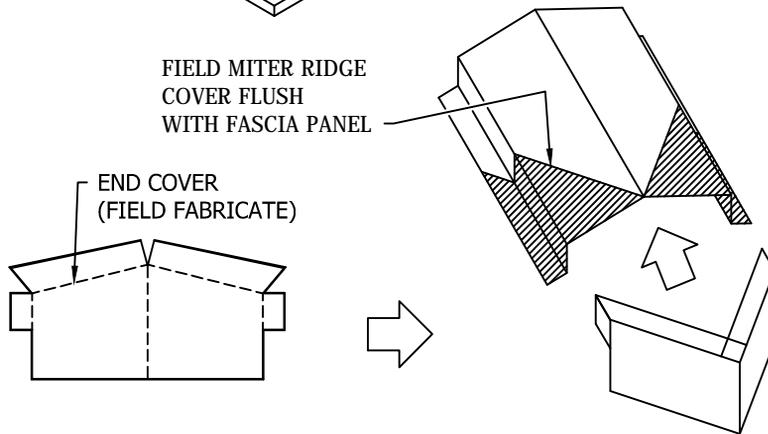
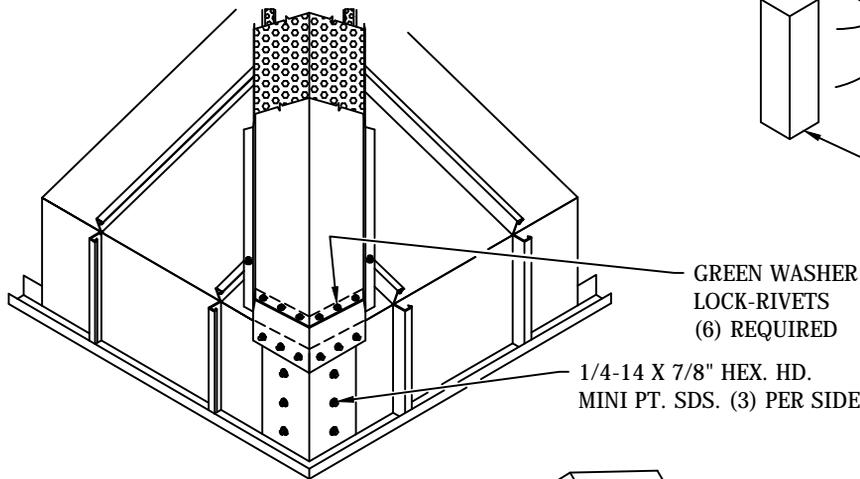
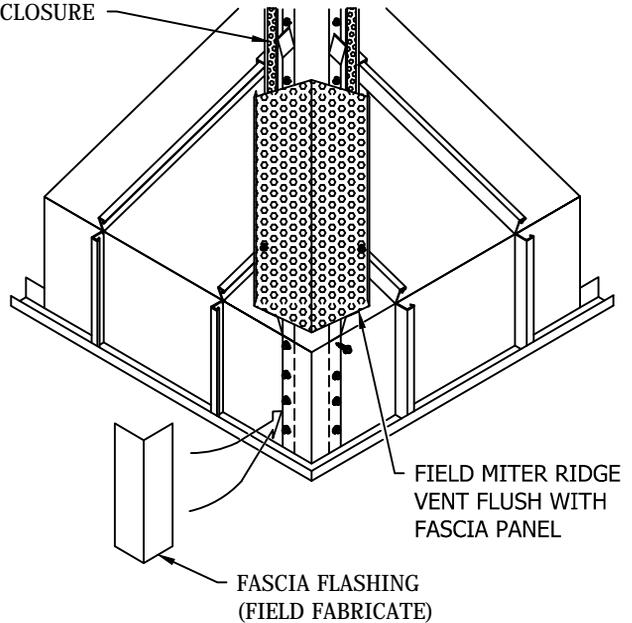
1. Modify end of panel by notching upper and lower flange to form a 1 1/2" tab. Bend tab as shown and install.
2. Install ridge / hip cap.
3. Secure ridge / hip cap and outside corner fascia flashing connection with pop rivets.
4. Install roof / fascia panel and base trim and secure with fasteners. Fastener varies. (See fastener chart)
5. Apply mastic as shown.
6. Install outside corner fascia flashing first and secure with fasteners. Then apply tape Panlastic to top tabs to receive ridge / hip cap.

# FASCIA - OUTSIDE CORNER INSTALLATION VENTED RIDGE

FOAM TAPE 3/16" X 3/4" CONTINUOUS  
BETWEEN RIDGE VENT AND PANEL CLOSURE

## INSTALLATION STEPS:

1. Attach ridge vent at corner and field miter flush with face of fascia pannel.
2. Apply tape panlastic and attach fascia flashing.

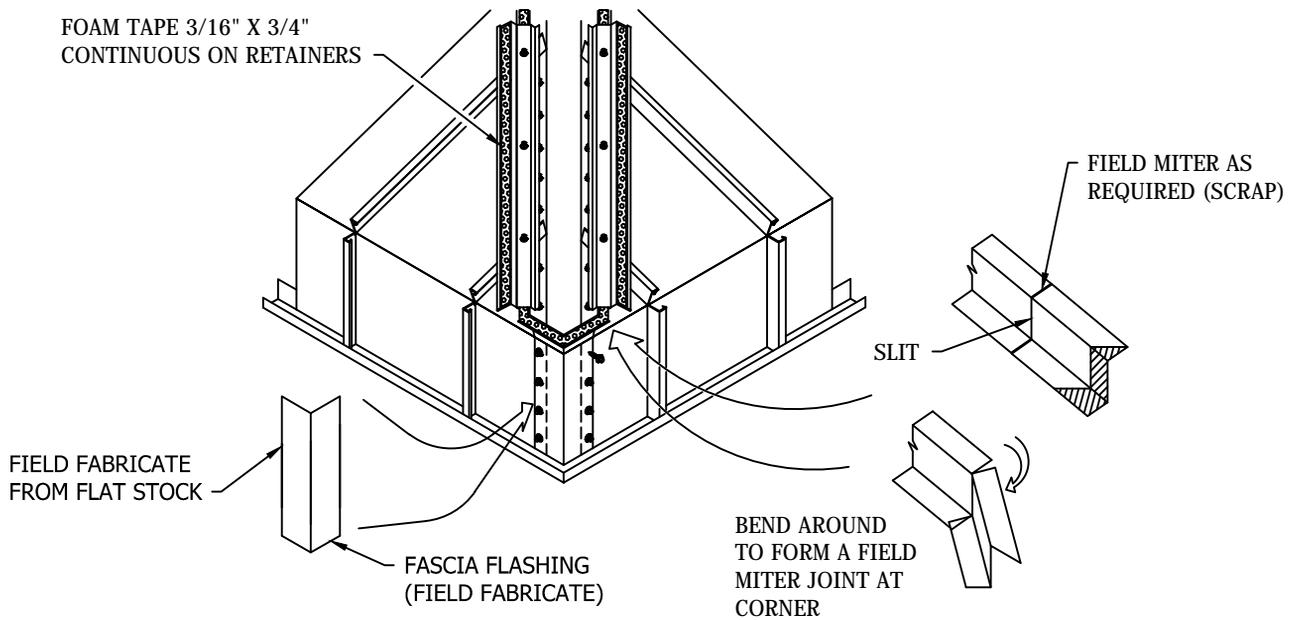


## INSTALLATION STEPS:

3. Field miter ridge cover flush with face of fascia pannel.
4. Apply tape Panlastic over end cover. (Field fabricate.)
5. Installing ridge cover and end cover.

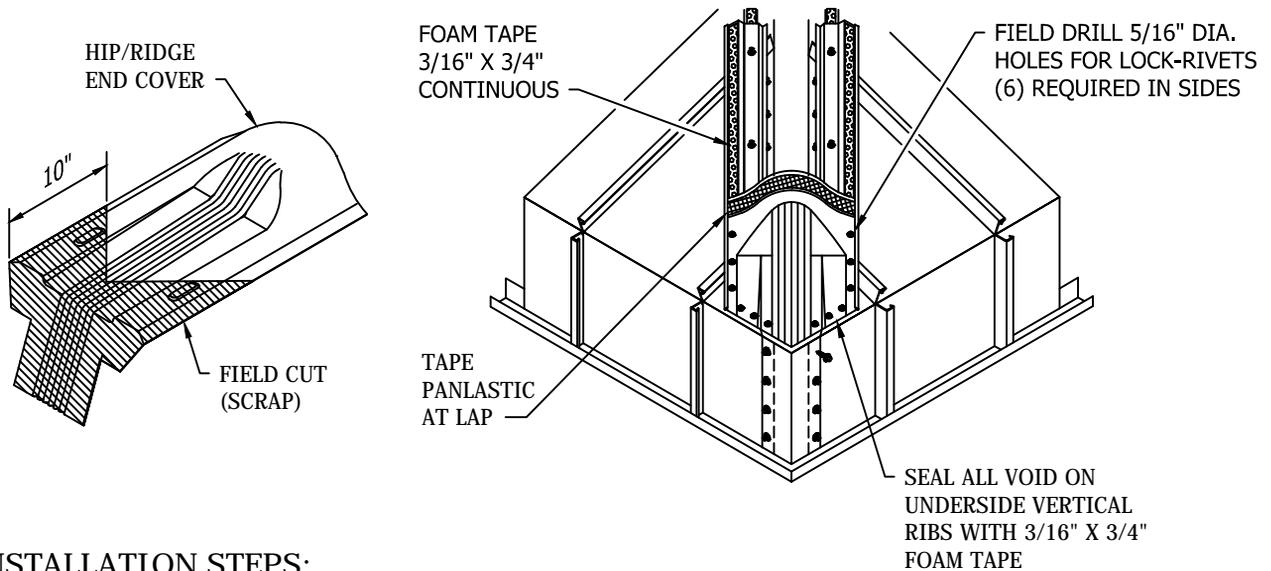
NOTE: Field fabricate fasica flashing and end cover from that stock material. (Flat stock not: included unless ordered.)

# FASCIA - OUTSIDE CORNER INSTALLATION EXPANSION RIDGE



## INSTALLATION STEPS:

1. Complete roof panel and panel closure installation as shown.
2. Attach hip / ridge retainer as required.
3. Apply tape panlastic and attach fascia flashing.



## INSTALLATION STEPS:

4. Field fabricate hip / ridge transition corner.
5. Field modify hip / ridge end cover.
6. Install hip / ridge transition corner along with hip / ridge end cover as shown. (Be sure to seal all voids on underside ribs of hip / ridge end cover with foam tape.)

NOTE: Field fabricated fascia flashing from flat stock material. (Flat stock not included unless ordered.)