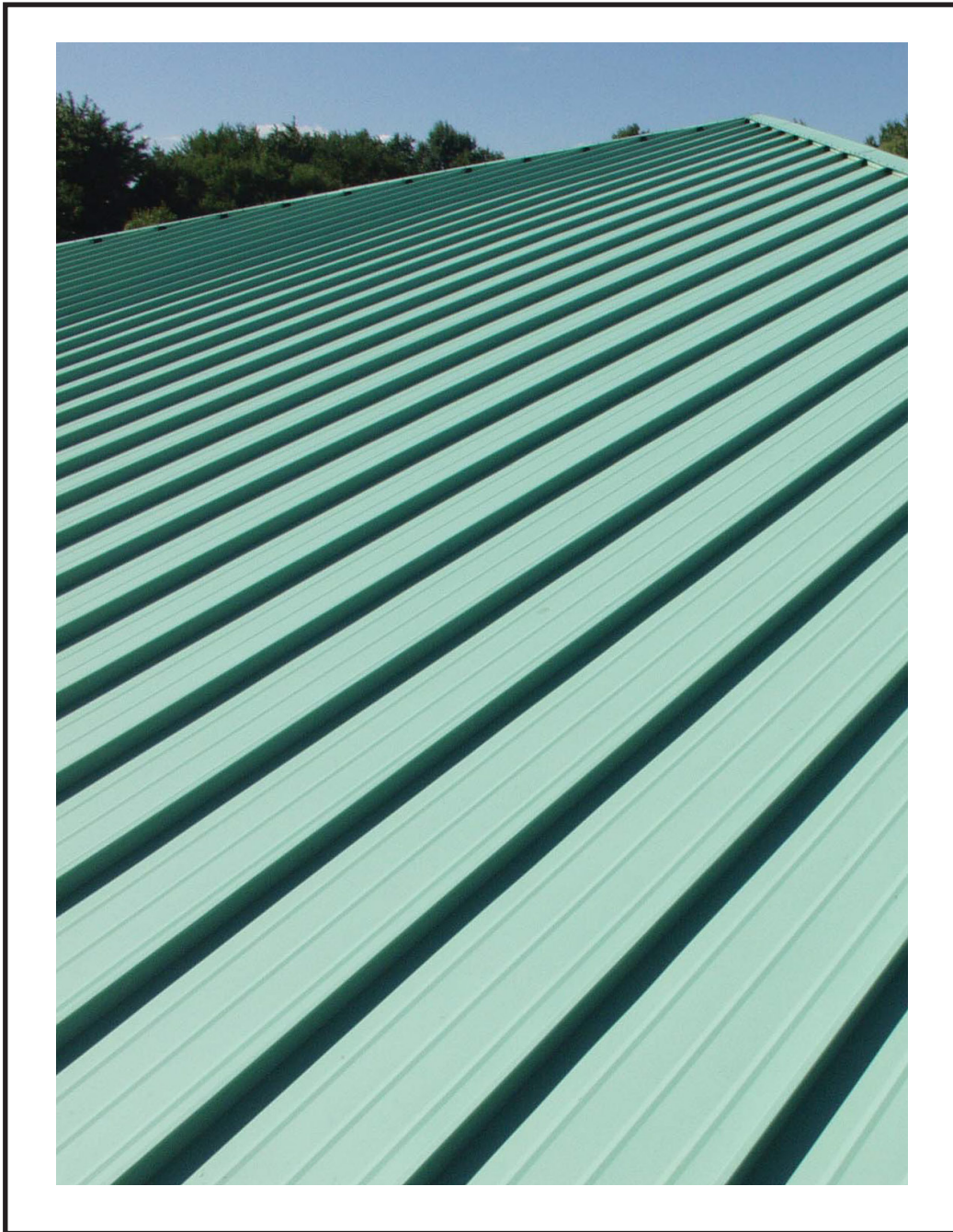


INSTALLATION GUIDE



Roofing & Building Maintenance

3735 Green Road • Beachwood, Ohio 44122
216.292.5000 • www.tremcoroofing.com

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FORWARD

This manual is provided for the use and convenience of Tremco Roofing and Building Maintenance customers for the installation of TremLock VP standing seam roof products. It should be thoroughly read in its entirety before beginning a TremLock VP roof installation.

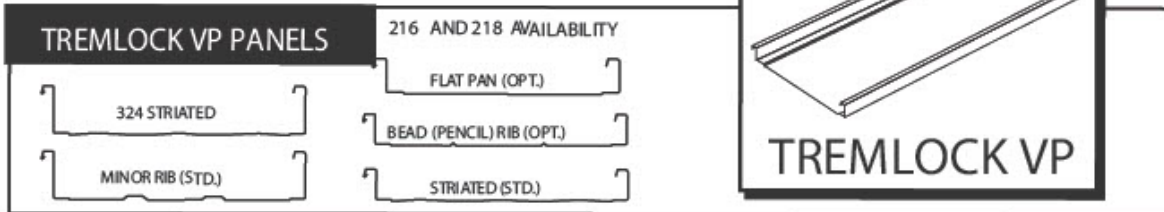
Contents of this manual are subject to change and revision without notice. This manual is shipped with each order of TremLock VP panels and is available from Tremco Roofing and Building Maintenance upon request.

Because the manual is revised from time to time, users are advised to check the date and revision numbers on the back cover to be sure that this manual is the most current copy in print. This may be verified by contacting Tremco Roofing and Building Maintenance Tech Services at the number and address shown below:

Clarification concerning TremLock VP roof installation should be directed to the Tremco Roofing and Building Maintenance Metal Technical Service Manager at:

Tremco Roofing and Building Maintenance
3735 Green Road
Beachwood, OH 44122
Phone: 1-800-852-6013
Fax: (216) 292-5076

TREMLOCK VP TECHNICAL DATA



IMPORTANT
Flat Pan or Pencil Ribs may increase the effect of oil canning. Oil canning is not a cause for panel rejection, and if ordering these products the customers purchase order must acknowledge this.

READ THIS FIRST

ATTENTION

Diaphragm capabilities and purlin stability are not provided by standing seam roof systems. Therefore, other bracing may be required to conform to A.I.S.C. or A.I.S.I. specifications. Final procedures to be determined by dealer.

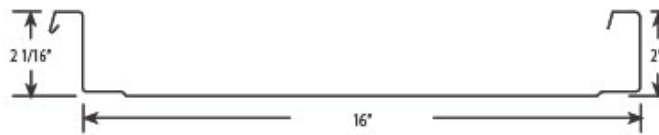
GUIDELINES

1. Roof slope minimum 1/2" on 12" for 2" high panels, 1/4" on 12" for 3" high panels
 Above 4:12" require some special trim parts. And, when installed over open framing with insulation, some purlin read-through will occur.
2. It would greatly facilitate designing, quoting, ordering and erecting of the roof system if you determine which clip system is required, based on building width and insulation as shown below.
3. A floating Clip System must be used with a bar joist application.
4. For UL90. Please review UL Construction #506 or #507.
5. For special clip attachments or conditions - please consult the Tremco Metal Technical Services Department.
6. If using insulation less than 2" thick - you may hear a drumming effect coming off the roof, during rainfall or highwinds. This is not a panel defect.
7. Roof penetrations: Please inquire with Tremco Metal Technical Services Department.
8. Irregular Designs: Please inquire with Tremco Metal Technical Services Department.

Building Clip Parameters

Utility -	Single Slope - 30' wide or less Double Slope - 60' wide or less	Low - with up to 3" Blanket Insulation High - with up to 6" Blanket Insulation (Thermal Spacer may be required depending on density of insulation)
Fixed -	Single Slope - 30' wide or less Double Slope - 60' wide or less	Utility - without blanket insulation
Floating -	Single Slope - 30' wide Double Slope - 60' wide All Bar Joist Applications regardless of width.	

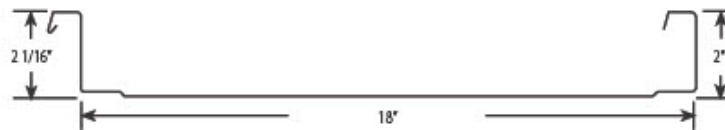
TREMLOCK VP TECHNICAL DATA



TREMLOCK VP 216 SECTION PROPERTIES									
Gauge	F _y (ksi)	Wt. (psf)	Design Thick (inch)	Panel Top in Compression			Panel Bottom in Compression		
				I _x (in ⁴)	S _e (in ³)	M _a (k-in)	I _x (in ⁴)	S _e (in ³)	M _a (k-in)
24	50	1.360	0.024	0.2130	0.1229	3.630	0.1215	.01067	3.196
22	50	1.694	0.030	0.2730	0.1593	4.769	0.1575	0.1337	4.004

NOTE: Section properties are calculated in accordance with 1996 AISI Specifications. S_e and M_a are for stress determination; I_x is for deflection determination.

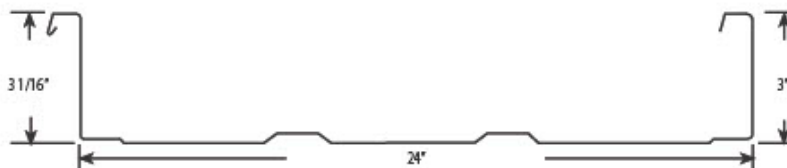
24 gauge: Allowable intermediate bearing at 3" = 0.686 kip/ft
Allowable end bearing at 2" = 0.212 kip/ft



TREMLOCK VP 218 SECTION PROPERTIES									
Gauge	F _y (ksi)	Wt. (psf)	Design Thick (inch)	Panel Top in Compression			Panel Bottom in Compression		
				I _x (in ⁴)	S _e (in ³)	M _a (k-in)	I _x (in ⁴)	S _e (in ³)	M _a (k-in)
24	50	1.317	0.024	0.1933	0.1089	3.260	0.1080	0.0949	2.841
22	50	1.317	0.030	0.2437	0.1417	4.242	0.1400	0.1189	3.560

NOTE: Section properties are calculated in accordance with 1996 AISI Specifications. S_e and M_a are for stress determination; I_x is for deflection determination.

24 gauge: Allowable intermediate bearing at 3" = 0.686 kip/ft
Allowable end bearing at 2" = 0.212 kip/ft

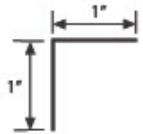
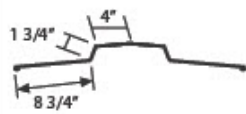
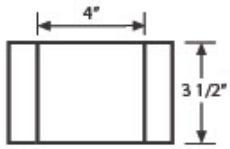
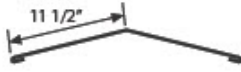
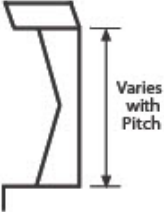
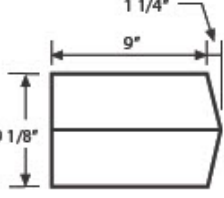
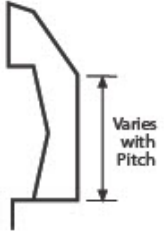
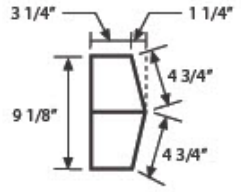
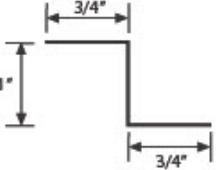
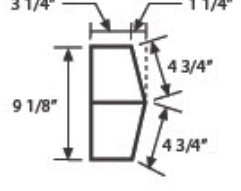


TREMLOCK VP 324 SECTION PROPERTIES									
Gauge	F _y (ksi)	Wt. (psf)	Design Thick (inch)	Panel Top in Compression			Panel Bottom in Compression		
				I _x (in ⁴)	S _e (in ³)	M _a (k-in)	I _x (in ⁴)	S _e (in ³)	M _a (k-in)
24	50	1.311	0.024	0.324	0.1221	3.656	0.3008	0.1394	3.573
22	50	1.643	0.030	0.4345	0.1668	4.993	0.2540	0.1543	4.619

NOTE: Section properties are calculated in accordance with 1996 AISI Specifications. S_e and M_a are for stress determination; I_x is for deflection determination.

24 gauge: Allowable intermediate bearing at 3" = 0.642 kip/ft
Allowable end bearing at 2" = 0.192 kip/ft

•••• TREMLOCK VP ••••

TRIM SELECTION			
	<p>CINCH ANGLE 26 GA</p>		<p>FLOATING RIDGE FLASHING* *specify desired pitch 24 GA</p>
	<p>DOWNSPOUT OUTLET 26 GA</p>		<p>FIXED RIDGE FLASHING* *specify desired pitch 24 GA</p>
	<p>FIXED PEAK BOX* *specify desired pitch 24 GA</p>		<p>GUTTER CORNER BOX* *1/4:12 to 2:12 26 GA</p>
	<p>FLOATING PEAK BOX* *specify desired pitch 24 GA</p>		<p>GUTTER CORNER BOX* *over 2:12 26 GA</p>
	<p>GUTTER STRAP 24 GA</p>		<p>SCULPTURED CORNER BOX* *specify desired pitch 26 GA</p>

•••• TREMLOCK VP ••••

TRIM SELECTION			
	<p>2" TREMLOCK VP GUTTER* 1/2:12 to 2:12 pitch</p>		<p>HI-SIDE CORNER BOX 26 GA</p>
	<p>2" TREMLOCK VP GUTTER* over 2:12 pitch 24 GA</p>	<p>Varies with Pitch</p>	<p>HI-SIDE TRIM* *specify desired pitch 24 GA</p>
	<p>3" TREMLOCK VP GUTTER* 1/4:12 to 2:12 pitch 24 GA</p>		<p>RAKE SLIDE* 24 GA</p>
	<p>3" TREMLOCK VP GUTTER* over 2:12 pitch 24 GA</p>		<p>RAKE TRIM* 24 GA</p>
<p>Varies with Pitch</p>	<p>END CAP* *specify desired pitch 26 GA</p>		<p>SIMPLE EAVE TRIM* 24 GA</p>

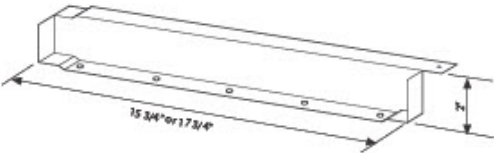
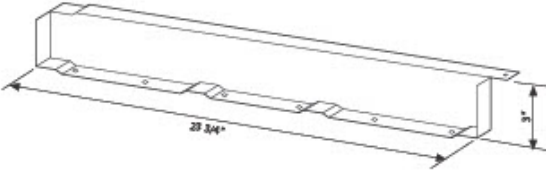
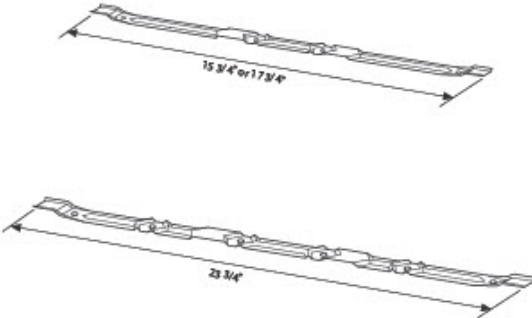
•••• TREMLOCK VP ••••

TRIM SELECTION			
	<p>2:16 and 2:18 SCULPTURED EAVE TRIM *specify desired pitch 24 GA</p>		<p>HIP FLASHING specify desired pitch 24 GA</p>
	<p>3:24 SCULPTURED EAVE TRIM 1/4:12 to 2:12 pitch 24 GA</p>		<p>FLOATING HIP FLASHING specify desired pitch 24 GA</p>
	<p>3:24 SCULPTURED EAVE TRIM over 2:12 pitch 24 GA</p>		<p>VALLEY FLASHING specify desired pitch 24 GA</p>
	<p>2:16 and 2:18 ZEE CLOSURE 24 GA</p>		<p>OFFSET CLEAT 24 GA</p>
	<p>3:24 ZEE CLOSURE 24 GA</p>		

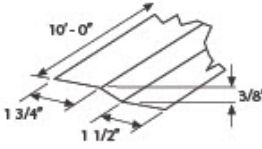
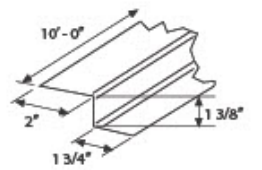
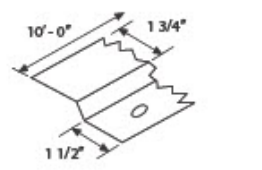
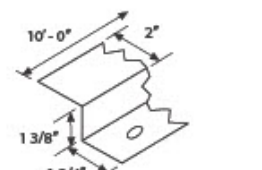
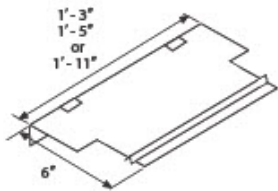
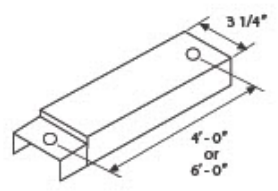
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ACCESSORIES (CLIPS)	
	<p>High Fixed Clip: 22 GA.</p> <p>Used for panel runs of 30' or less with up to 6" of blanket insulation. Attach with two (2) fasteners per clip</p>
	<p>Low Fixed Clip: 22 GA.</p> <p>Used for panel runs of 30' or less with up to 3" of blanket insulation. Attach with two (2) fasteners per clip</p>
	<p>Utility Fixed Clip: 22 GA.</p> <p>Used for panel runs of 30' or less without blanket insulation. Attach with two (2) fasteners per clip</p>
	<p>Low Float Clip: 22 GA. Clip with 16 GA. base</p> <p>3 1/2" total slide for thermal movement used with up to 3" of blanket insulation. Attach with two (2) fasteners per clip</p>
	<p>High Float Clip: 22 GA. Clip with 16 GA. base</p> <p>3 1/2" total slide for thermal movement used with up to 6" of blanket insulation. Attach with two (2) fasteners per clip</p>







•••• TREMLOCK VP ••••

ACCESSORIES (CLOSURES)	
	<p>2" Outside Closure: 24 GA.</p> <p>Used at ridge, * hip or high side end of panel run. * Field cut at hip Bare or Color</p>
	<p>3" Outside Closure: 24 GA.</p> <p>Used at ridge, * hip or high side end of panel run. * Field cut at hip Bare or Color</p>
	<p>Cinch Strap: 20 GA.</p> <p>Used at panel lap Bare or Color</p> <p>NOTE: May be omitted on slopes of 3:12 or greater.</p>

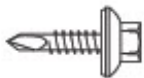

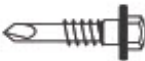

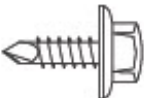
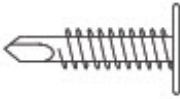

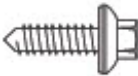
•••• TREMLOCK VP ••••

PARTS	
 <p>Low Eave Plate & Low Fixed Rake Plate</p>	<p>Low Eave with Low Fixed or Floating Clips Rake End with Low Fixed Clips - 16 ga.</p>
 <p>High Eave Plate & High Fixed Rake Plate</p>	<p>High Eave with High Fixed or Floating Clips Rake End with High Fixed Clips - 16 ga.</p>
 <p>Low Floating Rake Plate</p>	<p>Rake End with Low Floating Clips - 16 ga.</p>
 <p>High Floating Rake Plate</p>	<p>Rake End with High Floating Clips - 16 ga.</p>
 <p>1'-3" 1'-5" or 1'-11" 6"</p>	<p>Back-Up Plate: 16 GA. Panel Lap, Ridge & High Side End of Panel Run</p>
 <p>3 1/4" 4'-0" or 6'-0"</p>	<p>Back-Up Channel: 16 GA. Panel Lap, Ridge & High Side End of Panel Run</p>

•••• TREMLOCK VP ••••

PARTS		
	<p>Tube Sealant Gray</p>	<p>Outside Closures & Trim Laps</p>
	<p>Thermal Spacer</p>	<p>High Systems with up to 4" of Blanket Insulation</p>
	<p>Spacer</p>	<p>Low Systems without Blanket Insulation</p>
	<p>3/16" Double Bead Tape Sealant</p>	<p>Panel Eave & Outside Closure</p>
	<p>3/32" x 1" Tape Sealant</p>	<p>Panel Lap & Trim</p>
	<p>Pop Rivet 43D</p>	<p>Trim Lap</p>

•••• TREMLOCK VP ••••

FASTENER APPLICATION		
Fasteners	Description	Usage
	1/4" - 14 x 1 1/4" Long - Zac Socket - 3/8" Item# 10977 Self-Drilling	Eave Panel (framing) Lap Outside Closure Miscellaneous
	1/4" - 14 x 1 1/4" Long - Self-Driller Socket - 5/16" Item# 10969 Self-Drilling without washer	Rake Support (fixed) Eave Plate (standard) Fixed Clip Floating Clip (to purlins)
	1/4" - 14 x 1 1/4" Long - Self-Driller w/ shoulder #2 Drill Point Socket - 3/8" Item# 10975 Self-Drilling	Rake Plate (floating to purlin)
	#12 - 24x1 1/4" Long 4.5 Self-Driller Socket - 5/16" Item# 10979 Self-Drilling without washer	Eave Plate (to structural member) Floating Clip (to bar joist)
	#14 x 7/8" Lap/Tek - ZAC Socket - 3/8" Item# 93860 Self-Drilling	Ridge Cap Lap Hi-Side Trim to Closure Gutter (to panel) Gutter Straps Gutter Straps to Gutter Ridge Cap to Outside Closure Rake to Panel
	#10 - 16 x 1" Pancake Head Phillips Plain Item# 36117 Self-Drilling	Utility Clip (2 Required)
	#10 - 12 x 1" Type A	Utility Clip (2 Required) Over Plywood
	#17 x 1" ZAC "Goof Screw"	Use When 1/4" x 14 ZAC Strips Out

NOTES:

1. All exterior roof fasteners are "ZAC", a long life, hi-performance fastener.
2. For special fastener applications, please contact the Technical Services Department.

SECTION A GENERAL INFORMATION

This guide is intended to be used in conjunction with the erection drawings to help plan and organize the installation of the TremLock VP Standing Seam Roof System. The erection drawings govern specific part arrangement and identify the applicable roof conditions. The instructions will help identify parts, establish the installation sequence, demonstrate correct assembly, and point out areas or procedures requiring special emphasis or attention.

This installation guide applies to the TremLock Standing Seam Roof System. Custom roof conditions, including custom details and instructions, will be covered by the erection drawings. In case of conflict between this installation guide and the erection drawings, the erection drawings will take precedence.

Customer's Responsibility

Suitability of details

It is the responsibility of the customer (or designer) to ensure that the details meet particular building requirements to assure adequate watertightness. It is the customer's responsibility to determine suitability of supplemental details for any claims arising from improper detail selection by others or faulty installation of any kind.

Suitability of substrate or structure

It is the responsibility of the customer (or designer) to determine suitability of structure, or substrate for the TremLock VP panel system. It should be code-compliant and properly engineered and constructed for a structural standing seam roof system. It must be true and aligned to avoid panel distortion. TremLock VP panels offer little or no diaphragm stability to the structure, and may not be relied upon for diaphragm support.

Suitability of roof accessories

Tremco Roofing and Building Maintenance may pass along vendor information to its customers for insulation, preformed roof curbs, hatches, vents, pipe flashings and other ancillary items roof accessory items as well as tools and specialty fasteners. This is done as a convenience to the customer and is not to be construed as an approval of any particular roof accessory item for any given application. It is the responsibility of the customer to qualify other vendors and products with respect to quality and suitability for any particular application. Tremco Roofing and Building Maintenance assumes no responsibility for suitability or performance of materials and accessory items furnished by other vendors.

Subcontractor selection

The customer must select a competent installer that is qualified and experienced in the installation of standing seam metal roof systems. The installer should take time to study and understand this guide and follow the guide's instructions. Tremco Roofing and Building Maintenance does not guarantee and is not liable for the qualifications of installer. Tremco Roofing and Building Maintenance is not responsible for defects

that may be attributed to improper installation or the negligence of other parties, suitability of structure, substrates or adjoining work or materials.

Compliance with codes, standards, and sound industry practices

The customer is responsible for proper installation of the roof in accordance with the erection drawings and this installation guide, and other good construction practices as well as code compliance. In the case of tested and rated panel systems, it is the responsibility of the customer to see that actual construction complies with the tested and rated assembly in every detail.

- Panels should be installed straight and accurately.
- Roof clips shall allow for thermal movement and must be installed in strict accordance with Tremco Roofing and Building Maintenance erection drawings with respect to type and quantity of fasteners as well as clip spacing along the panel seam.
- Thermal movement of panels must be considered when attaching to adjacent constructions and materials.
- All areas of roof must have positive drainage of 1/2:12 pitch minimum for 216 and 218 panels, and 1/4:12 pitch minimum for 324 panels, and not allow ponding in any area of the roof.
- Compatibility of adjacent materials (not furnished by Tremco Roofing and Building Maintenance) should be verified.
- No penetrations whatsoever shall be placed in the panel system by fasteners or other roof ancillaries except as shown on the erection drawings.
- Only Tremco Roofing and Building Maintenance furnished or approved sealants shall be used, and only as shown on drawings and within this manual.
- Some field cutting and fitting of panels and flashings is expected and considered part of normal installation.
- "Oil Canning" of the flat portion of metal panels is inherent to metal panels and a common industry phenomenon. It shall not be considered cause for rejection.
- All flashings, closures, and accessories shown on the erection drawings shall be provided by Tremco Roofing and Building Maintenance unless noted otherwise. Installation procedures shall be in accordance with Tremco Roofing and Building Maintenance printed instructions, details, approved shop drawings and the highest industry standards and practices.

Trade knowledge and practices

The customer (and/or) installer of the roof system is responsible for the safe execution of the work. Metal roof installation is a skilled craft requiring considerable trade knowledge and experience. Such knowledge and experience includes general rooftop safety, as well as knowledge of the hazards associated with metal roofing, and the tools and equipment associated there-with. This manual is intended to describe the sequence and proper placement of parts. It is not the intent or purpose of this text or Tremco Roofing and Building Maintenance to train individuals for the craft of Metal Roof Assembly, or to convey all necessary trade knowledge and practice of metal roof installation. Although some general safety commentary is offered in the following text, it is not intended to prescribe comprehensive safety procedures.

If the installer cannot safely assemble the roof in accordance with these instructions, it is the responsibility of the installer to stop the work and determine alternate safety assembly procedures.

Roof Safety Consideration

OSHA

The Occupational Safety and Health Act (OSHA) has developed many regulations applicable to the installation of this or any other roof system. These regulations, identified as Part 1926, Safety and Health Regulations for Construction, are available from any government book store. The objective of the OSHA standards is to protect the worker from injury or illness. These OSHA regulations should be recognized as job site requirements and fully complied with. Failure to do so may result in substantial fines in the event of an OSHA inspection. Safe installation practices may be further defined and made mandatory by state or local ordinances. Maintaining good housekeeping on the job site is recognized as being important to both OSHA compliance and to successful job completion.

Walking and Working on Roof Panels

PLACING PANELS ON THE STRUCTURE

Do not place bundles of panels on the roof structure without first verifying the structure will safely support the concentrated weight of the panels and the weight of the installation crew. Some roof structures may not be designed to support the weight of a full panel bundle without additional structural support.

WALKING ON ROOF PANELS

An approved and safe walking platform should be used in high traffic areas to prevent the roof panels from being deformed, scratched, or scuffed.

Do not use a roof panel as a walking platform. An unscrewed panel could collapse under the weight of a person standing between purlins or at the end.

Do not walk on the last installed panel run, as the unsecured edge could collapse under a person's weight. When installing clips or making end lap connections, etc., stand where the roof structure will support your weight.

Do not leave a roof panel edge unattached, always install clips to the panel before terminating the installation for any period of time.

When using power tools, equipment, lanyards, retractable lines and other installation equipment, ensure that the metal parts are covered in such a manner that they do not scratch the panel surface if dragged along the panel.

PANEL OVERHANG

Do not stand on the end of unsupported (cantilevered) panels at the eave or ridge. Standing on the cantilever portions may result in panel collapse.

CONSTRUCTION LOADS

When properly attached to supporting structurals and seamed, TremLock VP panels are designed to support uniform loads which are evenly distributed over the panel surfaces, panels will also support a minimum 300 pound point load over any one square foot area of any part of the panel.

Point loads such as rooftop equipment, scaffold feet, etc., which exceed 300 pounds, or that occur in small, concentrated areas, may cause panel deformation or other panel damage. Extreme point loads may even cause panel collapse. Use care and discretion with construction loads on TremLock VP panels.

SLICK SURFACES

Panel surfaces and structural steel surfaces are hard, smooth, and non-absorbent which causes these surfaces to be very slick when wet or covered with snow or ice. Even blowing sand or heavy dust can make these surfaces difficult to walk on without slipping.

Caution must be exercised to prevent slipping and falling onto the roof surface or even sliding off the roof. Non-slip footwear is a necessity and non-slip working platforms are recommended.

ELECTRICAL CONDUCTANCE

Metal Panels are an excellent electrical conductor. A possible cause of injury is the contact of metal panels with power lines during handling and installation. Appropriate precautions should be employed. The installation process must be routed to avoid accidental contact with all power lines and high voltage services and equipment. All tools and power cords must be properly insulated and grounded and the use of approved ground fault circuit breakers is recommended.

SHARP EDGES

Some edges of panels and flashing are sharp and can cause severe cuts if proper protective hand gear is not worn. Be careful not to injure others while moving panels and flashing.

Handling Roof Materials In Strong Winds

Do not attempt to move panels in strong winds. Wind pressure can easily cause a man to lose balance and fall.

Loose, wind borne panels are very dangerous and can cause sever injury and damage. Secure opened bundles of panels with banding or tie-downs so wind will not blow the panels. Clamp individual unsecured panels to the roof structurals.

Checking the Structure

Prior to installation, roof structurals should be checked for overall dimensions and evenness of plane. Unevenness in plane may cause excessive oil canning or other deformity of panels. Also, roof structurals nearest the panel end laps, ridge or high eave should be checked against panel length for correct location to properly accommodate the roof components, e.g. proper lap dimensions and overhangs, etc.

Allowable tolerances

To ensure the roof system's integrity and designed weather tightness, the structure must be aligned within the following tolerance:

The allowable out of square of the rake line to the eave line and ridge line is 1/4" for each 40' foot of rake run.

Structure Length and Rake Straightness - The roof system is designed to accommodate $\pm 2"$ of overall structure length error, or $\pm 1"$ of rake straightness error at each rake.

Note:

Although these structure alignment tolerances will allow for reasonable roof component fit-up and ease of installation, the extremes of these tolerances may in limited instances be aesthetically objectionable. For instance, if the rake flashing is perfectly aligned, and the above 2" error is exhibited in the panel seam adjacent to the rake flashing, the eye may detect such error quite easily. For this reason, on steep-sloped or architectural roofs, discretion should always be exercised, and closer tolerances may be necessary in some instances.

To assure that the accumulation of structure length error and rake straightness error does not exceed the roof system's tolerance, the structure length should be measured from rake line to rake line at each eave, at the ridge, and at each point where there is a significant error or change in rake straightness.

To assure that the accumulation of structure width error and eave straightness error does not exceed the roof system's tolerance, the structure width should be measured from eave line to eave line at each rake, and at each point where there is a significant error or change in rake straightness.

Any structure alignment error which exceeds the above stated tolerances must be corrected before roof installation can begin. If uncorrected, errors that exceed those stated may require special details, additional materials, modified parts (with additional cost, fabrication and delivery time), additional installation time, and modified construction details. Tremco Roofing and Building Maintenance may not assure the performance of such modified details.

Receiving and Handling Roof Materials

Equipment for Unloading and Lifting

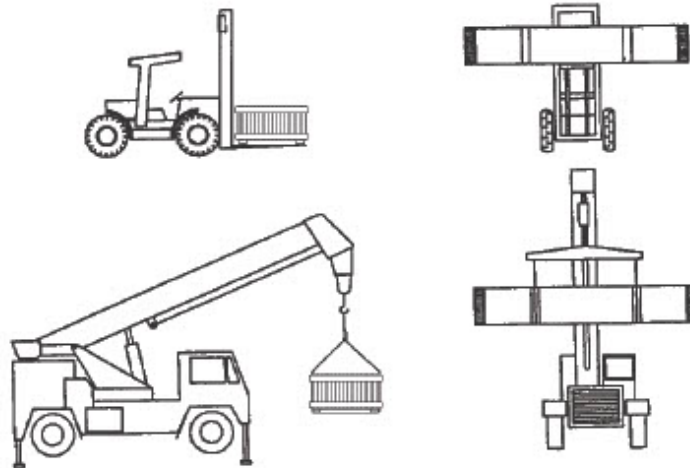
Hoisting equipment is necessary to unload and position the panels and accessory crates for site storage and installation. The equipment must have sufficient capacity and reach to place the materials where it is required for efficient installation. A forklift is handy for unloading and placing shorter panel and accessory crates.

Nylon slings will be required to avoid panel damage. Slings should be 8" minimum width and 6'-10' long to accommodate the panel bundle girth. Sling capacity should be at least 6000 pounds. Never use wire rope slings.

A spreader may be required for panel crates over 25' in length to assure correct sling spacing and uniform lifting. The spreader must be sized to handle the panel crate weight.

Handling Roof Panel Bundles

Under normal conditions, panel crates over 25' long should be lifted with two slings spaced at greater distance than third points. Panel crates less than 25' long may be lifted with a forklift only if the forks are spread at least 5' apart.

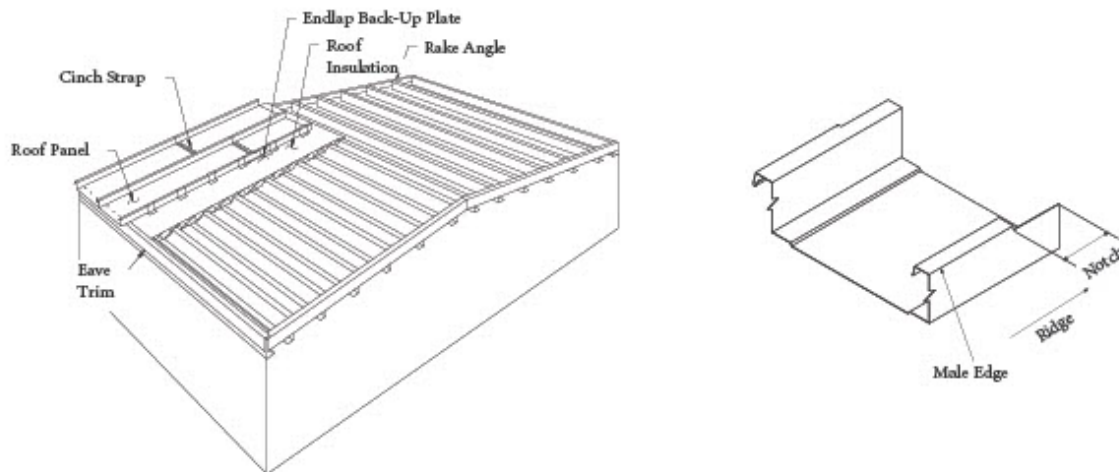


Slings Should be located near the cross boards.

Loads should always be checked for secure hook-up, proper balance, and lift clearance.

Tag lines should be used if necessary to control the load during lifting, especially if operating in the wind.

When moving panel bundles, extreme caution should be taken to prevent damage to the panel edges. Un-crated panels should be supported at each end and at 8' spaces. All opened crates on the roof should be banded to the roof structurals at the end of each work day. On steep roofs, provisions should be taken to prevent panels and panel crates from sliding off the roof. Be sure to set panel bundles on the roof in the proper direction for the installation sequence.



View of roof with starting panels indicated

TremLock VP panels must be installed from left to right when viewing the roof from the eaves

Material Inventory

All material is carefully inspected and crated before leaving the plant and accepted by the transportation company as being complete and in satisfactory condition. It is carrier's responsibility to deliver the shipment intact. It is the consignee's responsibility to inspect the shipment for damages and shortages when it is delivered.

Conducting a material inventory at the time of delivery is essential. By conducting the materials inventory, the installer is able to identify any material shortage or damage and avoid delays to installation later because of such shortage or damage.

Shortage or damage of the delivered materials must be noted and clearly marked on the bill of lading before signature of acceptance. Notify Tremco Roofing and Building Maintenance immediately of any conflicts. Tremco Roofing and Building Maintenance will not be responsible for shortages or damages unless they are noted on the bill of lading. Signature on the bill of lading is acknowledgement that the shipment is complete and undamaged.

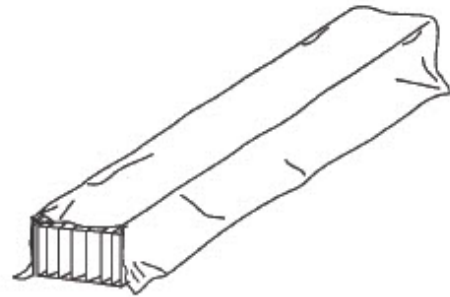
In the case of packaged components (such as clips, fasteners and sealants, etc.), the quantities are marked on their container and should be checked against the bill of materials. Tremco Roofing and Building Maintenance must be notified of any shortages or concealed damage within 15 days of delivery.

Field Storage of Roof Materials

Upon acceptance of the shipment, the customer or his representative is responsible for proper handling storage and security of the roof materials.

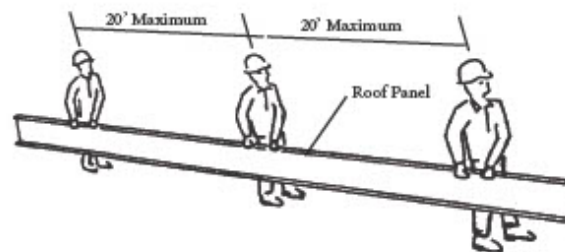
Roof materials should be stored on the jobsite as follows:

- Store panels in a protected area, out of standing water and drifting snow, etc.
- Elevate panels with blocking to allow air circulation under the bundle.
- Slope panels for drainage of moisture from the panels.
- As necessary, cover panels with waterproof tarp, allowing for air circulation (do not wrap tarp under panel crate or restrict air movement).
- Inspect panels daily for moisture accumulation.
- If panel bundles contain moisture, the panels should be dried and re-stacked. Use care in restacking to avoid damage to panels.
- Opened or restacked panel crates should be secured to prevent wind damage.
- Trim and accessories should be stored in a secure area and protected from damage, weather, and theft. Fasteners, sealants, closures, etc. should be stored out of the weather and protected from contamination.



Handling Individual Roof Panels

To lift individual panels, lift one side of the panel by the seam letting it hang naturally to prevent buckling. Pick-up points should not be more than 20' apart. Do not pick up panels by the ends or in a flat position.



If the individual panels are to be lifted to the roof by hand line, the common method is to use vice grip "C" clamps with padded swivel foot. Position the clamps on the flat of the panel, as close as possible to the edge so the panel is lifted as shown in the diagram at right.

The clamps should be uniformly spaced, no more than 20' apart, and the hand lines must be pulled in unison so that the panel is not buckled by uneven lifting. Be sure the clamps are tight on the panel and the line is secure to prevent dropping the panel which can result in personal injury and property damage.

Roof Installation Basics

Tools and Equipment

Before starting paneling, be sure that the proper equipment and tools are on hand. The tools required for installing the TremLock VP Standing Seam Roof System are standard for the metal construction industry. The tools must be in good operating condition and operators should adhere to safety precautions at all times.

The following tools and equipment should be considered for efficient installation of the TremLock VP standing seam panel. Actual tools and equipment required may vary due to variations in building type, construction, crew size, etc.

This list should not be interpreted as a limitation to your inventory of installation equipment.

Screw Guns...1800-2000 RPM designed for use with self-drilling screws

Hex Socket Heads...5/16" and 3/8", magnetic

Drill...1/4" capacity

Drill Bits

Power Shears and Nibbler

"C" Clamps

Pop Rivet Tool

Sheet Metal Hand Snips...center, left and right cut

Hack Saw

Steel Measuring Tapes

Caulk Guns

Power Source and Extension Cords

TremLock VP Seamer

Other Materials:

String Lines

Brooms

Marking Pen

Caulk lines

Sealants

TEMPERATURE EFFECTS

Temperature extremes must be considered during installation of the roof due to the sensitivity of sealants. Temperatures below +20° F may cause the tape and tube sealants to stiffen resulting in loss of adhesion and compressibility.

On cold days it is a good idea to keep sealants in a heated place until immediately prior to use. At very high temperatures (+120°F or more), the sealant may become too soft for practical handling. On very hot days, keep sealants in the shade when possible, or in a cooler.

COMPRESSION

To assure proper adhesion and seal, the tape sealant must be compressed between the panel or flashing surfaces with firm and uniform pressure. The required pressure is applied by the clamping action of screws pulling the adjoining surfaces together.

CONTAMINATION and RELEASE PAPER

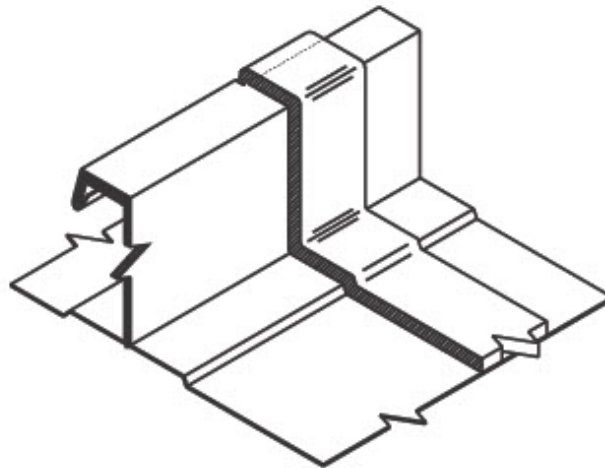
To assure proper adhesion and sealing, the sealant must have complete contact with the adjoining surfaces. Butyl sealants will adhere over minor evaporating oils and light presence of moisture. Under normal conditions, no surface preparation is necessary for these sealants. Excessive contaminants, water, oil, drilling residues and dirt may prevent good sealant adhesion and should be removed prior to placing sealant. Panel and flashing surfaces must be reasonably dry and reasonably clean for good sealant bonding.

Tape sealant is provided with a protective paper to reduce contamination. Paper should be left in place until just prior to engaging the sealant. If tape sealant surfaces become excessively contaminated, it should not be used. Incomplete removal of the protective paper will prevent the sealants adhesion to the panel or flashing surfaces. Always check that the release paper is completely removed immediately before the panel or flashing is installed over the sealant.

INSIDE CORNERS

An inside radius, such as where the panel flat meets a rib, is usually the most critical area to seal. A common mistake for the installer is to bridge or stretch the sealant across the inside radius.

When the lapping panel or flashing is pushed into place, the bridged sealant is stretched and thinned. The sealant may then be too thin to adequately seal this critical area. When tape sealant is applied at an inside radius, it is recommended that the sealant be folded back on itself, then push the sealant fold into the radius.



Fasteners

SCREW GUN

Depth sensing or torque-controlled screw guns may be used for driving exposed self-drilling screws. A 2000 maximum R.P.M. variable speed screw gun may be used, but a 1,800 R.P.M. gun is preferred. Use good quality, industrial grade screw guns as the higher amperage rating (5 to 7 amps) of these guns is required to achieve adequate torque for secure fastening. Screw guns should be variable speed and reversible.

SOCKETS

Use good quality magnetic sockets. Good fitting sockets reduce wobble and stripping of the screw heads. They also minimize objectionable paint chipping and scuffing on colored screws and minimize damage to the protective coating on unpainted screws. Ordinary magnetic sockets will not pick up the ZAC™ fastener. A “rare earth” magnetic socket will alleviate frustration when using the ZAC™ because the magnet is much more powerful. It will, however also pick up drilling debris much more easily than standard magnetic sockets, and therefore need frequent cleaning.

To clean drilling debris from inside the socket, use a small wad of butyl tape sealant. Press the sealant well into the socket, and withdraw sharply. The drill residues will be picked up by the tape. Repeat as often as needed to keep the socket clear of drilling debris so that it seats correctly on the screw head.

SOCKET EXTENSION

Depending upon the model screw gun being used, the nose piece may foul on panel attachment clips or panel upstand when driving clip screws. If this is the case, the depth sensing nose piece should be removed from the gun (it is not necessary when driving clip screws), or alternatively a 2” or 4” socket extension can be used. With the extension, the screw can be driven straight down without tilting the screw gun to clear the panel or clip.

INSTALLATION

Before starting the screw, the materials to be joined must be pressed together with foot or hand pressure. The pressure must be maintained until the screw has drilled through all the materials and the threads have engaged.

Self-drilling screws require significant tool pressure to maintain the drilling action and to start the thread forming action. Application of such pressure before starting the screw gun will usually prevent the screw tip from walking or wandering. Always hold tool and drive screw perpendicular to the surface of the work.

For proper seating of the fastener’s sealing washer, the panel or flashing surface must be clean and free of drill shavings. If drill shavings are caught beneath the seated screw head, back the screw out, check for washer damage, remove shavings and re-seat the screw

Do not over drive screws. Over driving can strip the threads and/or damage the sealing washer.

The fastener should be driven tight enough to uniformly compress the rubber washer but not so tight that the washer splits or rolls out from under the screw head. The ZAC™ screw used with the TremLock VP system is specially designed to minimize the potential for over-tightening. Refer to fastener application below.

As a good installation practice, all workmen running screw guns should carry appropriate oversized screws. When a screw is stripped or broken, immediately remove it and replace it with the oversized screw. Do not defer the replacement to be fixed later or to be found by the punch list crew. Many such screws will be overlooked until the customer complains of leakage. Stripped exposed fasteners will almost certainly leak. Stripped clip screws can lead to roof blow-off.

FASTENER APPLICATION

* Apply Sufficient Torque To Seat The Washer.
Do Not Over Drive The Fastener

WASHER
Bonded
Dish

CORRECT



1. Sealing material slightly visible at edge of metal washer. Assembly is weathertight.

TOO LOOSE



2. Sealing material not visible - not enough compression to seal properly.

TOO TIGHT



3. Metal washer deformed. Sealing material extruded beyond edge of washer.

Field Cutting Panels and Flashing

It is recommended that panels and flashings be cut with electric or hand shears or electric nibblers to provide a clean, undamaged cut. Electric shears work well for long straight “rip” cuts. Hand snips are used for smaller cuts when power shears or nibblers are not practical.

Nibblers work well for cutting across the width of the panel where irregular surfaces are involved. Nibblers also work well for cutting round or irregular shaped holes, such as for pipe penetrations through the roof. Nibblers create cutting residues which are very sharp and can easily damage panel finishes. Take care that cutting residues are not left where they will be picked up by the shoes of workmen and trafficked over the roof.

Whenever possible, fit the material so that the factory cut edge is exposed and the field cut edge is covered.

If it becomes necessary to cut through a finished seam, a reciprocating saw with fine-tooth metal blade should be used.

When making repetitive cuts (such as cutting panels at a hip condition) it is recommended that a template be made from a piece of drop-off panel or flashing to provide fast and accurate marking of the field cut. When using panel material for the template, cut off the horizontal portion of the panel ribs so that the template is easily laid onto the panel being marked.

CAUTION:

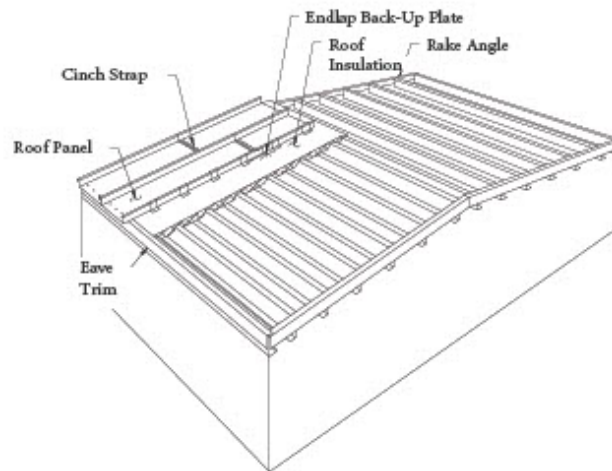
Never use abrasive saws (circular saws with friction disks). Abrasive saws create extreme heat, burning away the protective metallic coating from the cut and causing corrosion. Abrasive saw dust contains fine, hot steel particles which can accumulate on panel and flashing surfaces where they can cause staining and rusting. Rust caused by abrasive saw damage or abrasive dust particles is **excluded from warranty coverage**.

CAUTION:

For cosmetic reasons, avoid marking the panels where markings will be visible on the finished roof surface. Use only felt tip markers. Never use graphite pencils. Graphite causes rapid corrosion of Galvalume™ coating and (rusting) of the panel. Such corrosion from graphite pencil marks is **excluded from warranty coverage**.

Sheeting Direction and Modularity

The TremLock VP roof system must be installed from left to right when looking upslope. The recommended installation sequence is to complete each panel run from eave to ridge before starting the next panel run. This sequence will help ensure straight runs and allow the insulation to be installed immediately ahead of each panel run. This sequence is mandatory when using staggered end laps.



TremLock VP panels should be installed to their intended covering width (module). Failure to do so can result with poor panel alignment, improper nesting at laps, and improper fitting of ridge closures and other standard components. In severe cases, improper modularity and the alignment problems it causes can jeopardize weather integrity as well.

The accumulated coverage dimensions (start panel to finish panel) should also be monitored as roof work progresses to correctly fit and assemble the finished rake condition and maintain proper panel alignment from eave-to-ridge. Close control of the accumulated coverage dimension will also ensure proper location of pre-determined roof penetrations, and related flashings.

This accumulated panel coverage is always checked at the eave, ridge, and end splices so that non-parallel seam or “dogleg” conditions can be detected and corrected before they become objectionable. The coverage check should be done with a measuring tape held taut and parallel to the eave to prevent any measuring error. Always measure to the same side of the seam. At minimum every four to six panel runs should be checked for panel modularity and accumulated coverage. If panels tend to install out of true module, then check these dimensions more frequently. If accumulated coverage has significant error when checked, it should be corrected by equal adjustments of the next several panel runs.

Inspection of Roof Assembly During Installation

Importance of Inspection

During the roof installation, all areas of the roof system assembly must be frequently inspected to ensure the correct assembly in accordance with the erection drawings and this installation guide. Although some of these inspection items can be satisfactorily conducted post-roof assembly, others can only be done as work progresses.

Failure to assemble the roof system correctly could result in roof performance problems which may require costly corrective work or replacement. Incorrect installation may also void roof system warranties.

Inspection List

A. DRAWINGS AND DETAILS

Verify that the erection drawings have been reviewed for conflict with actual field conditions. Also, confirm that the drawings and this manual are the latest issuance with the latest revisions.

B. PANEL LENGTH

Check that the installed roof panels have the correct overhang dimensions at the eave; and at end laps, particularly with respect to the purlin location near the end lap. Also check similarly at the ridge or high eave with respect to panel end and location of purlin.

C. EAVE

- Verify that the eave plate is properly located, and that proper fasteners were used at the indicated frequency.
- Verify that the correct eave trim is in place, and that the laps are properly sealed.
- Verify that the tape sealant between eave trim and roof panel is in place, and that no panel eave fasteners are on the “weather” side of the tape seal.
- Verify that correct fasteners are used for panels’ eave attachment, and that none are stripped, loose, or overtightened.
- Check that the sealant inside the vertical portion of the seam is correctly placed. This can be done with a thin probing tool if the assembly is complete. This sealant should marry the eave tape seal at the base of the seam, and the factory applied seam sealant at the top of the seam. It should engage both sides of the vertical panel seam.
- Check that the eave sealant is in complete contact with the roof panel and eave trim without any voids, gaps, or excessive sealant contamination.
- Check that the panel module is correct, and no gaps exist at the base of the vertical seam area.

- Also check accumulated panel coverage.
- Check for excessive panel distortion, or “dishing” of the panel flat directly above the eave member which may cause ponding conditions.

D. END LAP

- Check that the roof panel end laps are correctly assembled and that the lapping panels are tightly nested without visible gaps. Check that alignment of seam is within tolerance.
- Check that the sealant is in the correct position and is in complete contact with the lapped panels without any voids or gaps, especially at the radius between the panel flat and the vertical legs of the panel. Confirm that the sealant is not excessively contaminated.
- Check that the pigtail sealant is in the correct position and seals the end lap seam notches.
- Check that the cinch strap fasteners penetrate through the center of the sealant and into the back-up plate. Check that the fasteners are not loose, stripped or over-tightened.
- Check that the panel module and accumulated panel coverage is correct.
- Check that the end lap assembly is not distorted, or “dished” above the lap causing potential water ponding.

E. RIDGE

- Check that the sealant is in the correct location on top, bottom and ends of closure, and is in complete contact with the closure and the roof panel without any voids or gaps. Confirm the sealant is not excessively contaminated.
- Check that closure fasteners are properly seated and into the back-up member.
- Check that tube sealant is installed along the back of the closure as necessary to seal any voids around the panel seam area.
- Check that the panel module and accumulated panel coverage is correct.

F. RAKE

- Check that the rake closure is correctly positioned with splices oriented for downhill watershed.
- If there are roof panel end laps, check for continuity between the end lap sealant and the rake closure sealant.
- Check that the tape sealant is in continuous contact with the roof panel and the rake closure.

- Check that all fasteners are properly seated, spaced, and protected by tape sealant.

G. PANEL CLIP ATTACHMENT

- Check that the panel clips are correctly fitted to the panel without any distortion or damage of the clip tab. Check that the clip tab is centered on the clip base between the centering tabs.
- Check that the clips are located along each panel sidelap at each roof structural, or at the locations and frequency specified on the erection drawings.
- Check that the panel clip fasteners are as specified on the erection drawings.
- Check that the panel clip fasteners are not loose or stripped. In the case of composite deck assemblies, verify that the fasteners penetrated and engaged the specified structural member.

H. PANEL SEAMS

- Check that the factory installed sidelap sealant is in the correct position without voids or interruptions and is not damaged, or excessively contaminated.
- Check that the full length of each sidelap seam is correctly seamed without seaming abrasion.

I. FLASHINGS AND PENETRATIONS

- Check that all flashings are correctly assembled and tightly fitted. Check that the required sealants are correctly positioned on “wet” side of fasteners and in complete contact with the adjoining surfaces without voids or interruptions.
- Check that the flashing splices are correctly lapped, sealed and fastened. Check for lap pigtail sealants where critical.
- Check that the flashings are sufficiently pitched to shed water and eliminate ponding areas, especially at the critical splices, end laps and corners.
- Check that the fasteners are of the specified type, size, length, finish and spacings. Check that the fasteners are properly seated with sealing washers in full contact with the flashing surface and not split or otherwise damaged.
- Along the rakes, high eave transitions, roof penetration, etc., check that the flashings are not constrained and will allow for the roof's thermal movement.

J. SURFACE CONDITIONS

- Verify that panel finish has not been excessively scratched, dented or abraded.
- Verify that no dissimilar metals are in electrolytic contact with roof panels or flashings and same are free of graphite pencil markings.

- Check that other corrosive elements have not contacted the roof, e.g. strong acids, alkalis or other chemicals or fumes, wet cementitious mortars, stucco, copper condensate, run-off from treated lumber, etc.
- Verify that roof surfaces are not heavily trafficked.
- Check that waste, debris and construction residuals are not left on the roof such as: tools, material drop-off, fasteners, wire, staples, drill and nibbler chips, saw and file particles, etc.
- Check that the panels and flashings are not being subjected to long term wet conditions such as: standing water, consistent sources of steam, mist, spray, dripping or runoff, wet debris, wet insulation or other holding materials.
- Check that the roof materials have not been subjected to heat sources such as: cutting torches, abrasive saws, etc.

K. MATERIALS, ACCESSORIES AND ANCILLARIES BY OTHERS

- Verify that all rooftop flashings, accessories, and ancillary items not furnished by Tremco Roofing and Building Maintenance are compatible both metallurgically and from a service life standpoint with Tremco Roofing and Building Maintenance material.
- Tremco Roofing and Building Maintenance cannot be responsible for the performance of roof materials which are not provided, specified or approved by Tremco Roofing and Building Maintenance

SECTION B BASIC INSTALLATION SEQUENCE AND DETAILS

General

The following details provide graphic illustration of the roof assembly steps. The purpose is to instruct the installer in correct and efficient assembly of the roof system. Details in this manual may be altered from time to time in response to changing state-of-the-art technologies. It is important therefore to verify with Tremco Roofing and Building Maintenance that this is the most current printing of this manual. (Refer to the back outside cover, on the bottom right side.)

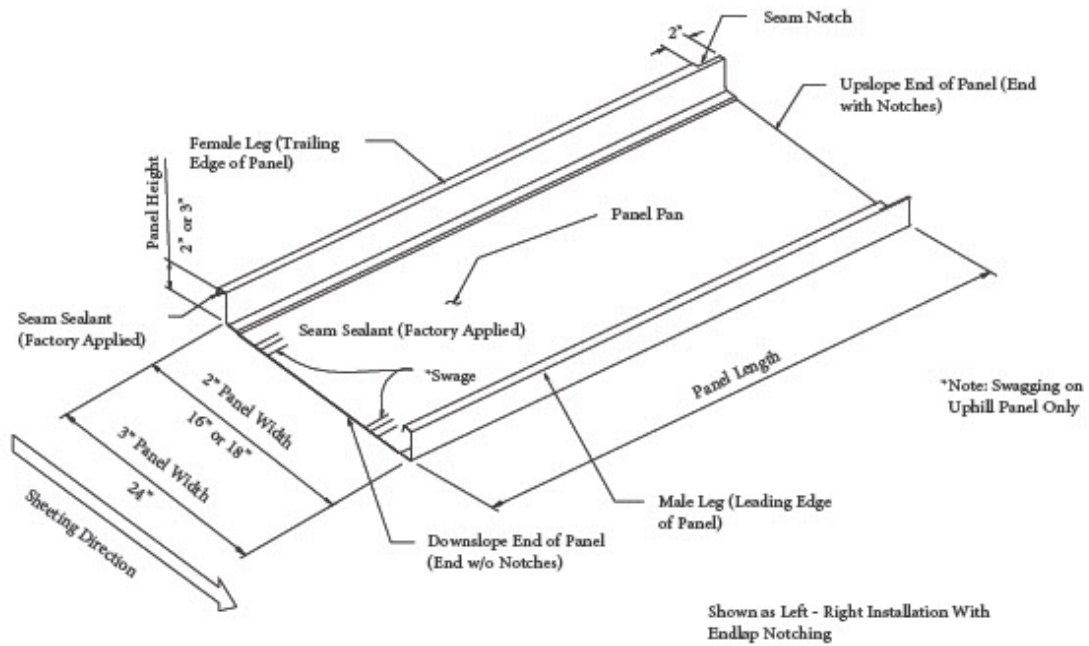
Because of the many variations in conditions, it is important to identify and isolate the specific installation details required for any given project. Review the erection drawings for differences with these details. If differences exist, the erection drawings have precedence.

These details are arranged in a step-by-step sequence. Following this sequence ensures correct assembly and ensures that the part to be worked on will be readily accessible for the next assembly step.

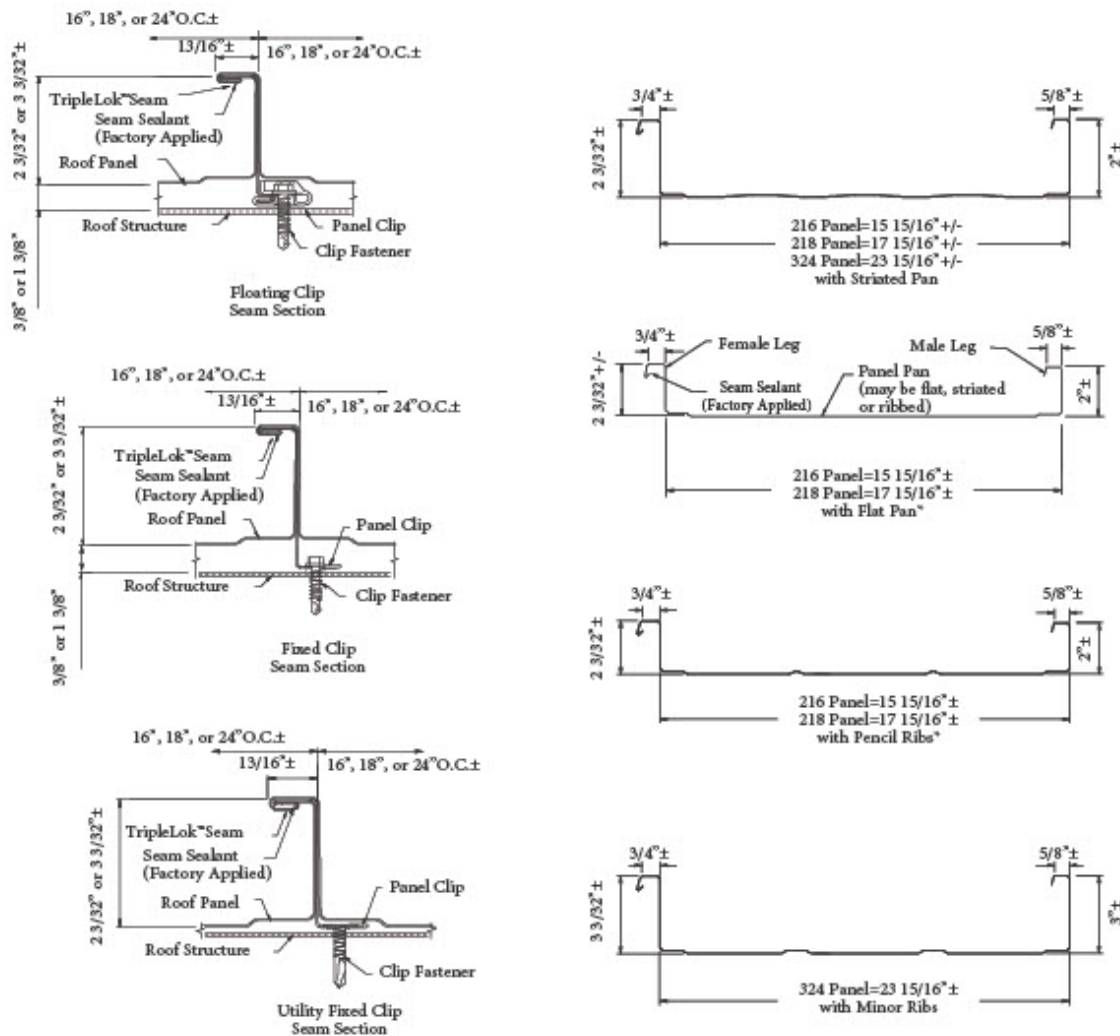
Do not short-cut this sequence without careful consideration of the possibility of incorrect assembly and the resulting corrective rework.

To minimize confusion, the details are always oriented so that the view is from eave to ridge, with the starting rake at the left and finish rake at the right.

To help ensure weather tightness, the details emphasize proper fit-up, sealing and fastening. The type and size of fasteners and sealants are specified for each condition. Be sure that these critical instructions are reviewed often and the roof assembly is checked at each assembly step.



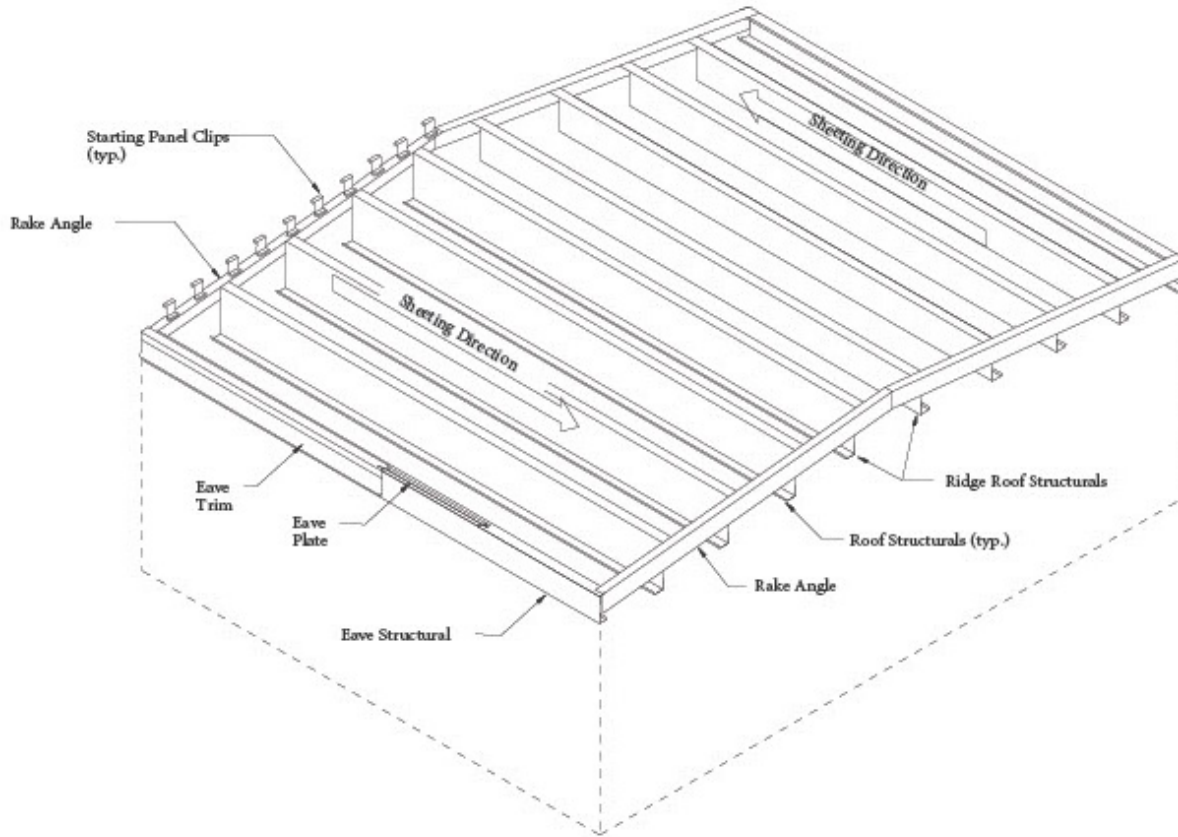
Through these instructions, the references to the panel will be made using the terms shown on the above illustration.



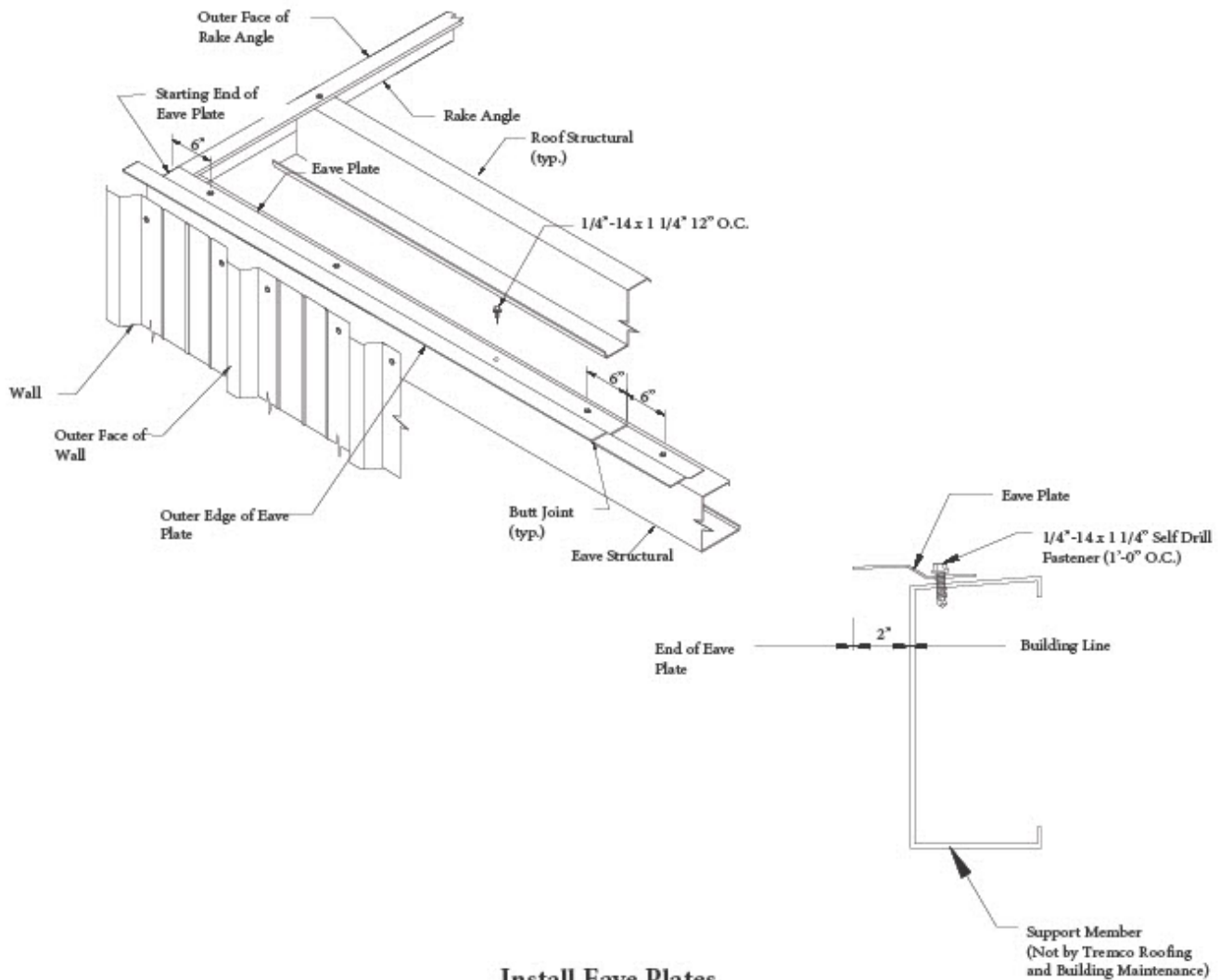
TremLock VP is a mechanically seamed roof system. Seam details shown above are after seaming process.

***NOTE:** Flat Pan or Pencil Ribs may increase the effect of oil canning. Oil canning is not a cause for rejection, and if ordering these products the customers purchase order must acknowledge this.

Preparation of Structurals



View of Roof With Sheeting Direction Indicated



Install Eave Plates

The eave plate provides a solid attachment surface for the roof panel.

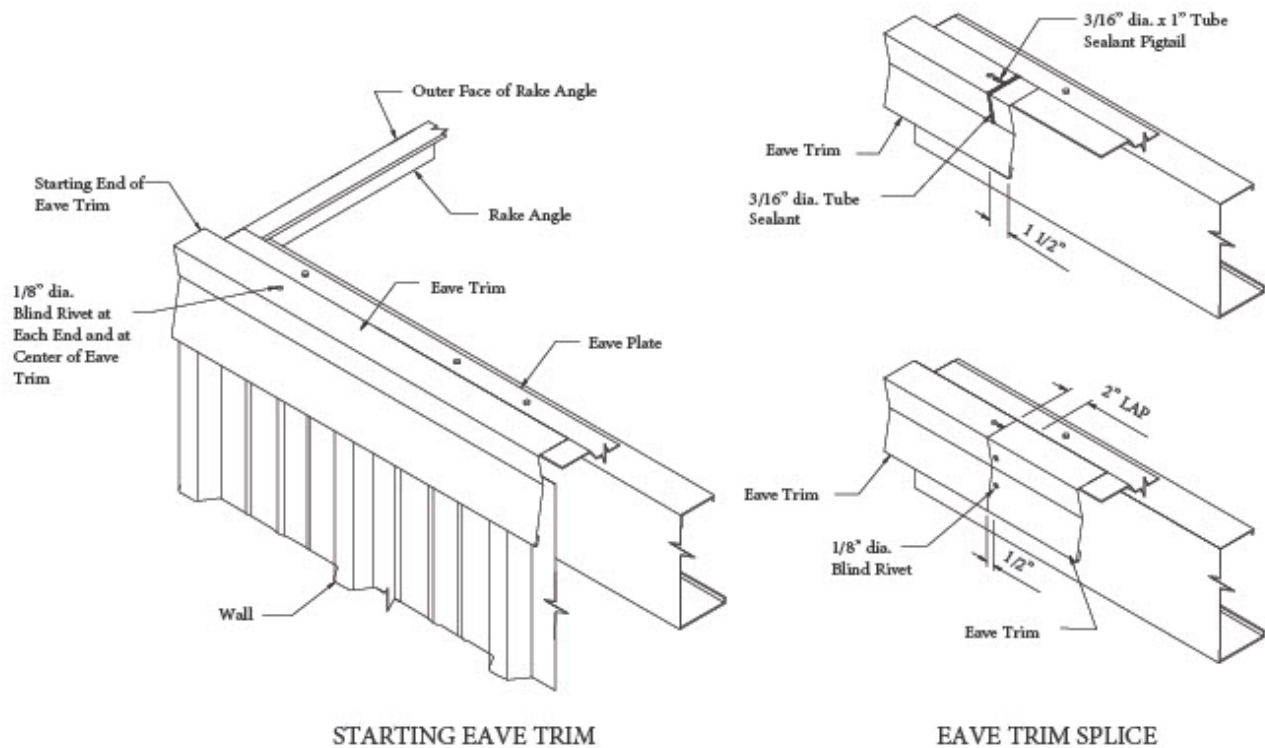
The eave plate must be installed before the insulation is placed over the structurals.

Before installing the eave plate make sure the eave structural members are in a straight alignment from endwall to endwall.

Install the starting end of the first eave plate flush with outer face of rake angle.

The outer edge of the eave plate is to be 2" out from the face of the eave structural.

Be sure to tightly butt eave plates along the eave structurals.

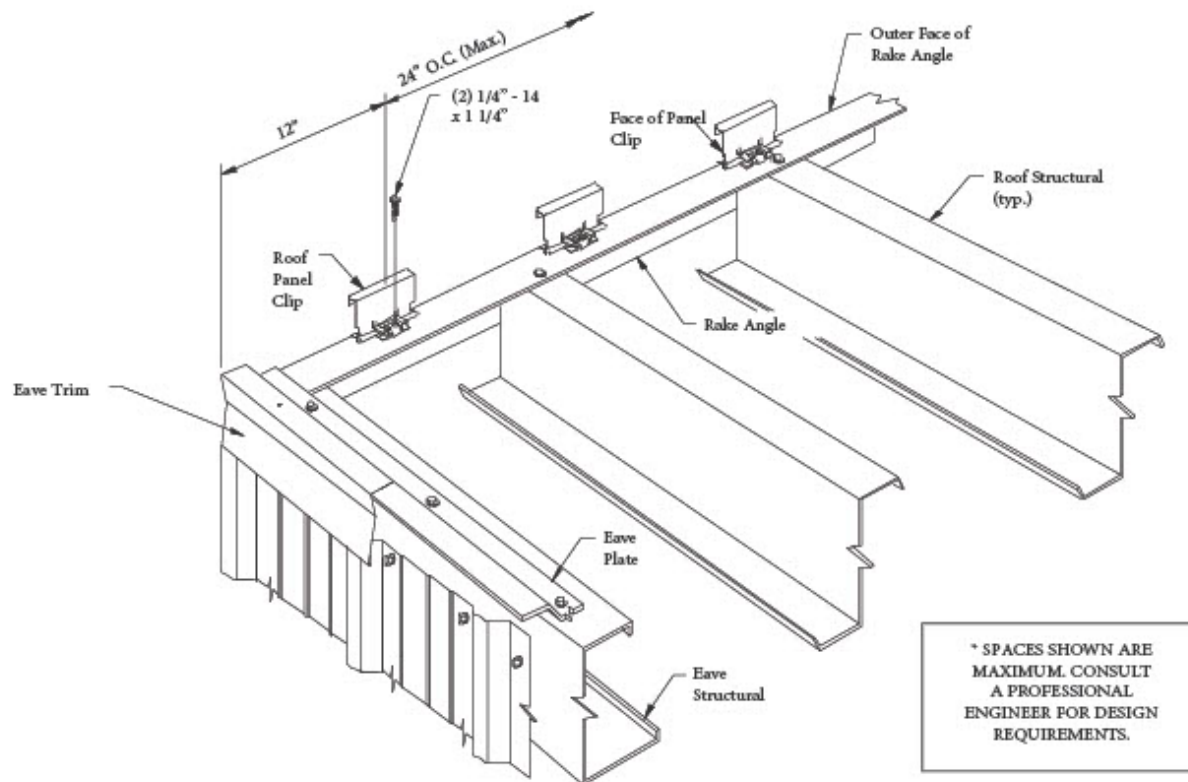


Install the Eave Trim

Place the upper lip of the eave trim over the eave plate as shown.

The eave trim provides a water seal between the roof panel and the wall panels. All laps of the eave trim must be sealed to minimize water entry.

Fasten the eave trim in position with three blind rivets or temporary structural fasteners. The fasteners will hold the trim in position until the roof panels are placed over the trim. Be sure placement of temporary fasteners do not interfere with the first panel. If using hex head fasteners as temporary fasteners, remove. (so panels are not installed over them).



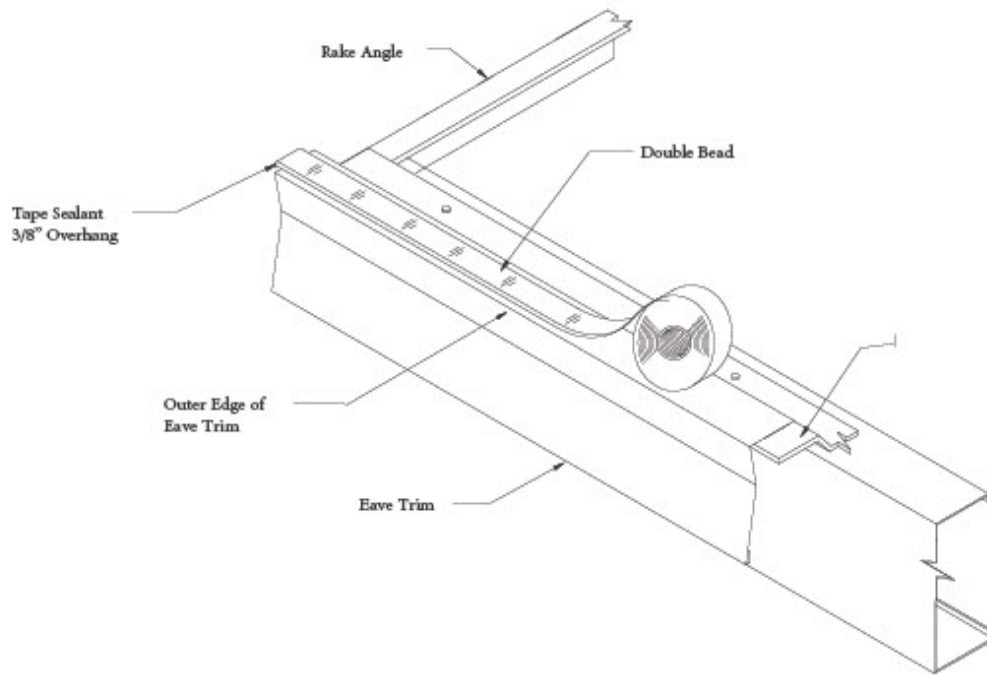
Install Start Clips

Start clips are the same clips that are used to attach the panels elsewhere on the roof.

The position of the start clips establishes the first panel run alignment. It is very important that the start clips are installed perpendicular to the center line of the ridge line.

If the structurals have been installed true and square the edge of the rake angle can be used to align the start clips.

If the rake angle is not true and square then a chalk line should be snapped to guide the installation of the start clips.



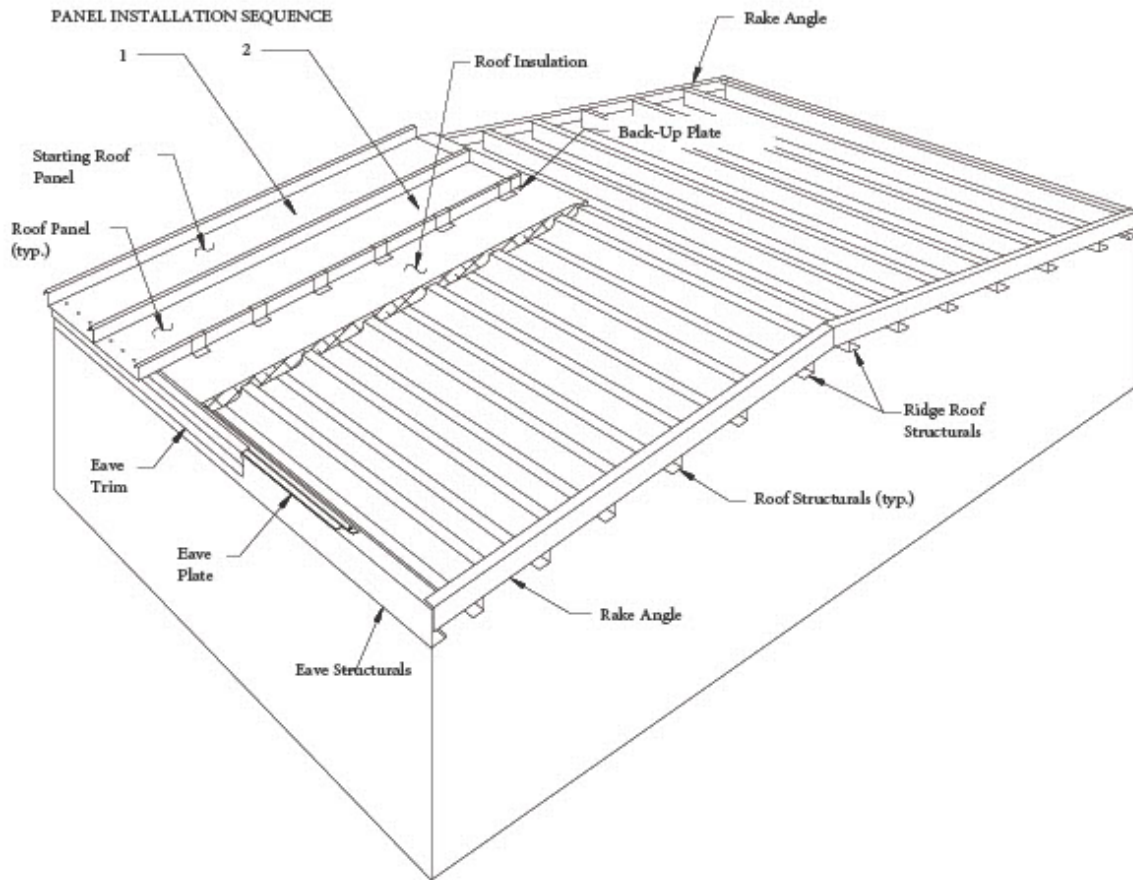
Place Eave Sealant

The seal of panel to eave trim is made with a “Double Bead Tape Sealant”.

Apply a continuous strip of tape sealant along the top edge of the eave trim.

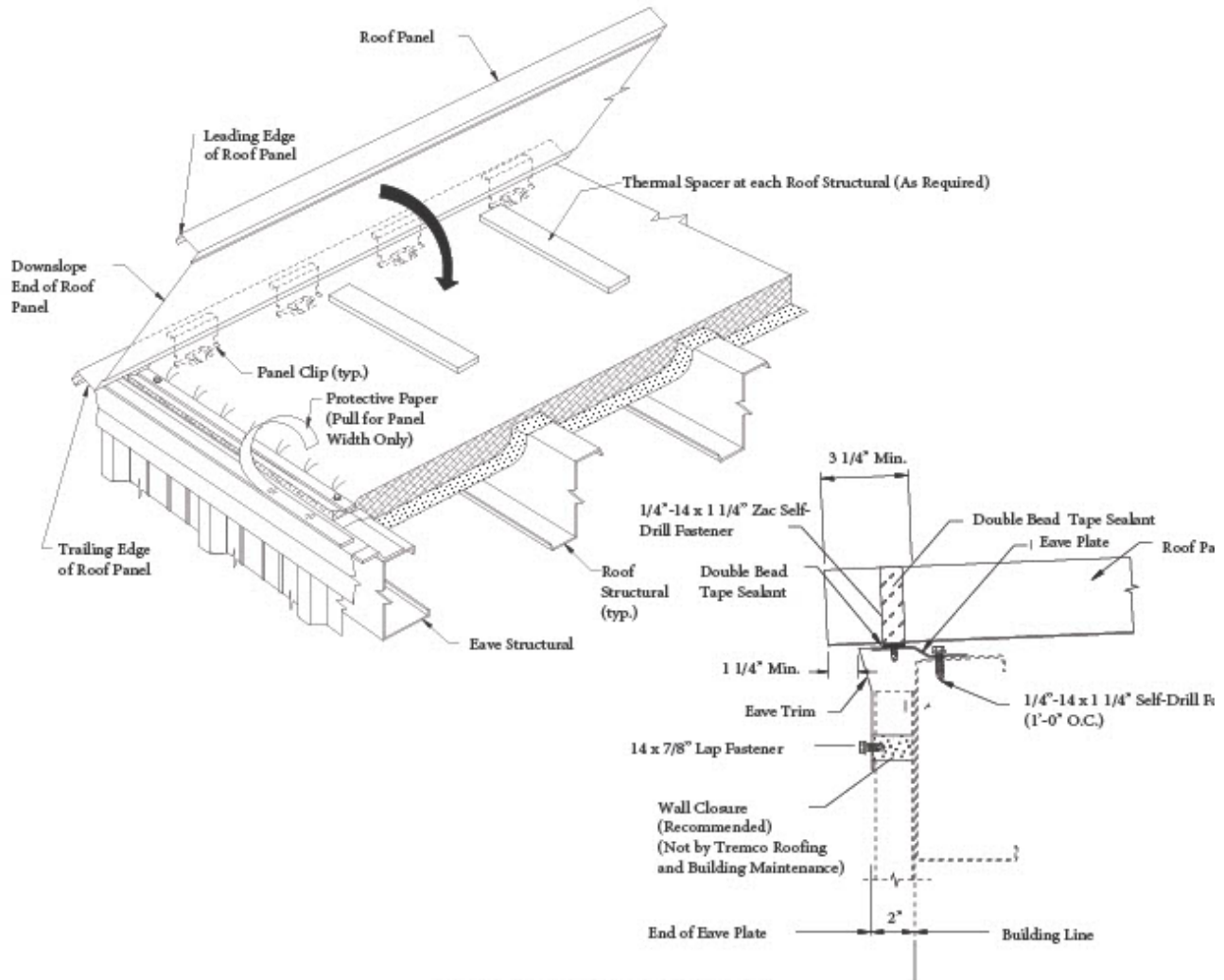
DO NOT REMOVE THE PAPER BACKING FROM THE TAPE SEALANT AT THIS TIME!

DO NOT APPLY TAPE SEALANT OVER TEMPORARY FASTENERS!



View of Roof With Starting Panel Indicated

TremLock VP panel must be installed from left to right when viewing the roof from the eaves.



First Roof Panel Placement

The start clips will establish the desired longitudinal position of the first panel.

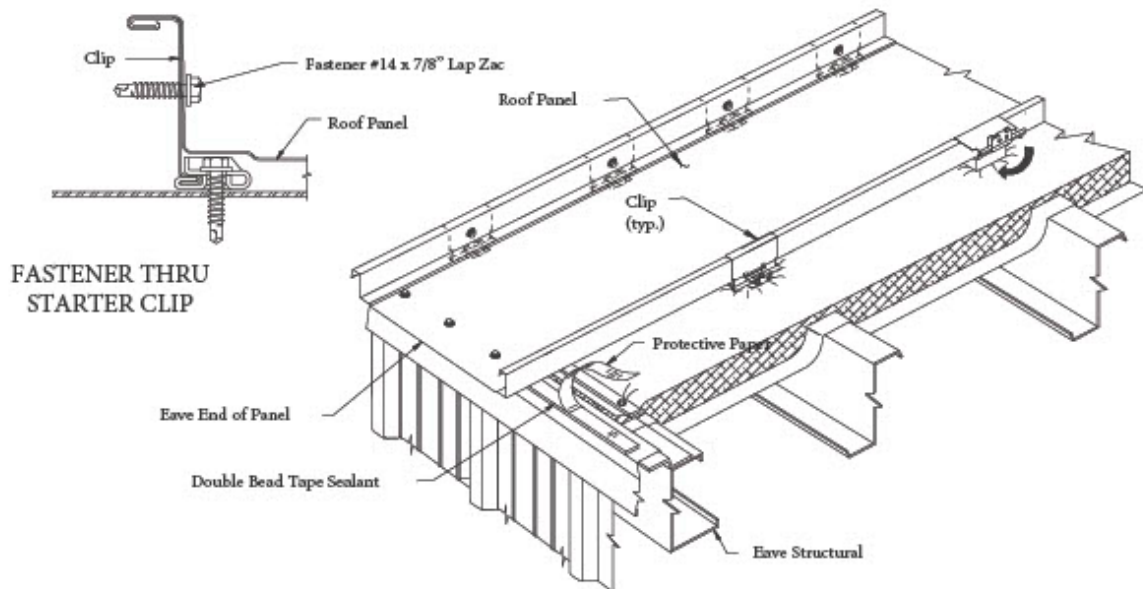
Position the panel so that the down slope end is 1-1/4" inches from the outer edge of the eave trim.

Note: This overhang dimension is very critical as it establishes the location of end laps and ridge cover attachment points.

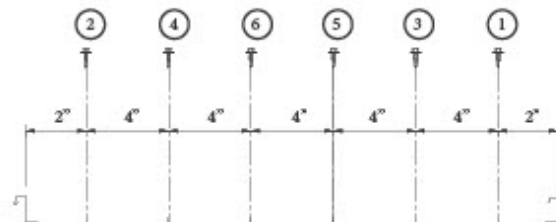
Hook the edge of the female lip over the panel clips and rotate the panel in place.

Remove paper backing from the tape sealant as panel is rotated in place.

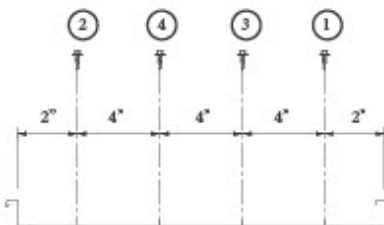
If the roof requires thermal spacers, place the thermal spacer over each purlin directly under the panel.



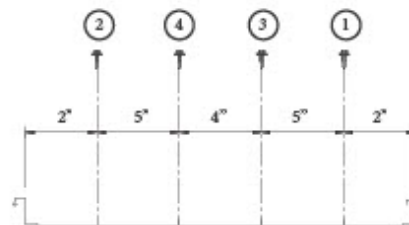
FASTENER THRU STARTER CLIP



324 PANEL-EAVE FASTENERS



216 PANEL-EAVE FASTENERS



218 PANEL-EAVE FASTENERS

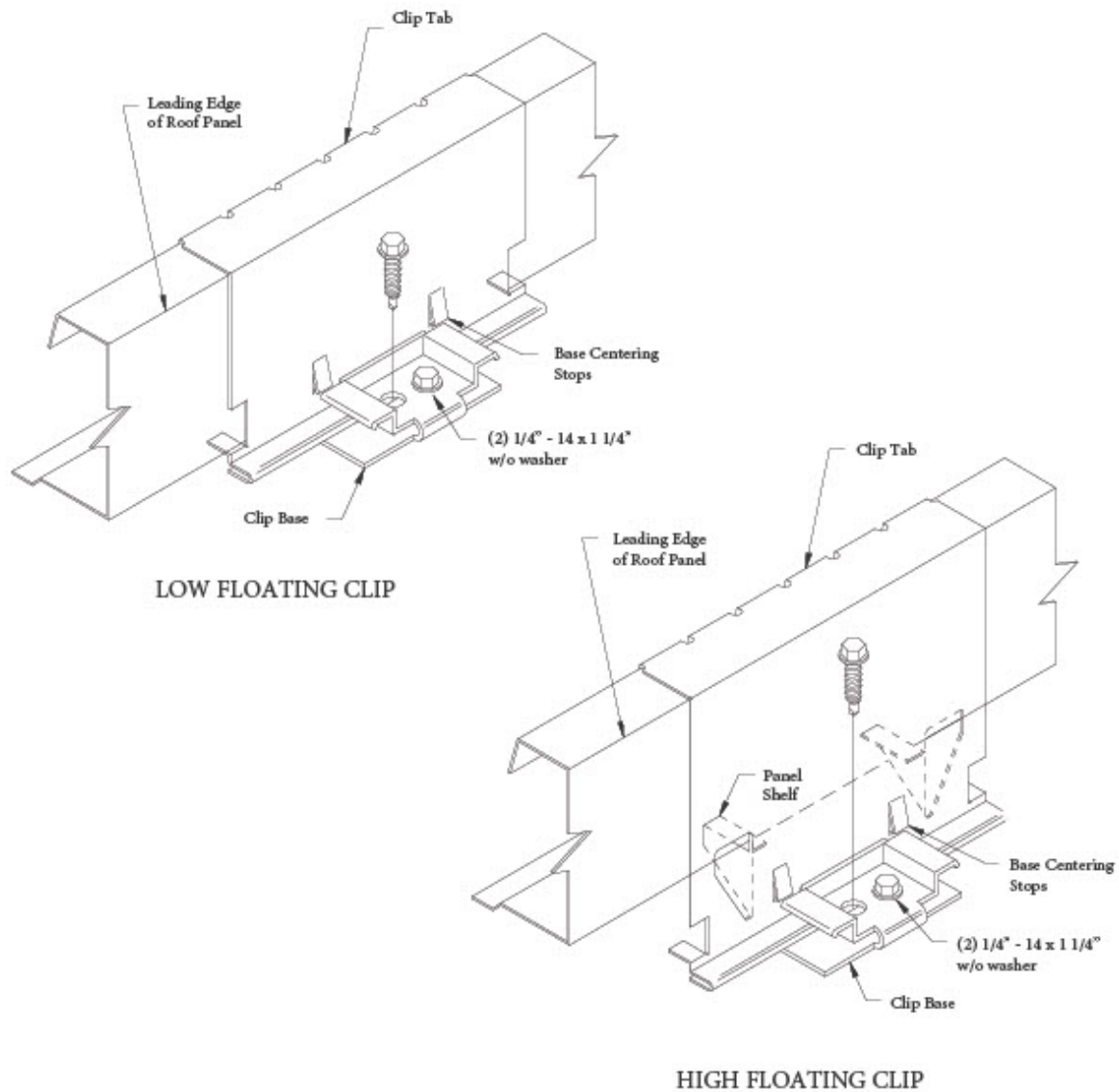
Attach First Panel

Verify that the roof panel overhang is correct.

Install #14 x 7/8" lap Zac fastener through panel into each starter clip.

Install 1/4" - 14 x 1 1/4" Zac fasteners through panel at the eave, locate the fasteners so they fasten into the eave plate. Space the fasteners as shown above.

Install panel clips at each purlin location. Specific clip installation instructions are on the following page.

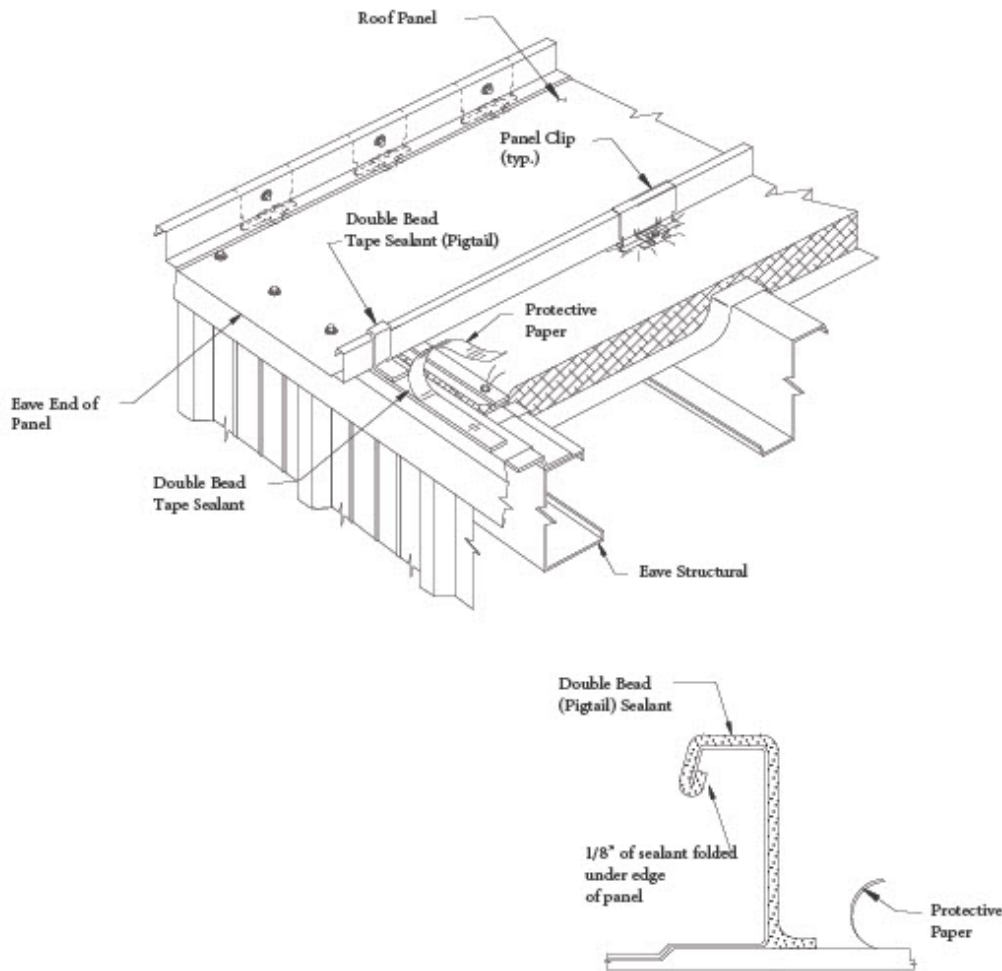


Panel Clip Installation

Either fixed clips or floating clips could be furnished with the roof system. The above illustration shows floating clip.

If thermal spacers are used, the high clip will have a panel shelf to hold the panel at 1 3/8" above the structurals.

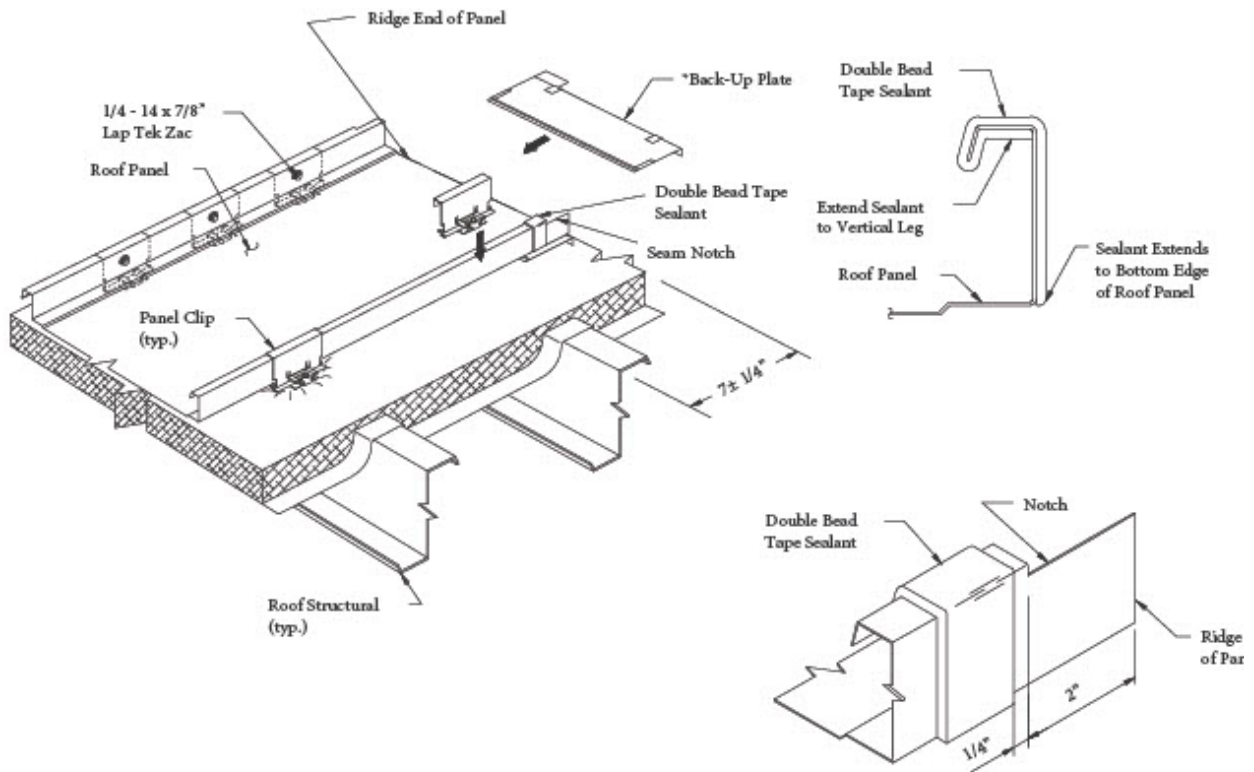
Install panel clips along the leading edge of the panel at each purlin location.



Before Installing the Second Run of Panels

Place a tape sealant pigtail on the vertical leg of the panel at the eave.

Remove just enough paper backing from the double bead tape sealant along the eave for one panel.



Sealant Pigtail Placement at Ridge

Prior to attaching panel to eave plate, measure the panel overhang at the purlin. The panel should extend $7'' \pm 1/4''$ up slope from the web of the purlin or centerline of joist.

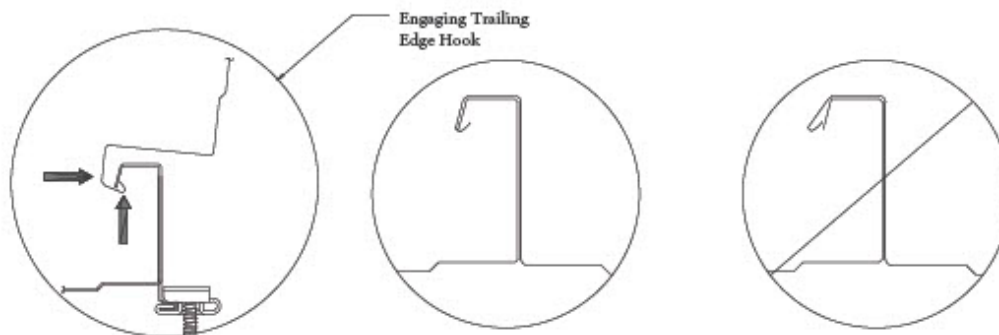
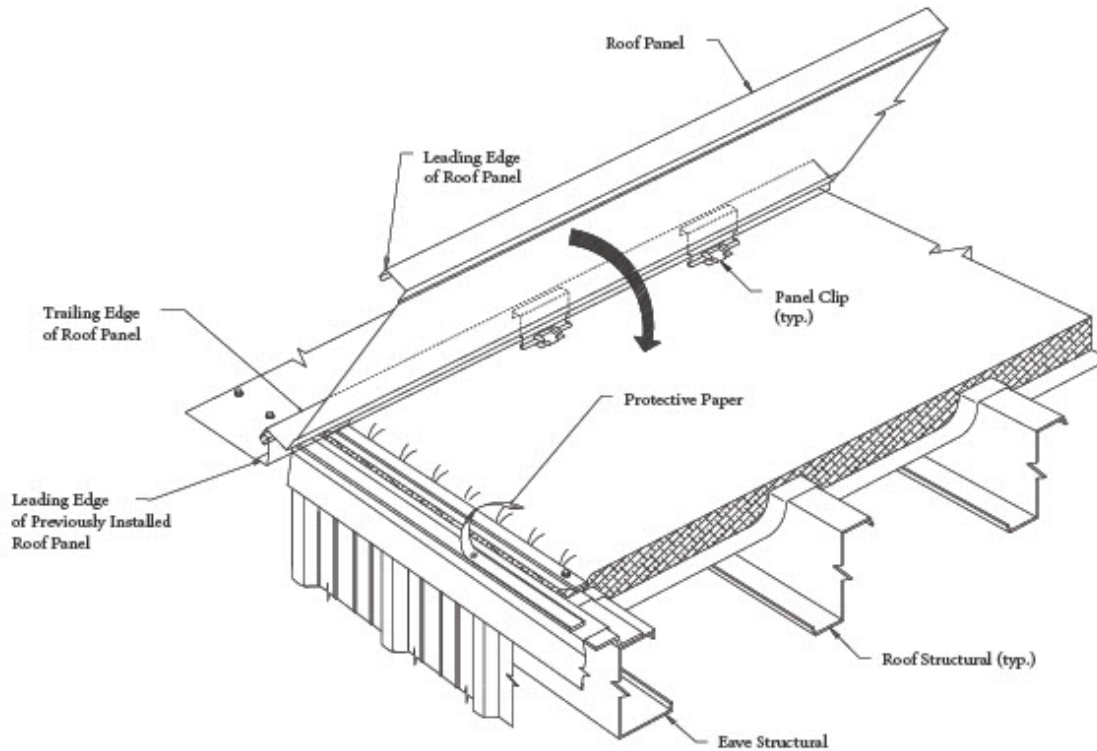
Slide the back-up plate on the end of the panel. Make sure the teeth are fully engaged with the panel.

IMPORTANT: INSTALL THE PANEL CLIP AT THE END PANEL SUPPORT AFTER PLACING THE BACK-UP PLATE.

**Installer Note: For low system only - The first back-up plate as well as the last back-up plate will require field modification to properly nest with rake angle. Cut and bend up the stiffener flange of the back-up plate as required to clear rake angle.*

Place a tape sealant pigtail at the ridge. Be sure the tape sealant covers the complete bottom side of the leading edge.

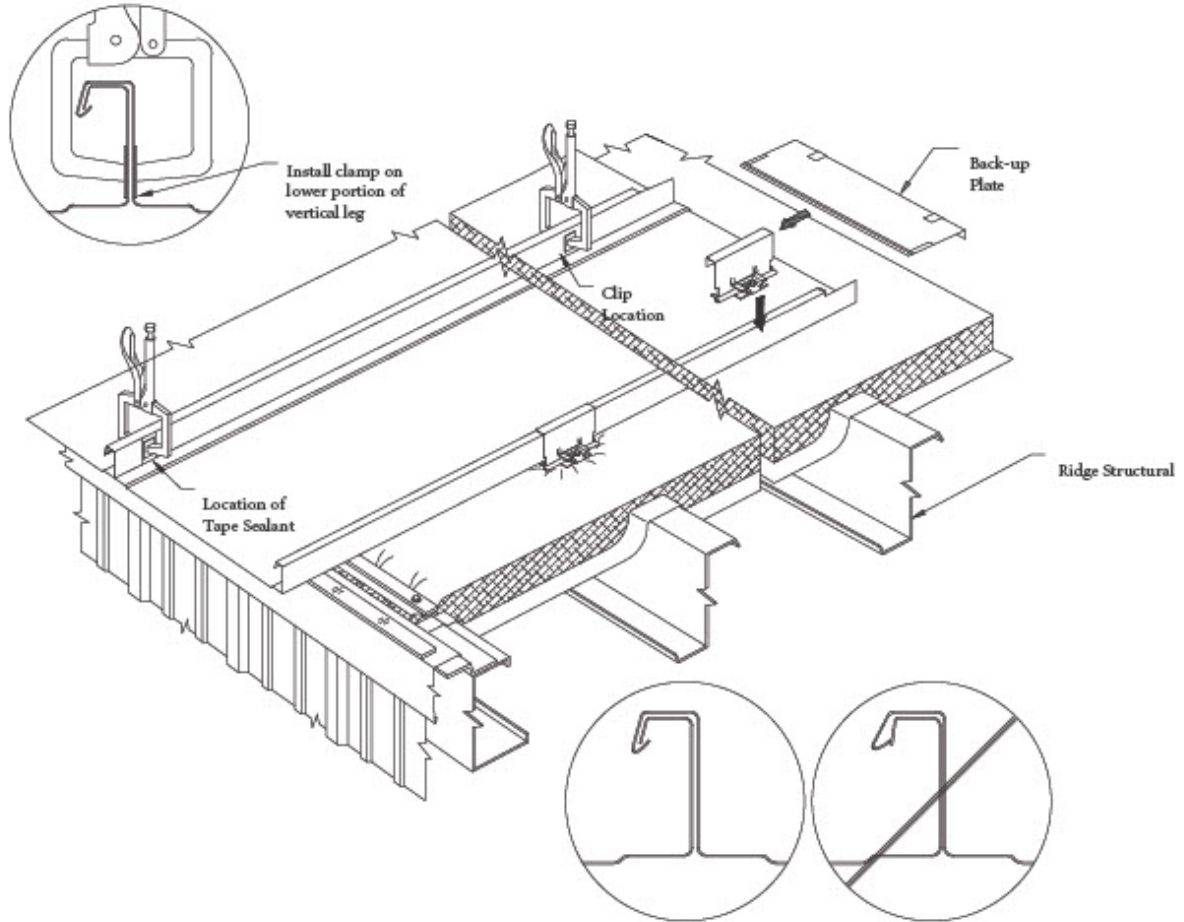
IMPORTANT! BE SURE THE RIDGE TAPE PIGTAIL IS IN PLACE BEFORE INSTALLING THE NEXT PANEL.



Place the Second Panel

Position the panel so that the eave end is flush with the previously installed panel. Roll the panel in place, as shown.

Important: The hook on the trailing edge must firmly engage the leading edge along the entire length of panel.



Install “C” Clamps on the Vertical Leg

After the panel has been rotated in place, verify the female hook has engaged the end of the male leg along the entire length of the panel.

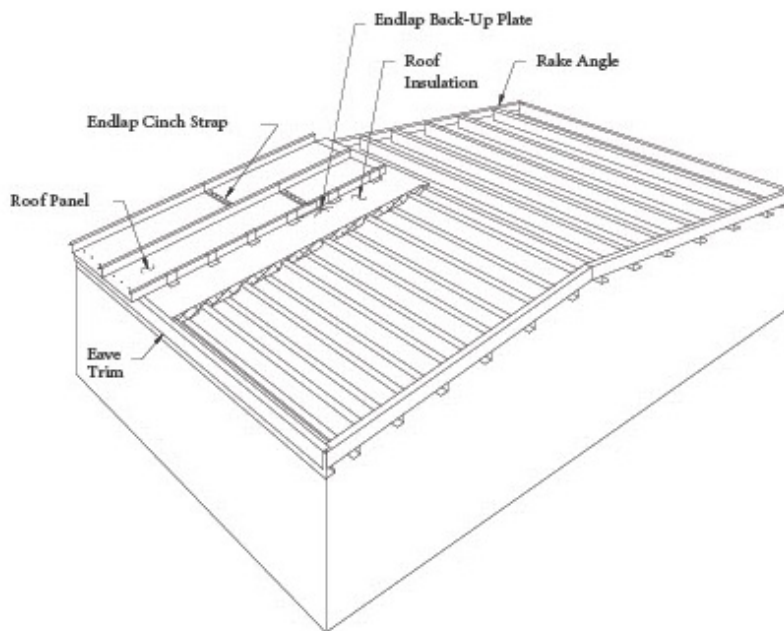
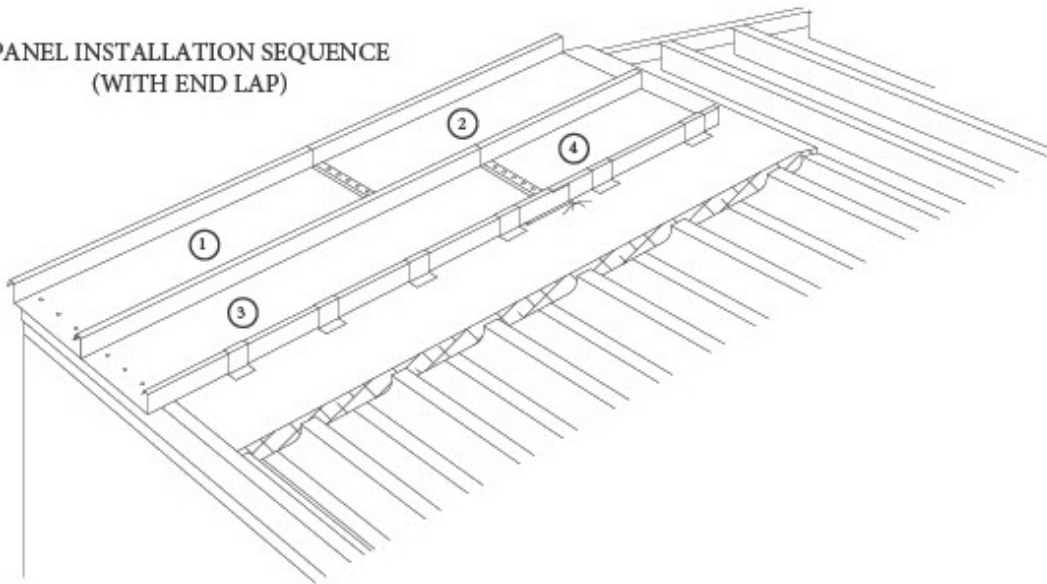
Place “C” clamps over the vertical legs of the panels at eave where the tape sealant was previously placed and at the up slope end at a panel clip location. “C” clamps should be spaced every 15’ to 20’.

The “C” clamps make sure the vertical legs of the panels are vertical and the panel module is maintained.

Continue with the installation of the eave fasteners and clips as previously described (See B-11)

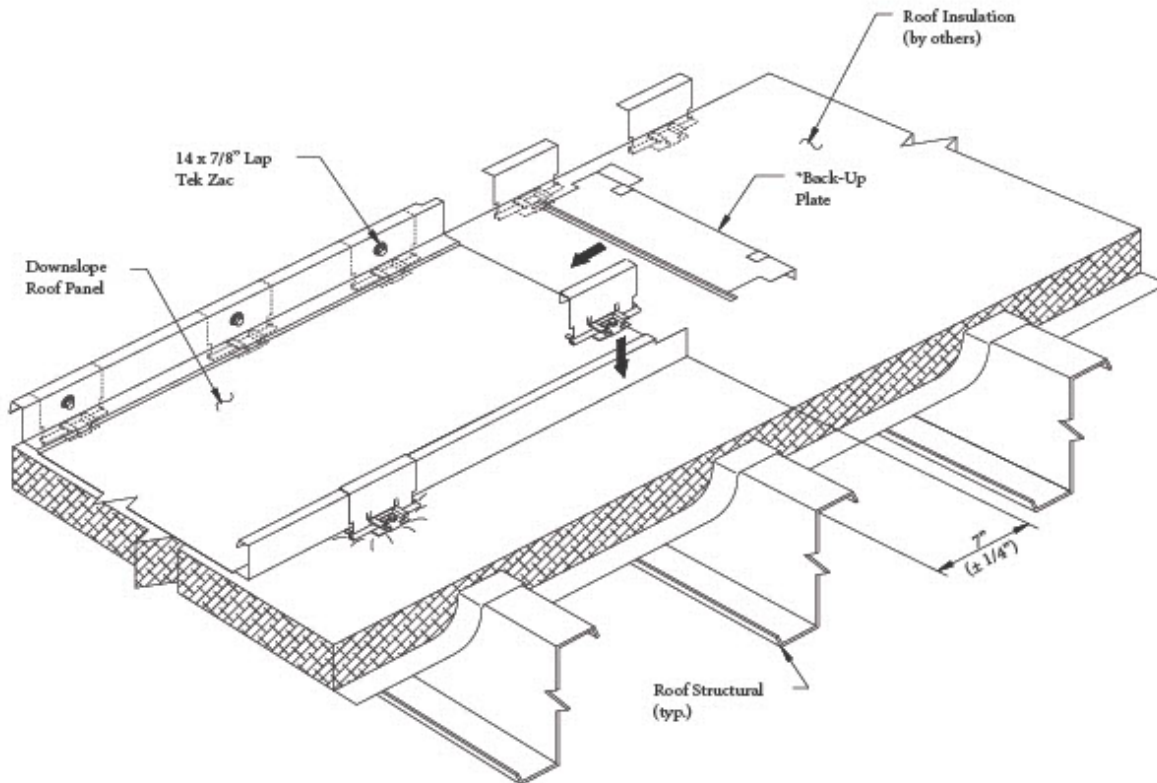
IMPORTANT: Install the panel clip at the end panel support **AFTER** placing the back-up plate.

PANEL INSTALLATION SEQUENCE (WITH END LAP)



View of roof with starting panels indicated

TremLock VP panels must be installed from left to right when viewing the roof from the eaves.



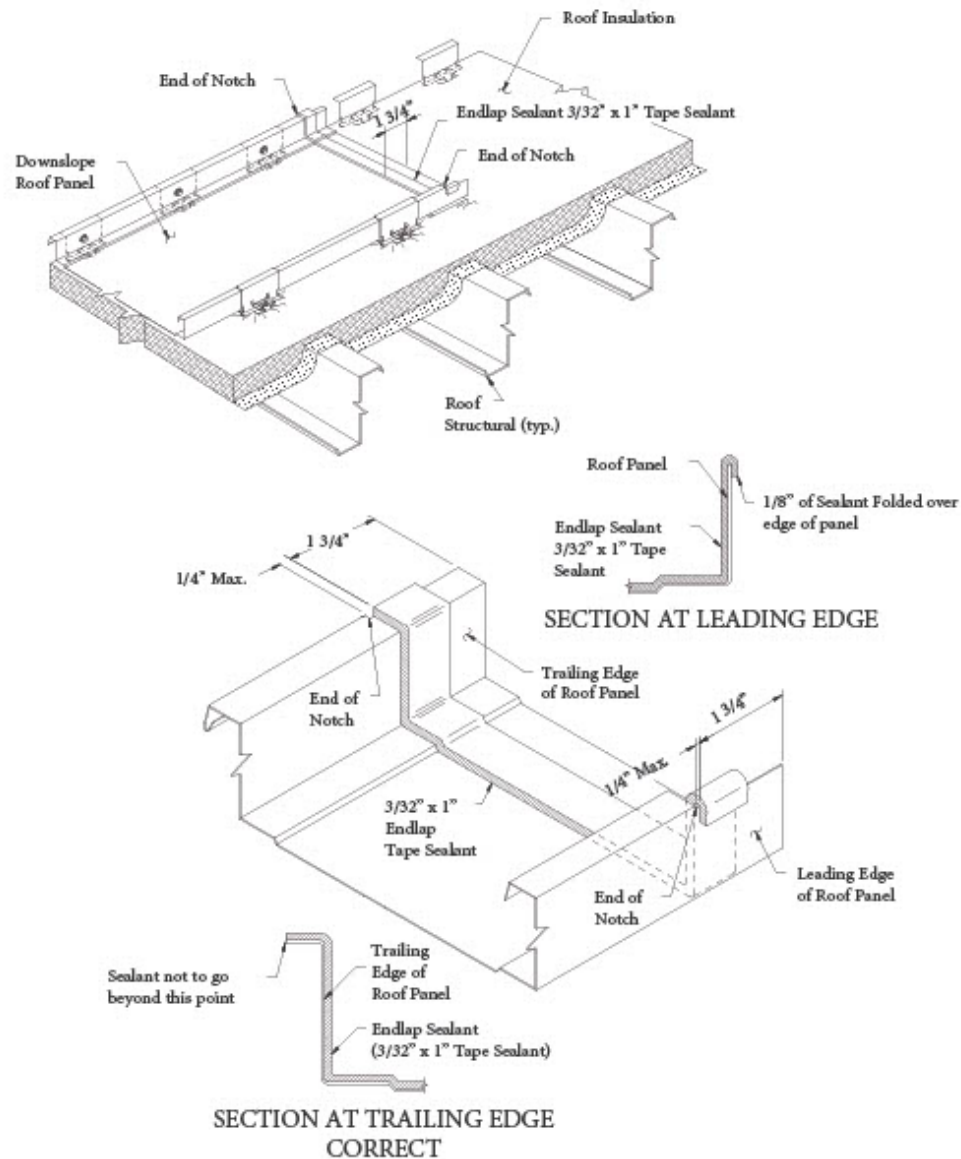
Verify Panel Overhang at Purlin

Prior to attaching panel to the eave plate, measure the panel overhang at the purlin. The panel should extend $7'' \pm 1/4''$ up slope from the web of the purlin or centerline of joist.

Slide the back-up plate on the end of the panel. Make sure the teeth are fully engaged with the panel.

Important: Install the panel clip at the end panel support **AFTER** placing the back-up plate.

***Installer Note:** For low system only - The first back-up plate as well as the last back-up plate will require field modification to properly nest with rake angle. Cut and bend up the stiffener flange of the back-up plate as required to clear rake angle.

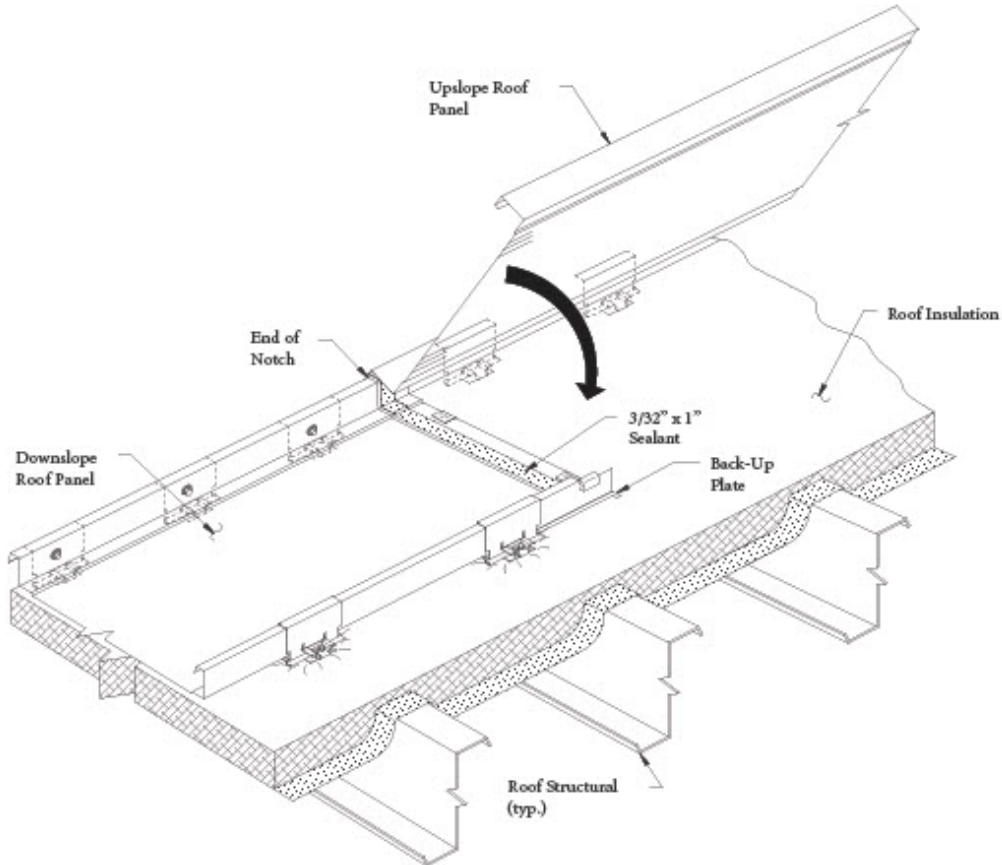


Tape Sealant Placement Details

The proper placing of the end lap sealant is very critical to the water resistance of the roof end laps.

The tape sealant is placed 1 3/4" from the up slope end of the panel. The factory notches along the panel leading and trailing legs are two inches long and can be used as a guide to start the sealant placement.

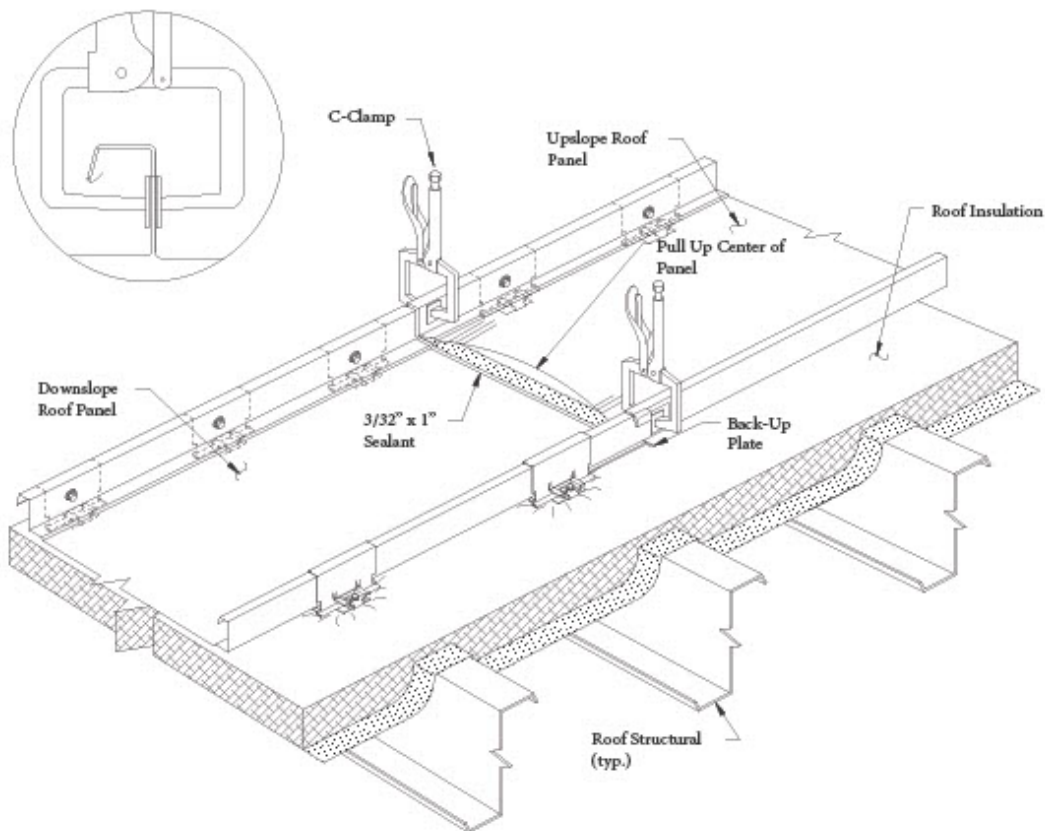
Important: Be sure the tape sealant is pressed tightly against the corners of the panel legs.



Place the Up Slope Roof Panel

Position the up slope panel so the hook portion of the trailing leg is against the notch portion of the previously installed panel.

The up slope panel should be aligned so the tape sealant on the down slope panel is covered by the up slope panel.



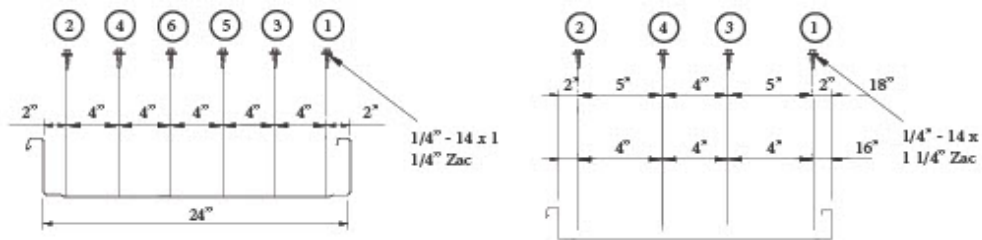
Place Panel Over Sealant

When placing the up slope panel over the down slope panel and tape sealant, care must be taken to prevent wiping the tape sealant off the vertical leg.

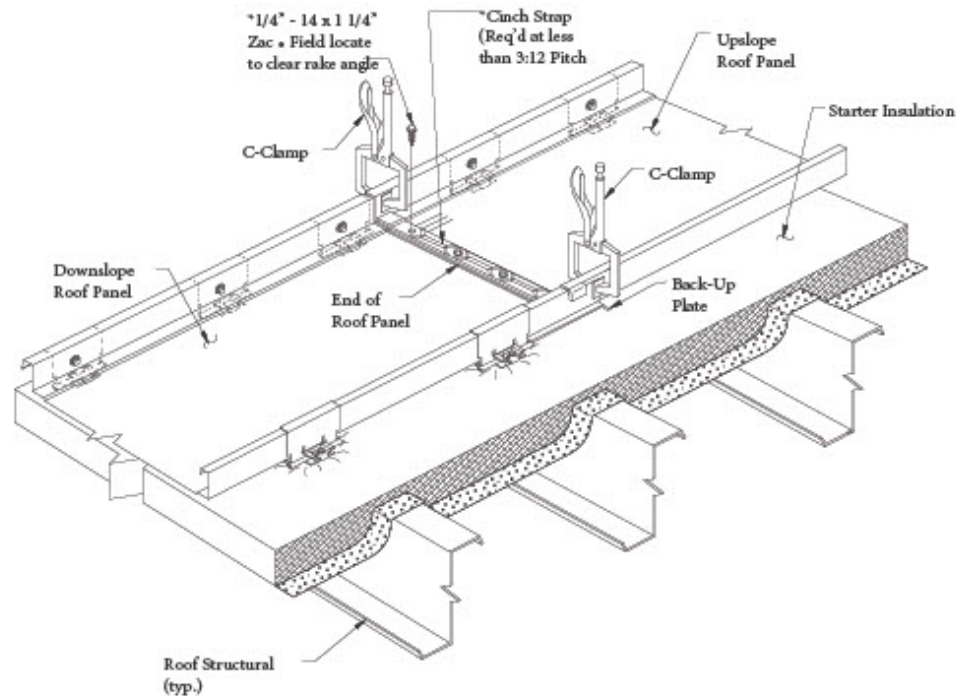
As the up slope panel is lowered bow up the panel flat as shown above. This way the up slope panel can be placed onto the tape sealant without wiping the sealant away from the vertical legs.

Place "C" vice grips over the up slope and down slope panel legs at the tape sealant to start the compression of the tape sealant over trailing edges. Place "C" clamp at up slope panel end.

Important: When bowing panel and using C-Clamps, use caution to prevent damaging the panel.



PANEL FASTENERS
AT ENDLAP
WITHOUT CINCH
STRAP



Install Cinch Strap

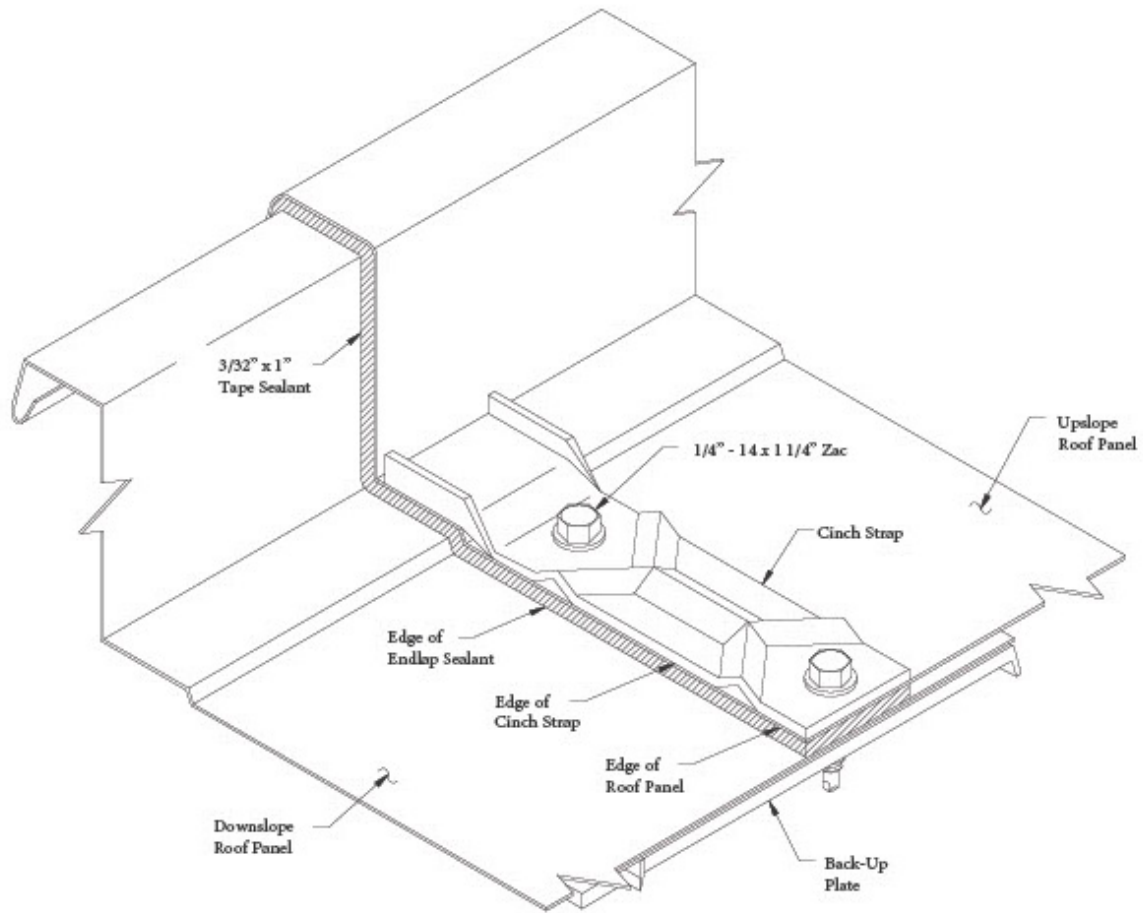
Cinch straps are required on roof systems with less than 3:12 roof pitch.

Position the cinch straps so that the edge of the strap is flush with the panel lap.

See page B-22 for properly installed cinch strap.

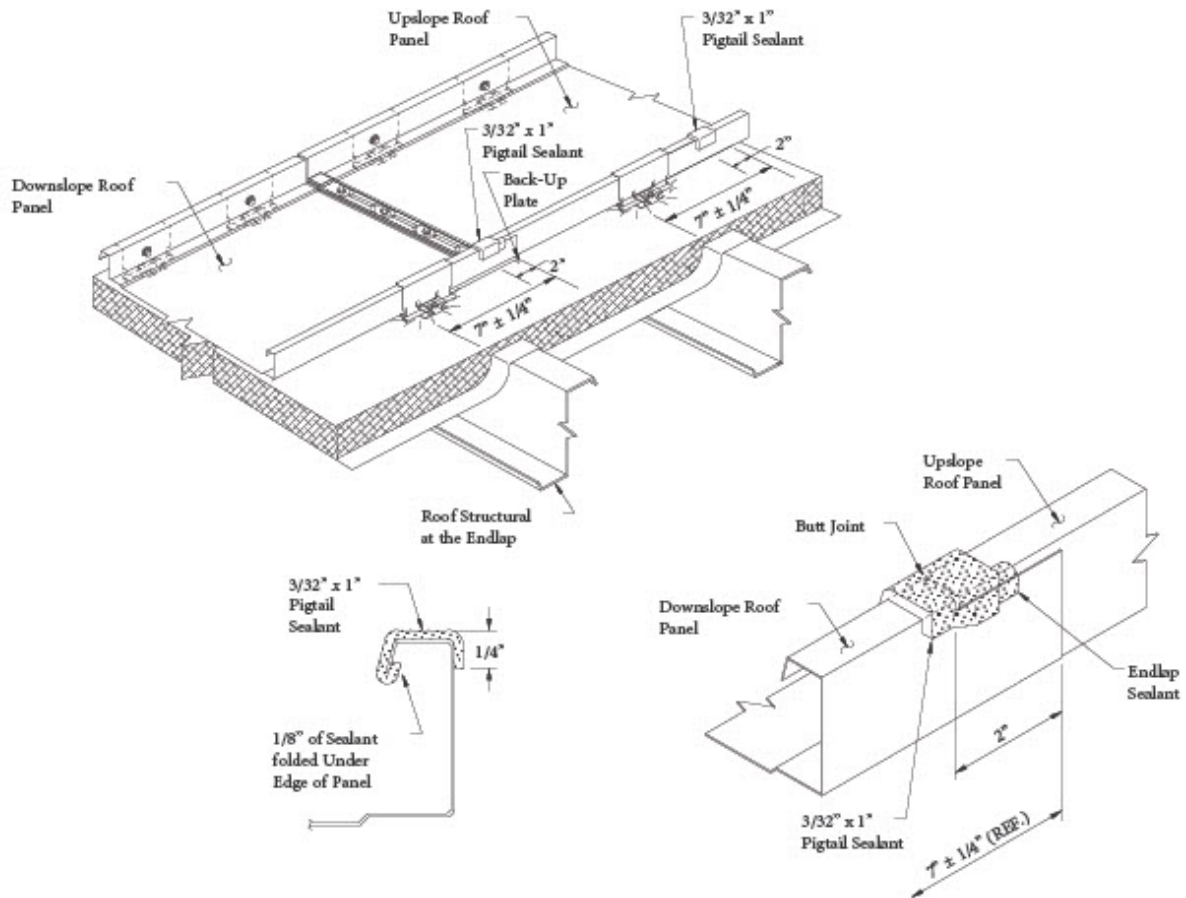
Install end lap fasteners at each hole in cinch strap.

***Installer Note: For Low System Only - The first cinch strap as well as the last cinch strap will require field modification for field location of fastener to clear rake angle.**



Properly Installed Cinch Strap

The above illustration shows a properly installed cinch strap and back-up plate.

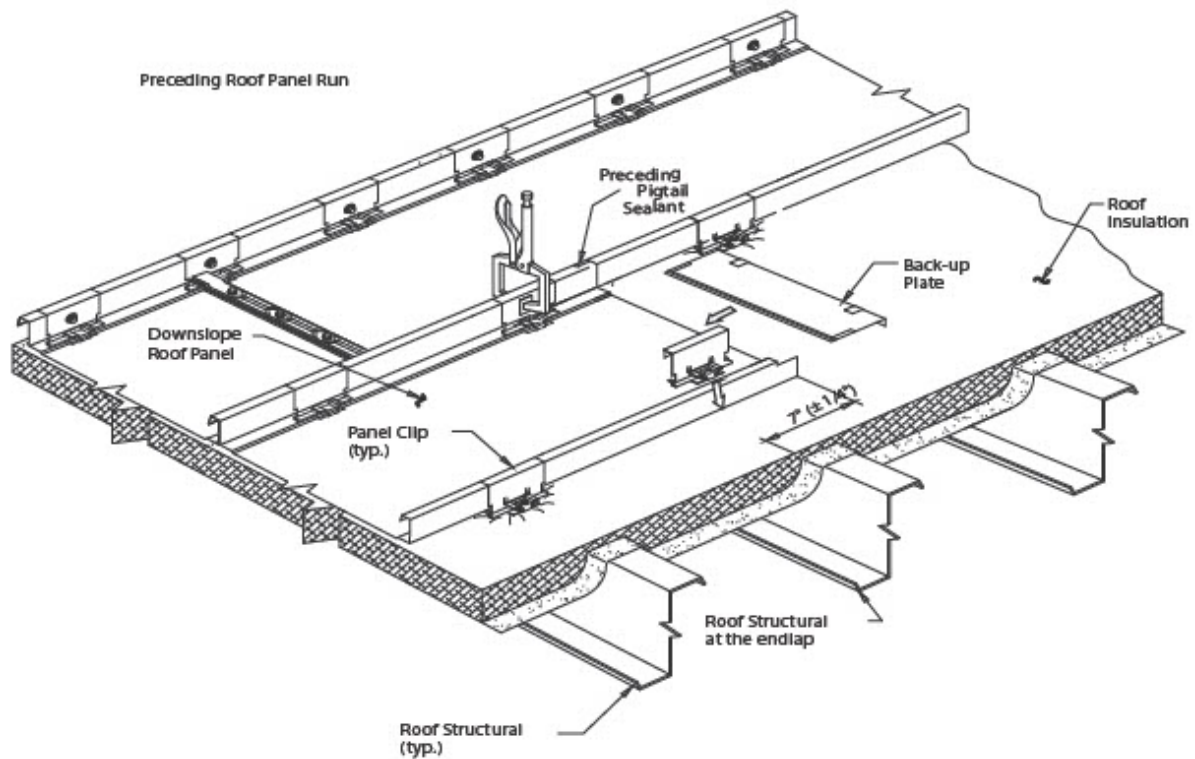


End Lap Pigtail Installation

Place a two inch (2") long strip of tape sealant over the top of the male lip of panel.

The sealant should cover the joint between the up slope and down slope panel legs as shown.

Place a second two inch (2") long strip of tape sealant over the top of the male lip of panel for butt joint of next panel run.

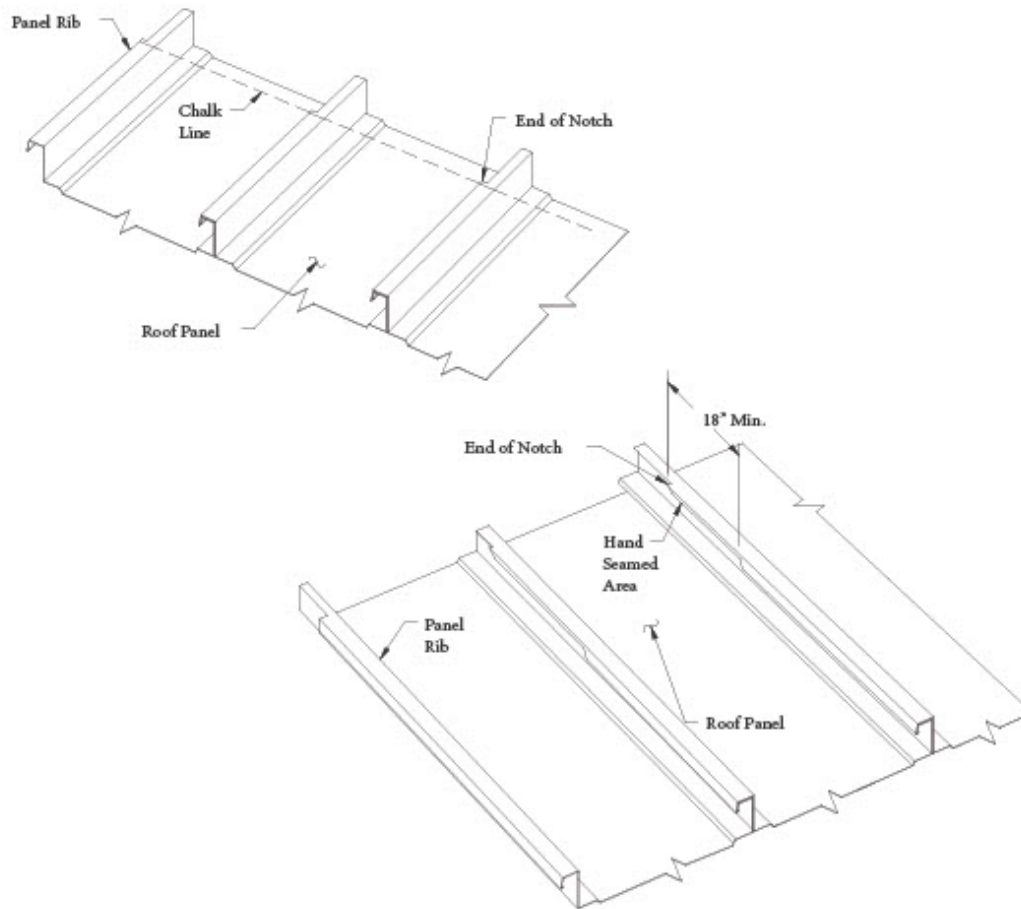


Second Eave Panel

Tremlock VP roof system is lapped in a staggered pattern.

End laps of subsequent panel runs will alternate.

Repeat procedure for installing end laps as in first panel run.



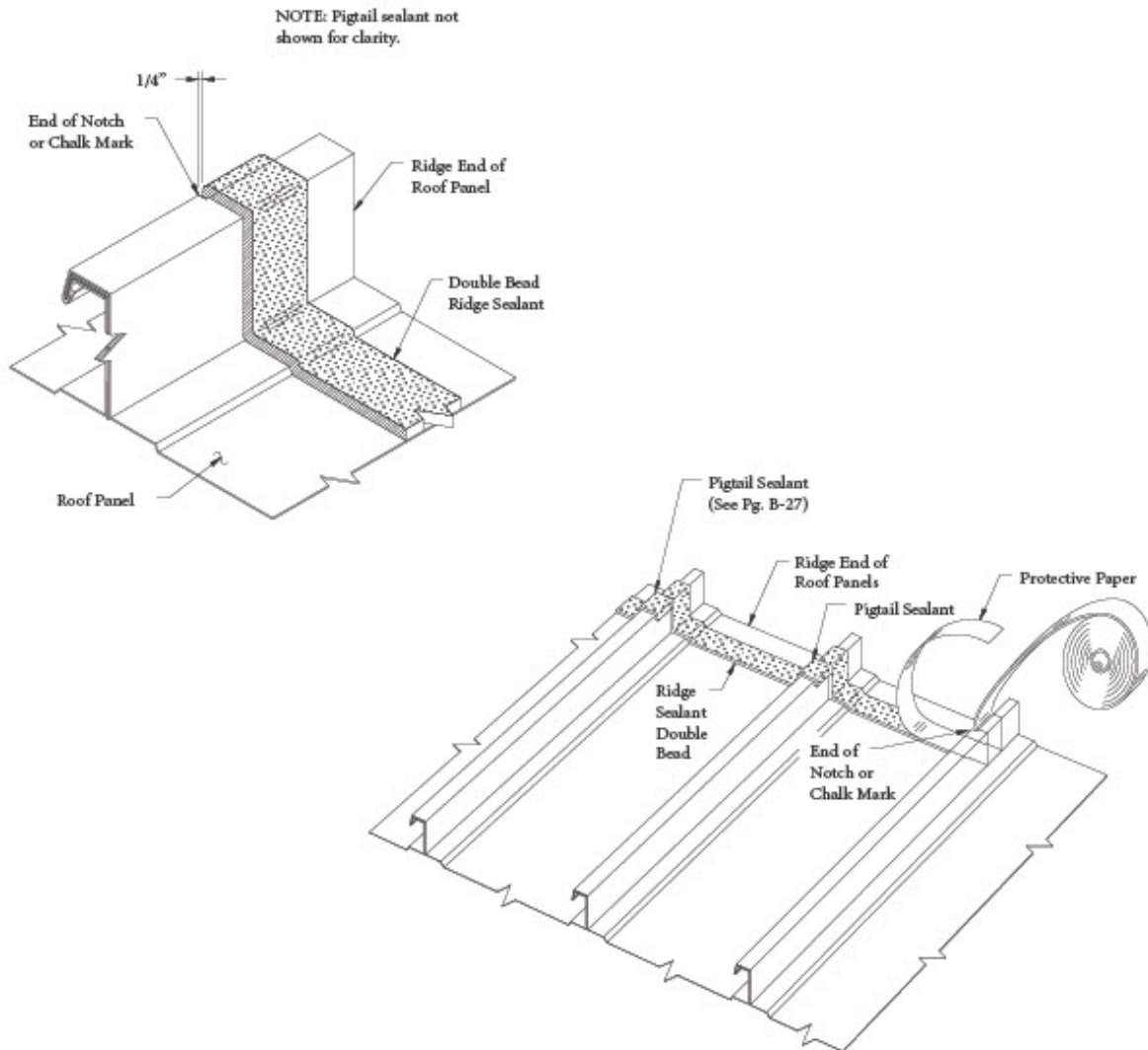
Ridge Preparation

Before installing the ridge closure, inspect the panel seams at the notched portion of the seam to be sure the tape sealant pigtail has been installed before seaming. If pigtails have not been installed as required, the seam must be opened and filled with gun grade sealant.

If the panels have not been seamed prior to the installation of the ridge closures use a hand crimper to seam the panels at least eighteen inches (18") down slope from the panel notch.

Use a chalk line to mark the panel ribs to establish a straight ridge cover line.

Important- The chalk line must be located below the notched portion of all panels.

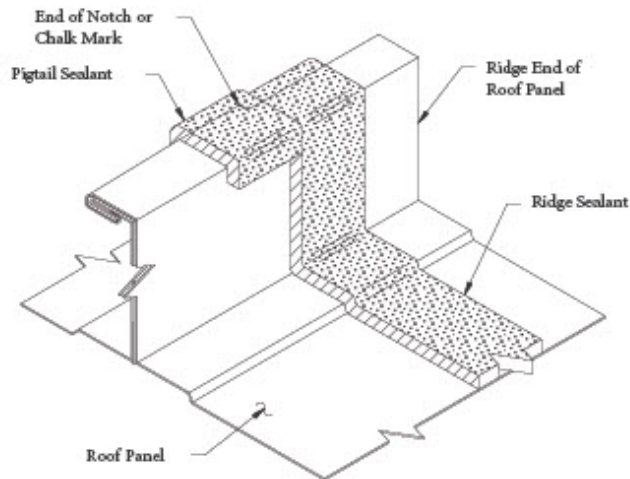
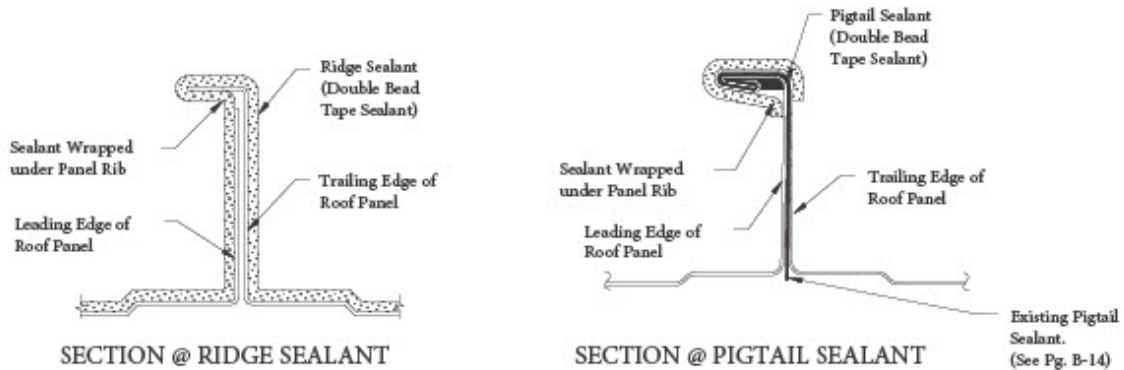


Ridge Sealant Application

Apply a continuous strip of tape along the ridge of the roof panels as shown.

Be sure the down slope edge of the sealant is located 1/4" above the down slope edge of the panel notch.

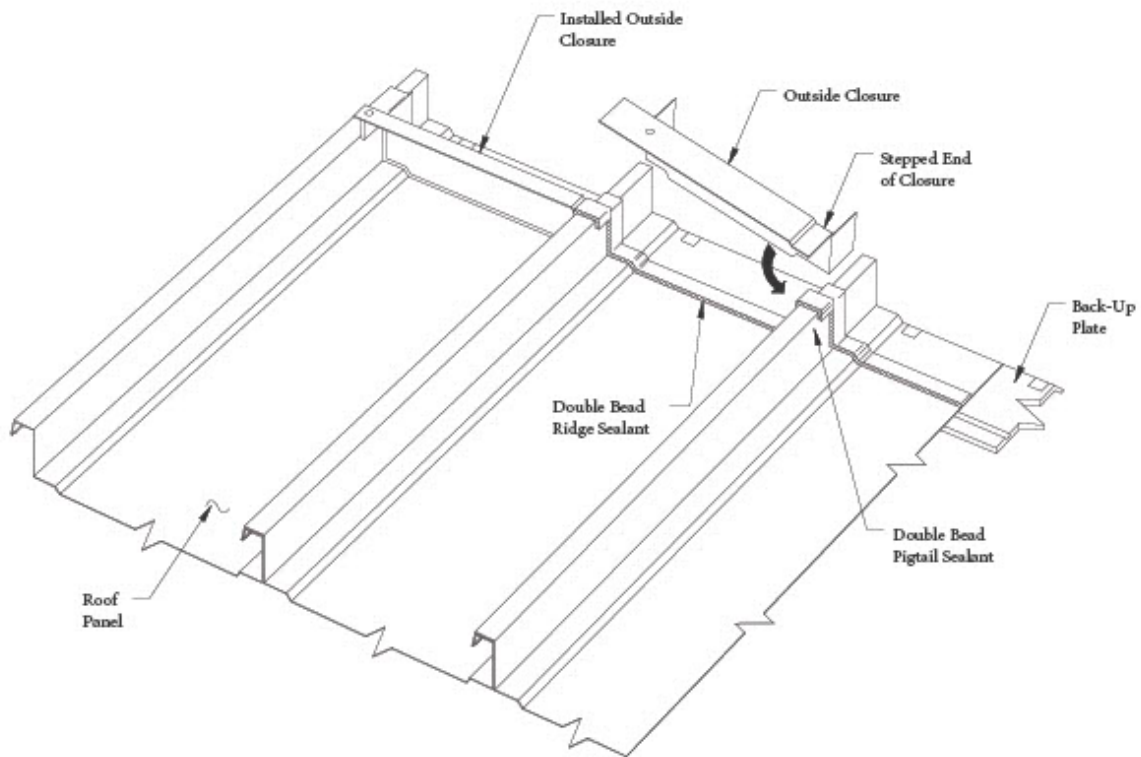
Place a 1-1/4" long sealant pigtail over the seam just down slope of the continuous strip of tape sealant to bridge between the ridge sealant and the lower edge of the notch.



Ridge Sealant Installation Details

The location of the ridge sealant is critical to the weather resistance of the roof system.

Be sure to verify that the sealant is installed as shown above, before installing outside closure.



Outside Closure Installation

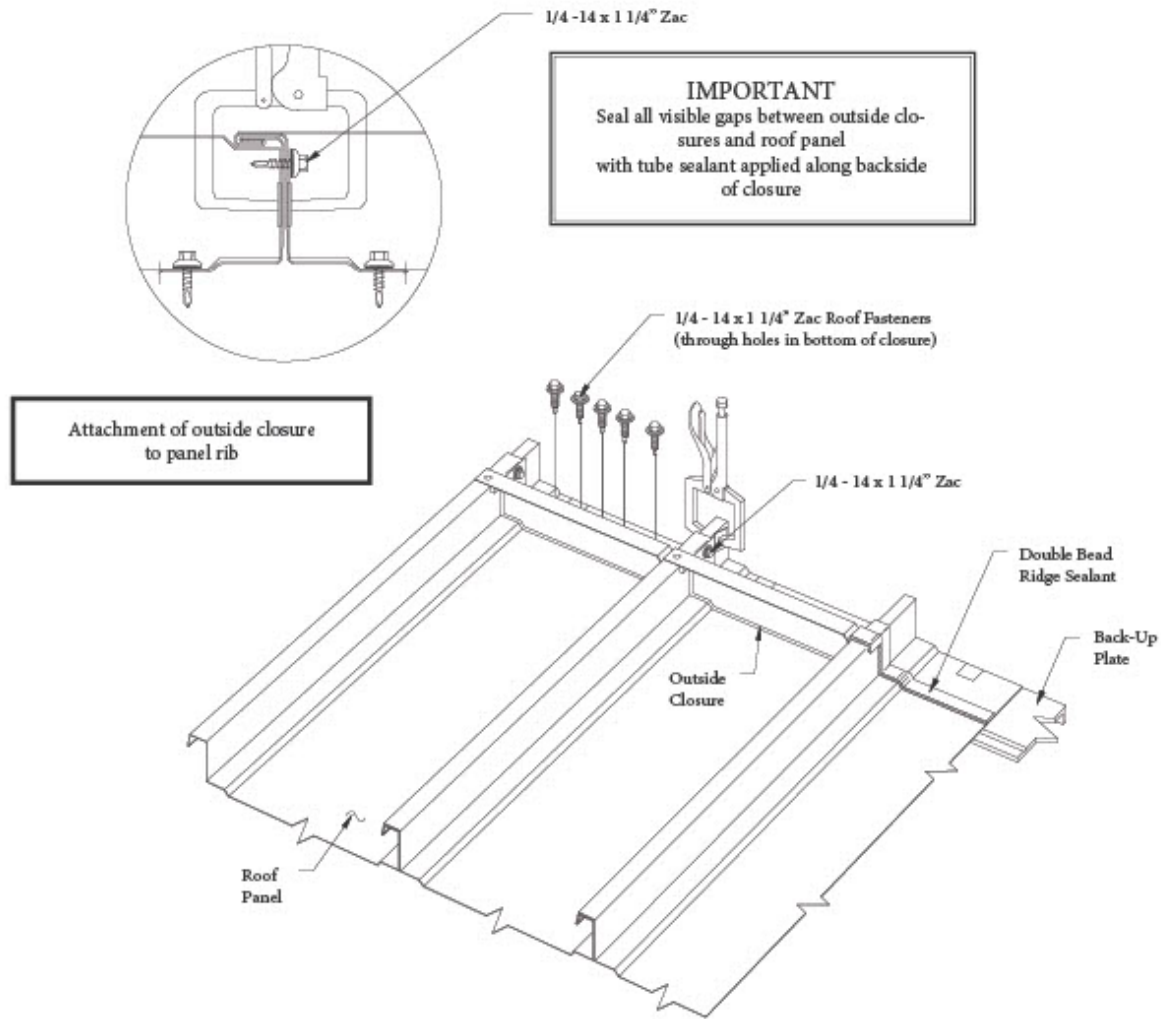
Align the lower flange of the ridge closure with the previously installed tape sealant.

Tilt the ridge closure so that the step end of the closure will slide under the seam as shown.

It may be necessary to force the vertical leg of the panel seam away from the end of the ridge closure to clear the tape sealant.

Be sure the bottom of the ridge closure is resting on the tape sealant.

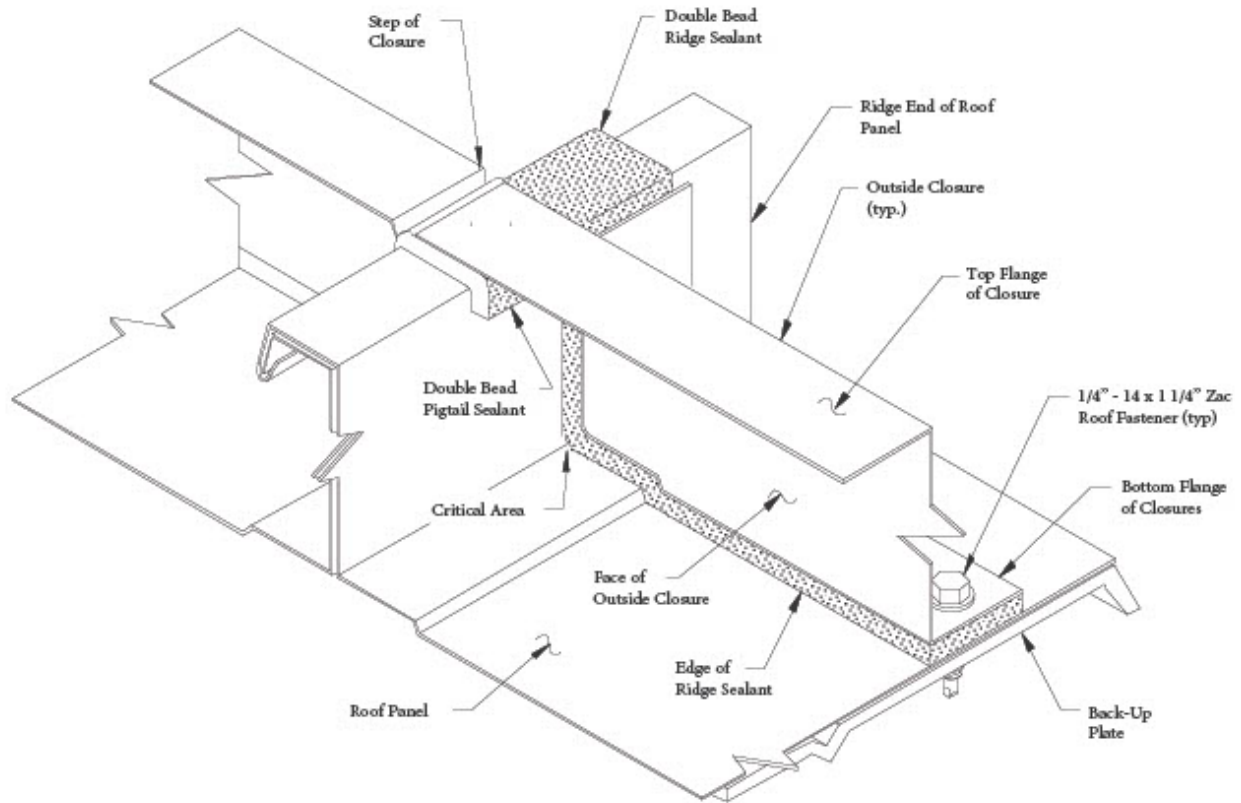
See rake detail page B-34 for installation of outside closure at rake panel.



Outside Closure Attachment

Verify that the closure is perpendicular to the panel surface.

Attach closure to roof panel with fasteners through the factory holes in the bottom flange of the ridge closure.



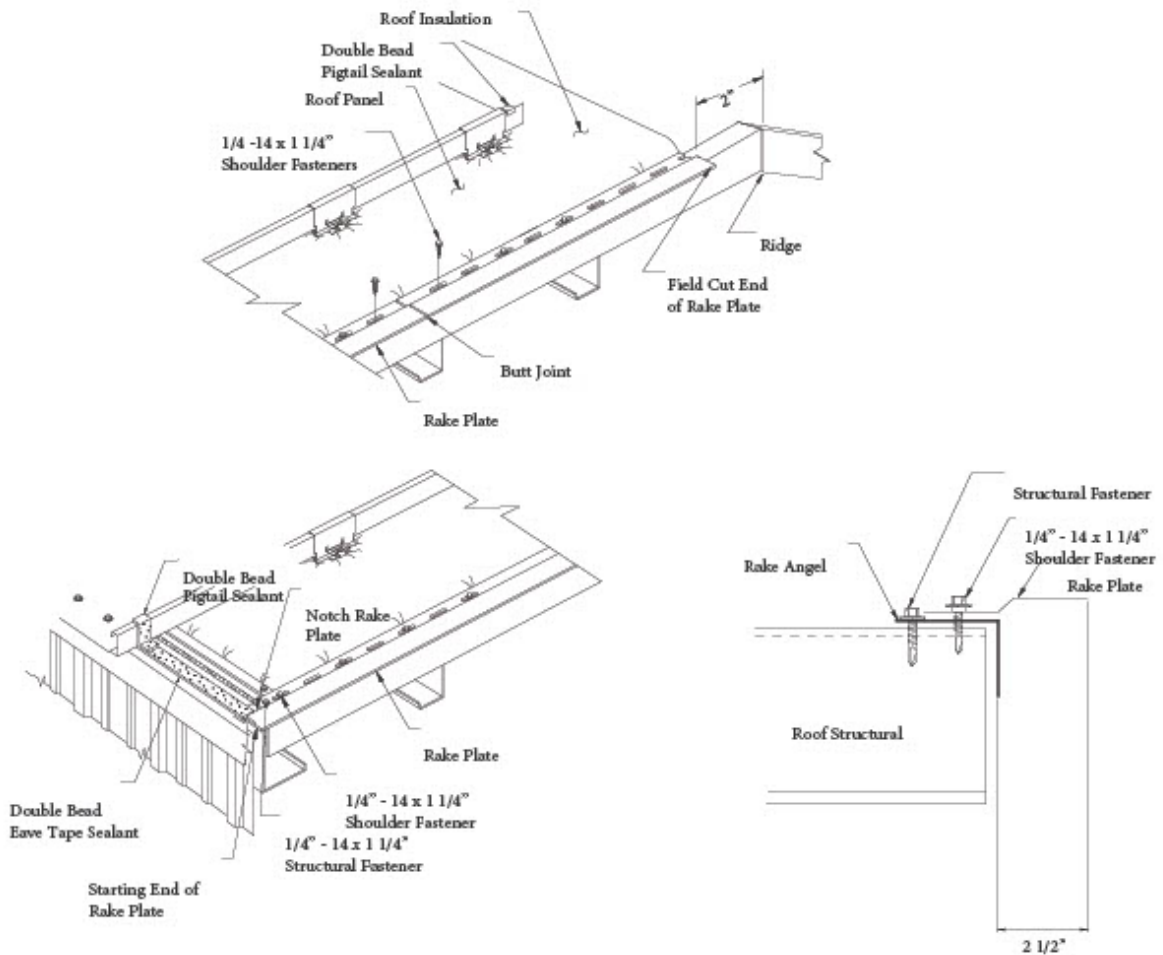
Outside Closure Details

The portion of the outside closure adjoining the roof panel must be completely embedded in sealant with no gaps. Especially critical are the corners of the closure as shown above.

The vertical face of the ridge closure should be flush with the down slope edge of the tape sealant.

The back-up plate must be located under the ridge closure and the fasteners attaching the closure must fully engage the back-up plate.

The down slope lip of the back-up plate must rest on the ridge purlin.



Rake Plate Installation

Start the lower end of the rake plate flush with the lower edge of the eave plate. The rake plate must be notched to clear the eave plate.

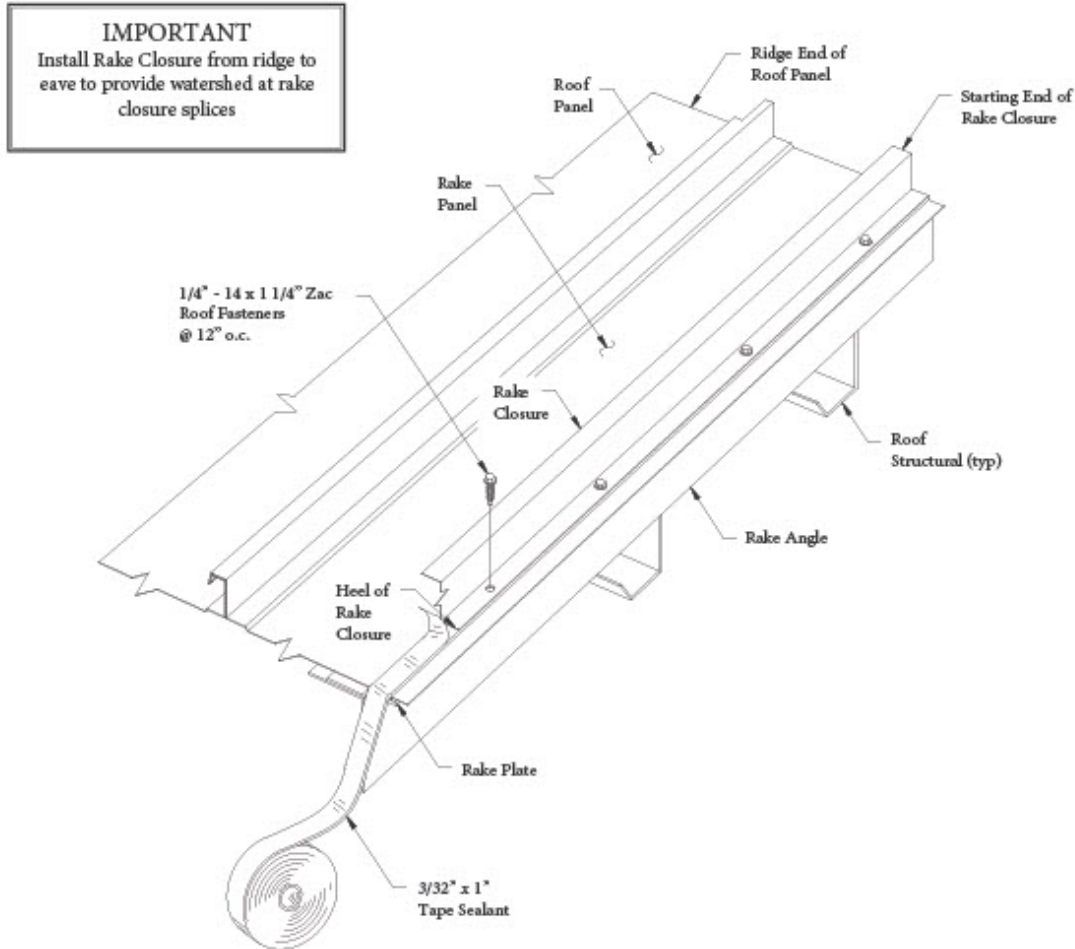
Attach the down slope end of the eave plate with one (1) structural fastener through the eave strut. This fastener should not be through a slot.

Use shoulder fasteners placed on 12" centers to attach the remaining portion of the rake plates.

Butt the ends of the rake plate along the rake angle. Place shoulder fastener in center of slots on either side of the butt joints.

Field cut the last rake plate two inches (2") from the ridge or high edge of roof.

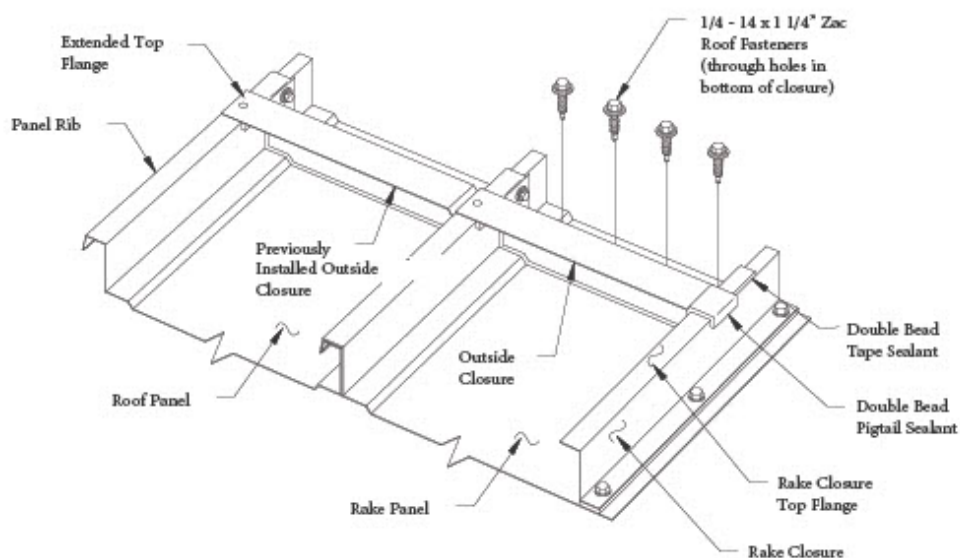
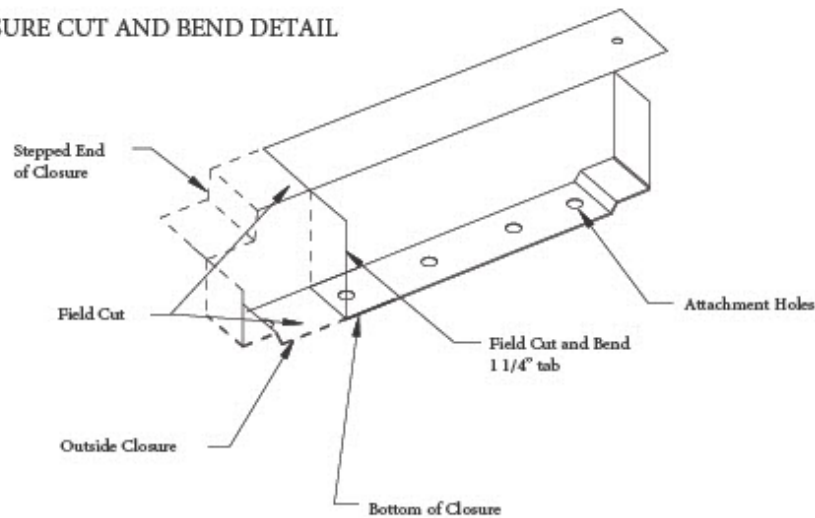
Important: The shoulder fasteners must be installed in the center of the slots of the rake plate to allow for expansion and contraction of the roof panel.



Rake Closure Installation

1. Field cut rake panel to fit and install.
2. Apply a continuous strip of tape sealant along the top of panel as shown.
3. Position the rake closure over tape sealant as shown with the upper lip facing toward the panel vertical leg.
4. **IMPORTANT** -Always start installing the rake closure from the ridge.
5. Attach the rake closure with roof fasteners spaced 12" on center.
6. At rake closure splice, lap 2" with 3/16" bead of tube sealant.
7. Terminate Rake Closure flush with ends of rake panel.

CLOSURE CUT AND BEND DETAIL



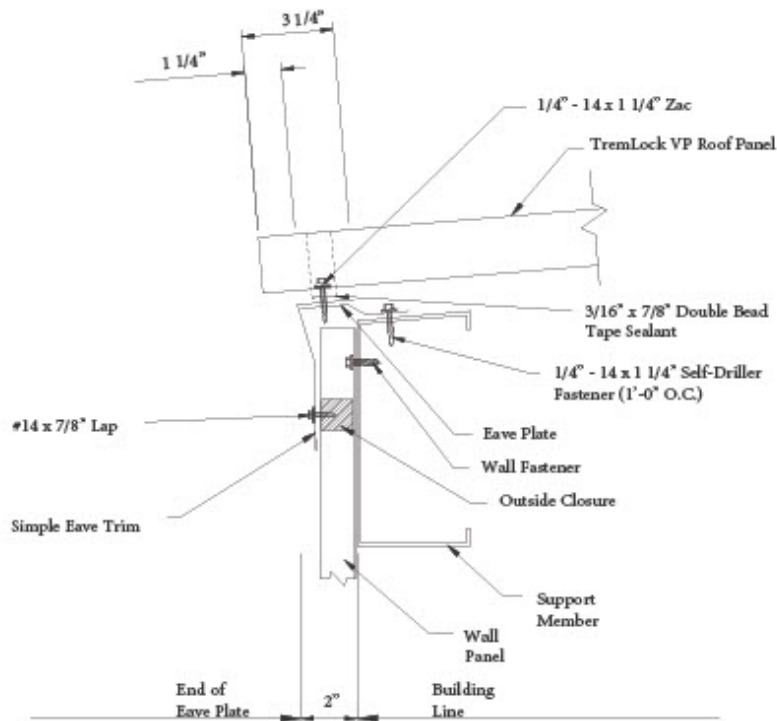
Outside Closure Installation at Rake Panel

If the last panel run requires field cut panels, the ridge closure must be field modified to fit between the panel leg and the rake closure.

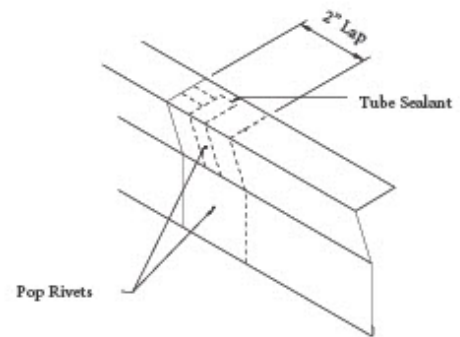
Field cut the end of the closure with the step.

Field modify the closure as shown above and install as previously described.

Be sure tape sealant fills the corner of the closure where vertical leg is field bent.

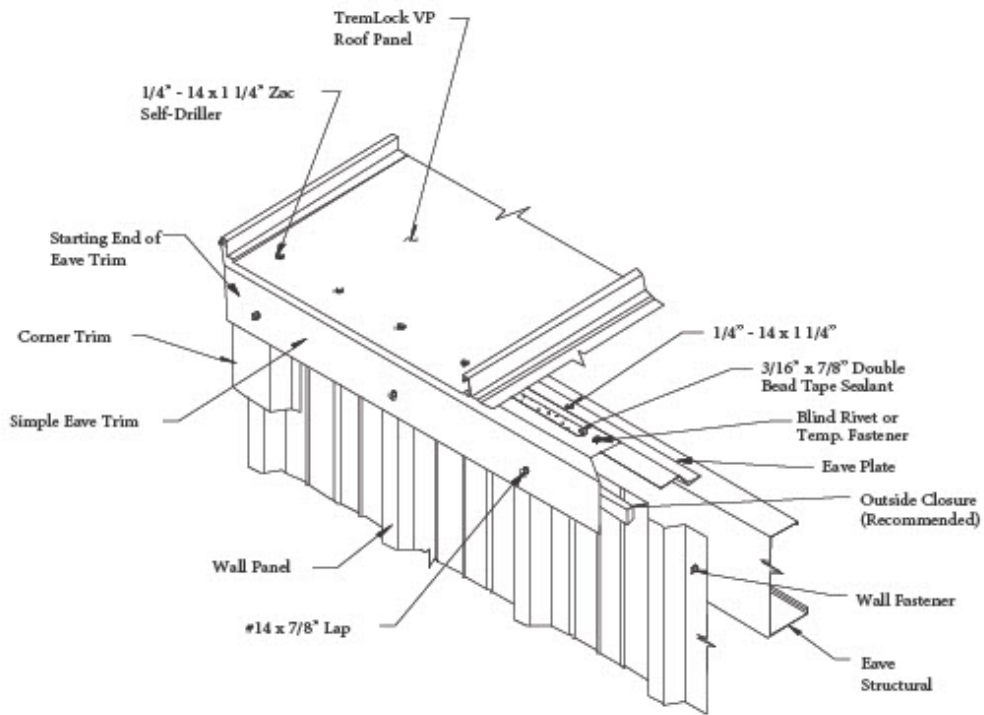


Section at Eave / Simple Eave Trim

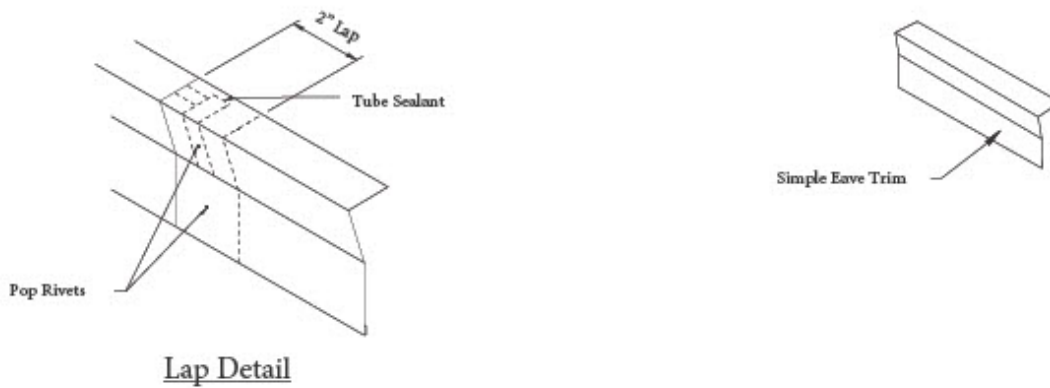


Lap Detail

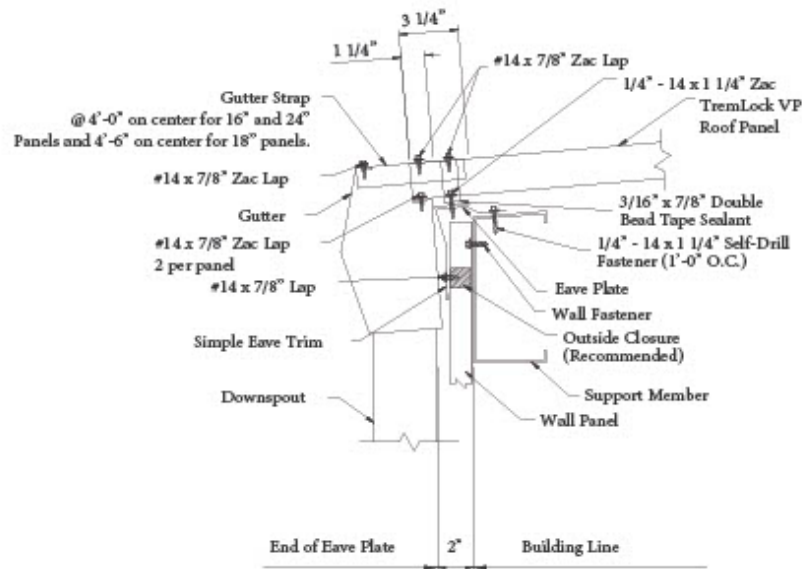
1. Trim to start and end with endwall lines.
2. Trim pieces lap 2".
3. Use tube sealant at lap.
4. Pop-rivet trim lap with 2 rivets.
5. Attach to wall panel ribs with a #14 x 7/8" lap fastener.



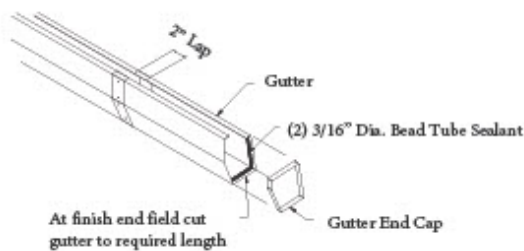
Starting Eave Detail / Simple Eave Trim



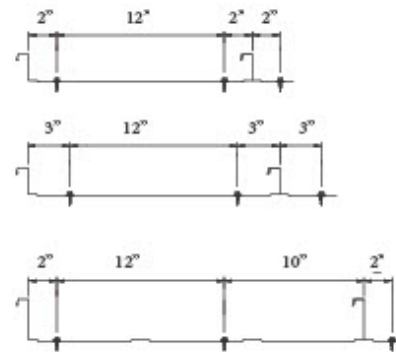
Lap Detail



Section at Eave / Gutter and Downspout

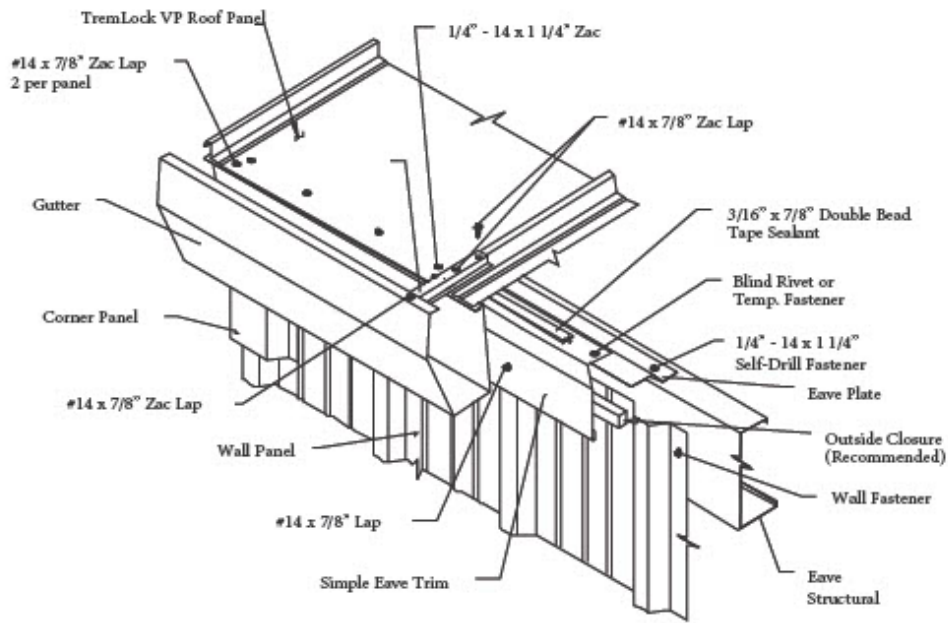


Lap Detail



Gutter Fastener Pattern

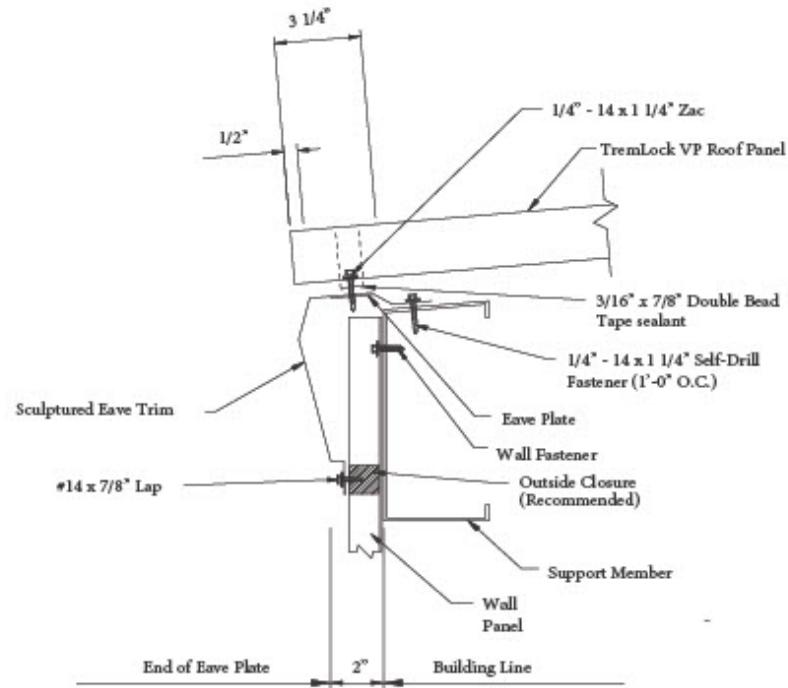
1. Gutter starts and ends at endwall steel-lines.
2. Apply tube sealant before lapping.
3. Attach gutter to roof panel with #14 x 7/8" lap fasteners at 1'-0" centers.
4. Use pop-rivets at end cap and lap.
5. Attach gutter straps to panel rib with #14 x 7/8" lap fasteners.
6. Attach gutter to gutter straps with #14 x 7/8" lap fasteners.



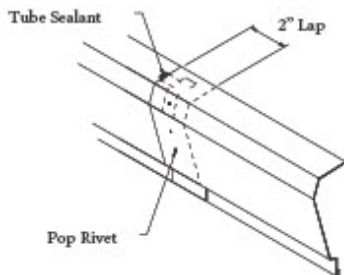
Starting Eave Detail / Gutter



Lap Detail

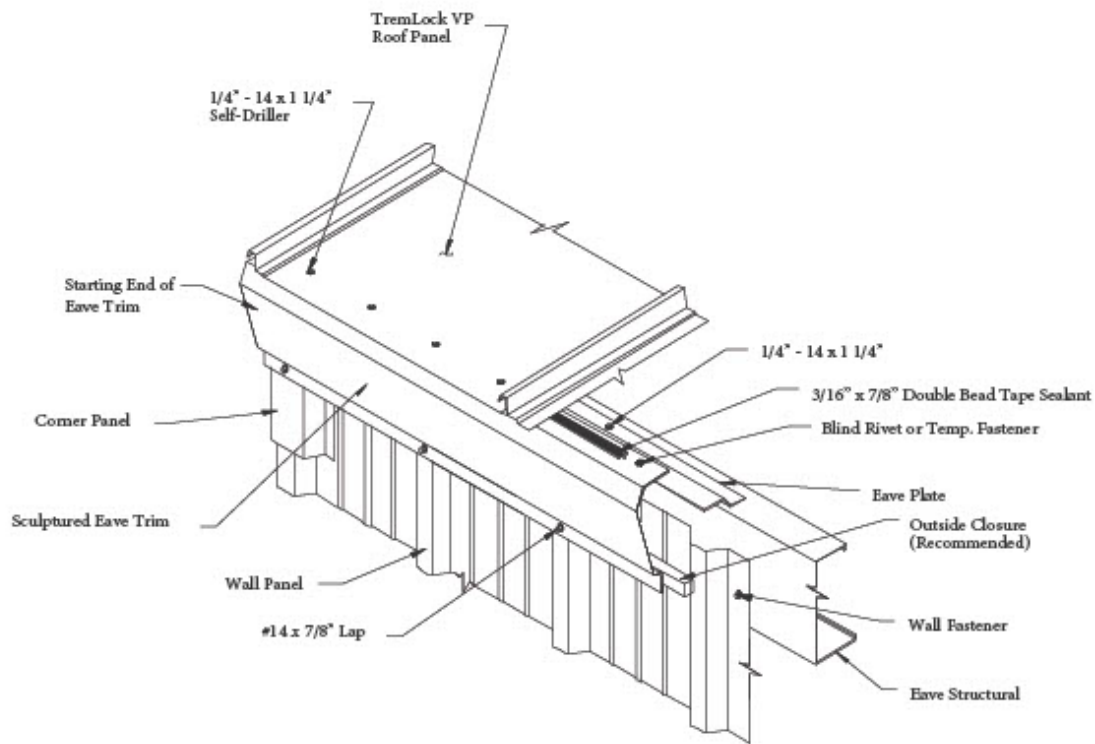


Section at Eave / Sculptured Eave Trim

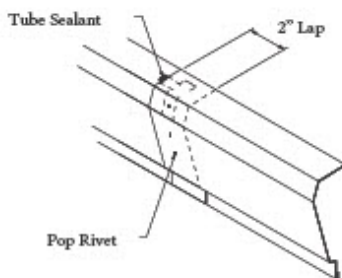


Lap Detail

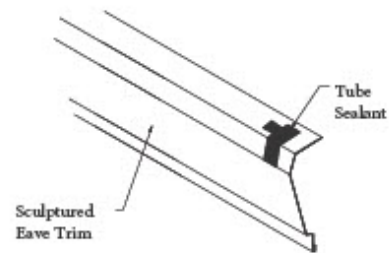
1. Trim to start and end with endwall steel-lines.
2. Trim pieces lap 3".
3. Use tube sealant at lap.
4. Pop rivet trim lap with 2 rivets.
5. Attach to wall panel ribs with a #14 x 7/8" lap fastener.

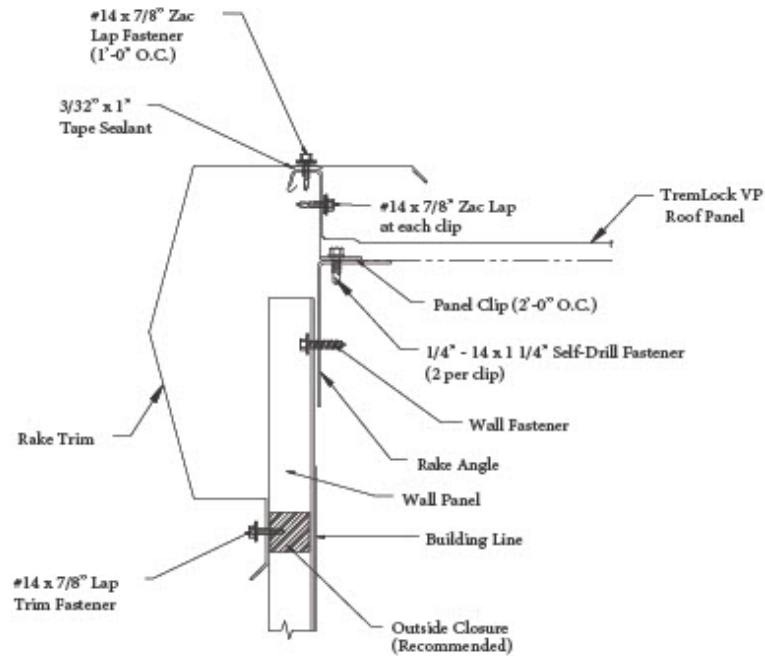


Starting Eave Detail / Sculptured Eave Trim

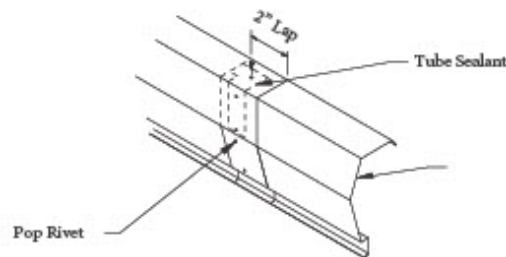


Lap Detail



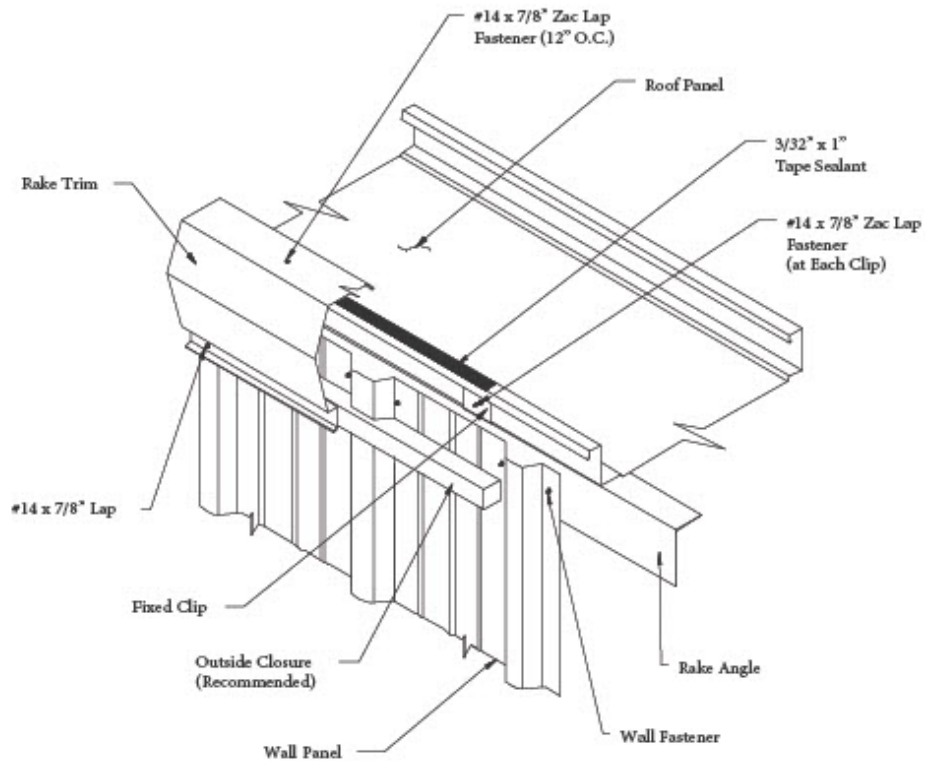


Section at Rake Start (On Module) / Fixed System



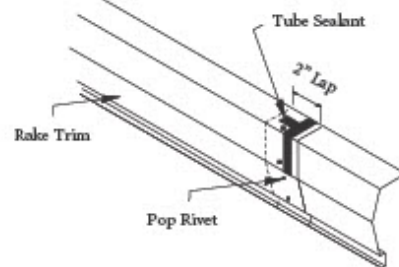
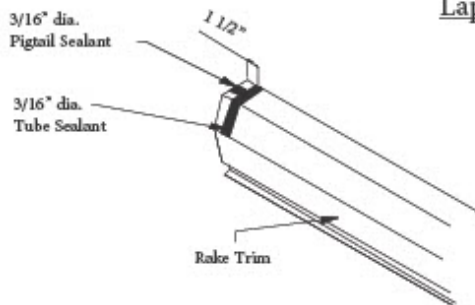
Lap Detail

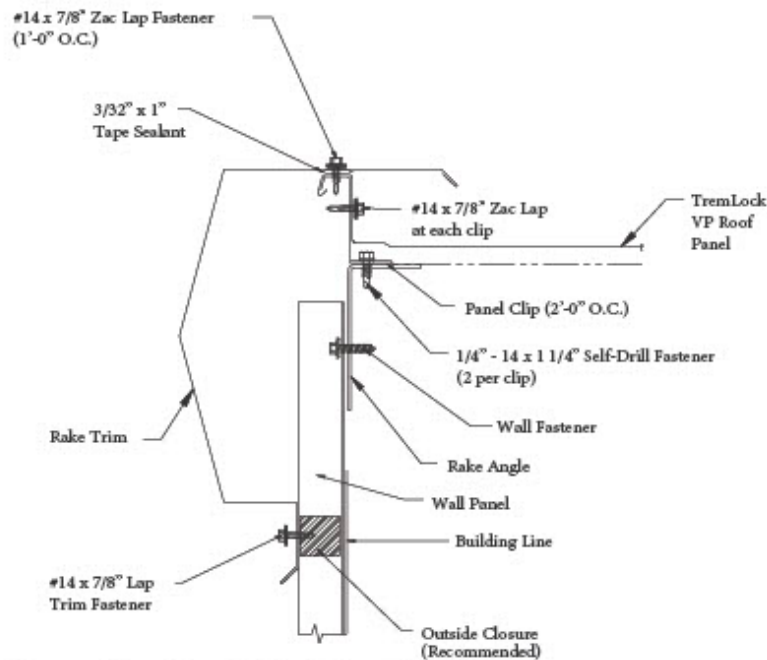
1. Trim to start even with face of sidewall panels.
2. Place roll tape on rib of roof panel.
3. Attach trim to panel with #14 x 7/8" zac lap fasteners at 1'-0" centers.
4. Attach trim to panel ribs with #14 x 7/8" lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim lap.



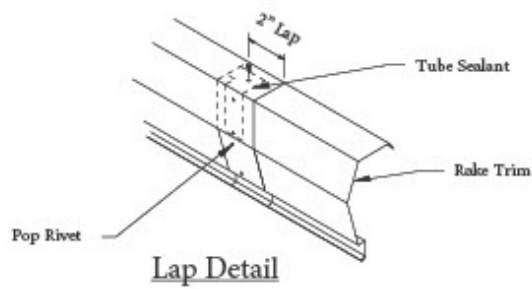
Rake Start (On Module) / Fixed System

Lap Detail

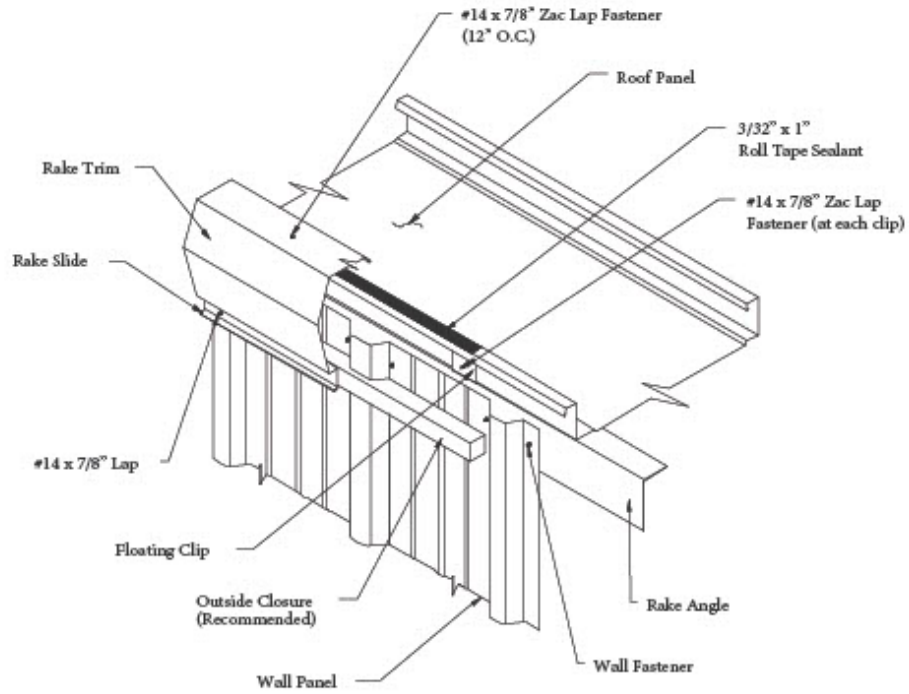




Section at Rake Start (On Module) / Floating System

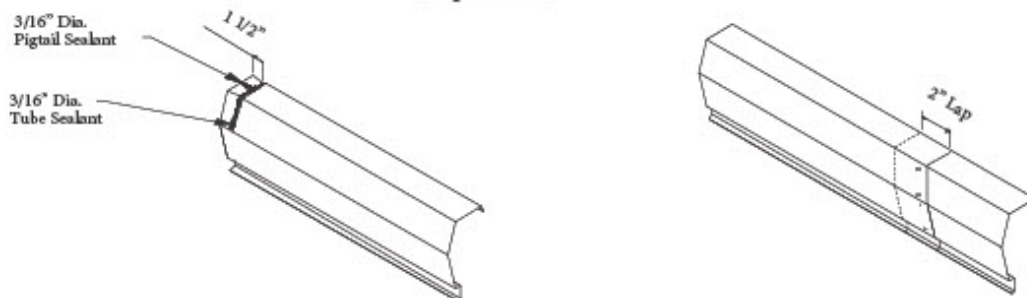


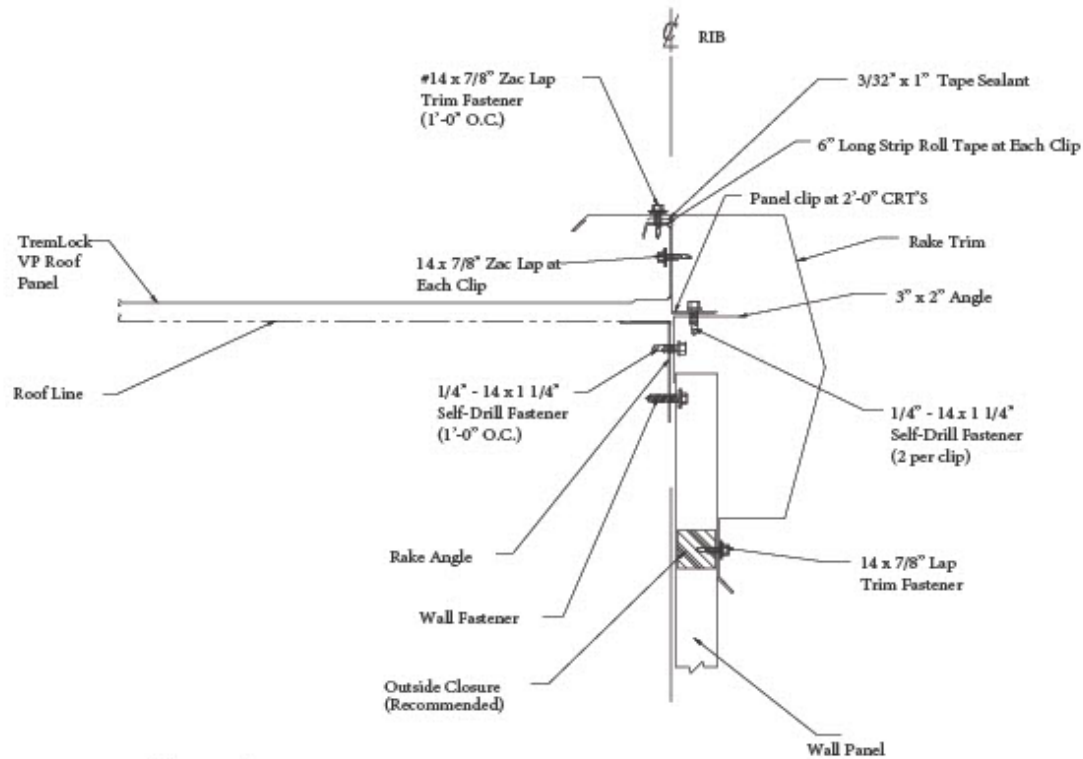
1. Trim to start even with face of sidewall panels.
2. Place roll tape on rib of roof panel.
3. Attach trim to panel with #14 x 7/8" zac lap fasteners at 1'-0" centers.
4. Attach rake slide to panel ribs with #14 x 7/8" lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim laps.



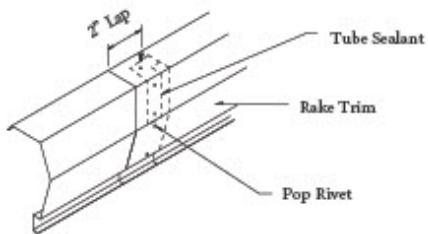
Rake Start (On Module) / Floating System

Lap Detail



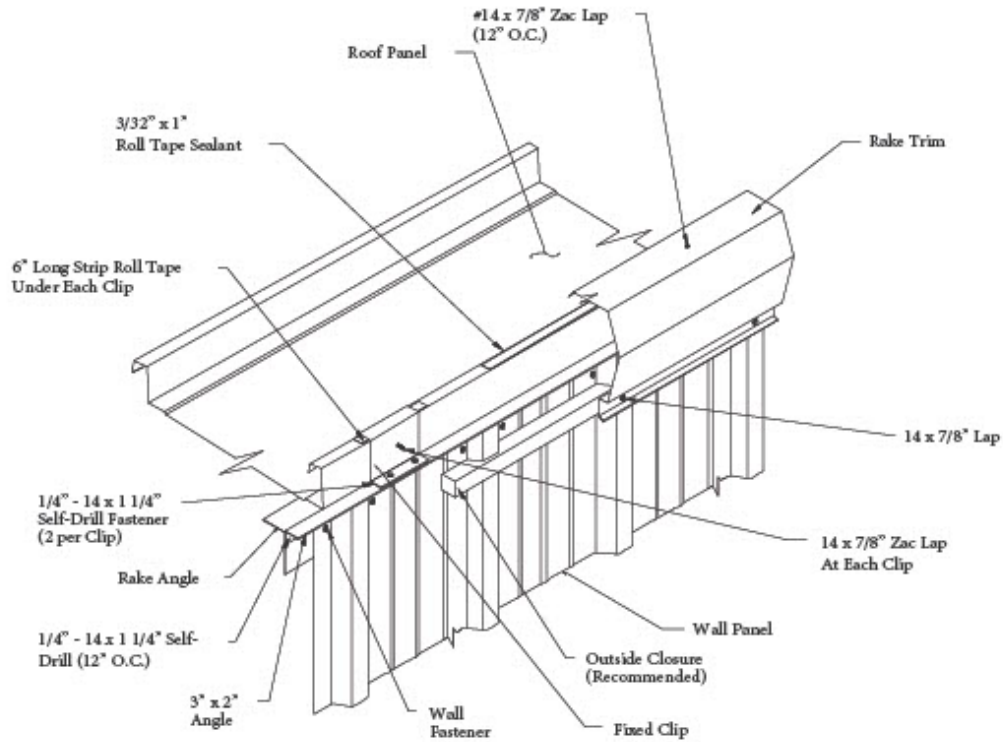


Section Rake End (On Module) / Fixed System



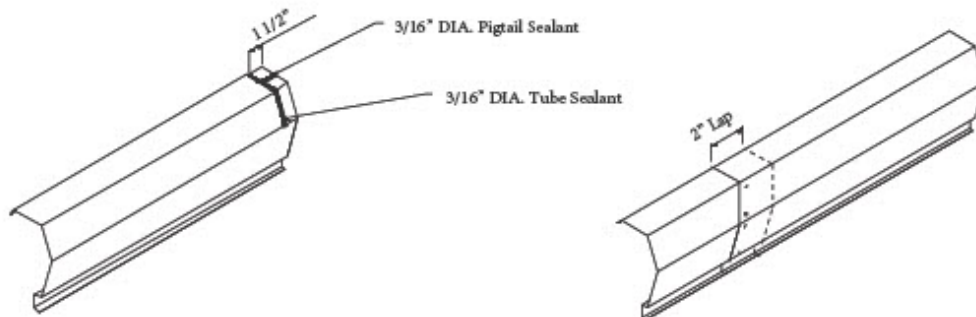
Lap Detail

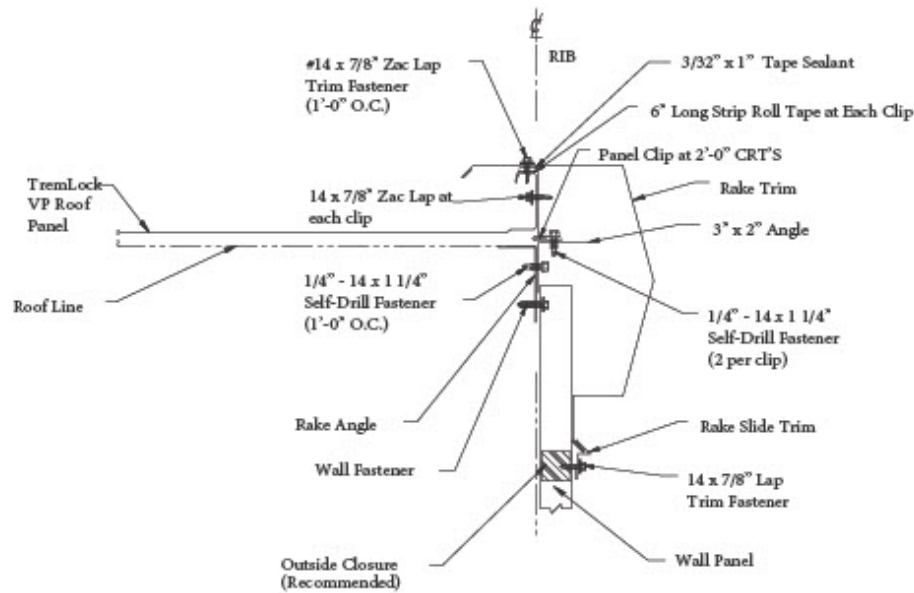
1. Trim to start even with face of sidewall panels.
2. Place roll tape on rib of roof panel.
3. Attach trim to panel #14 x 7/8" zac lap fasteners at 1'-0" centers.
4. Attach trim to panel ribs with #14 x 7/8" lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim laps.



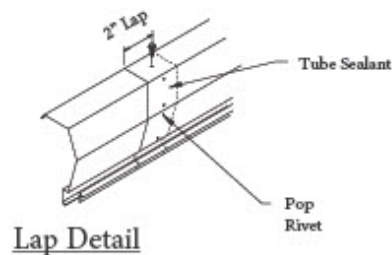
Rake End (On Module) / Fixed System

Rake Trim Splice

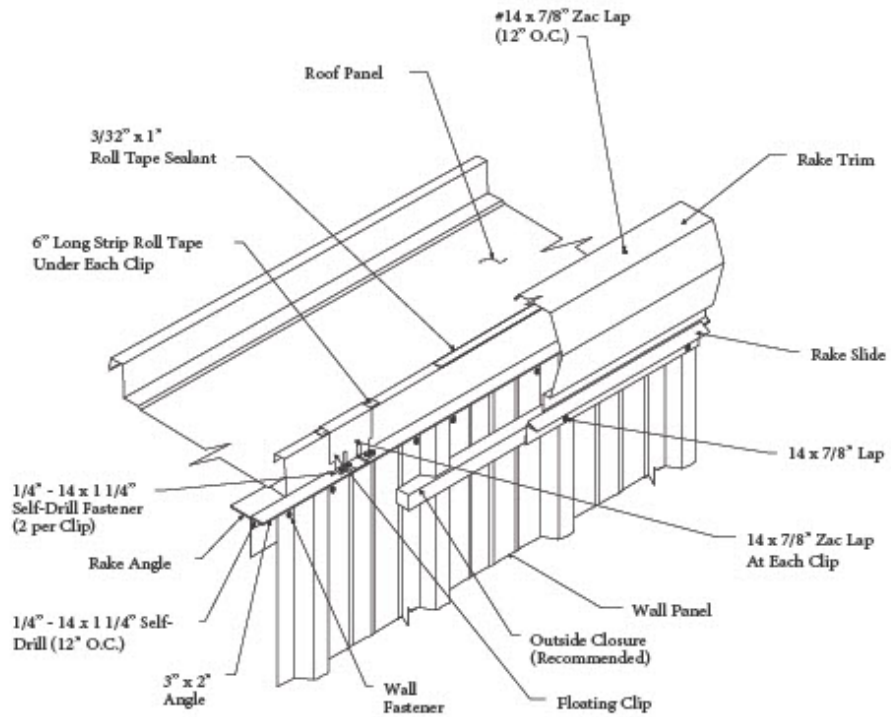




Section Rake End (On Module) / Floating System

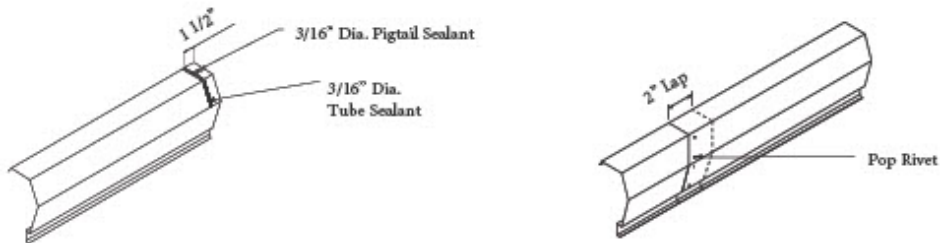


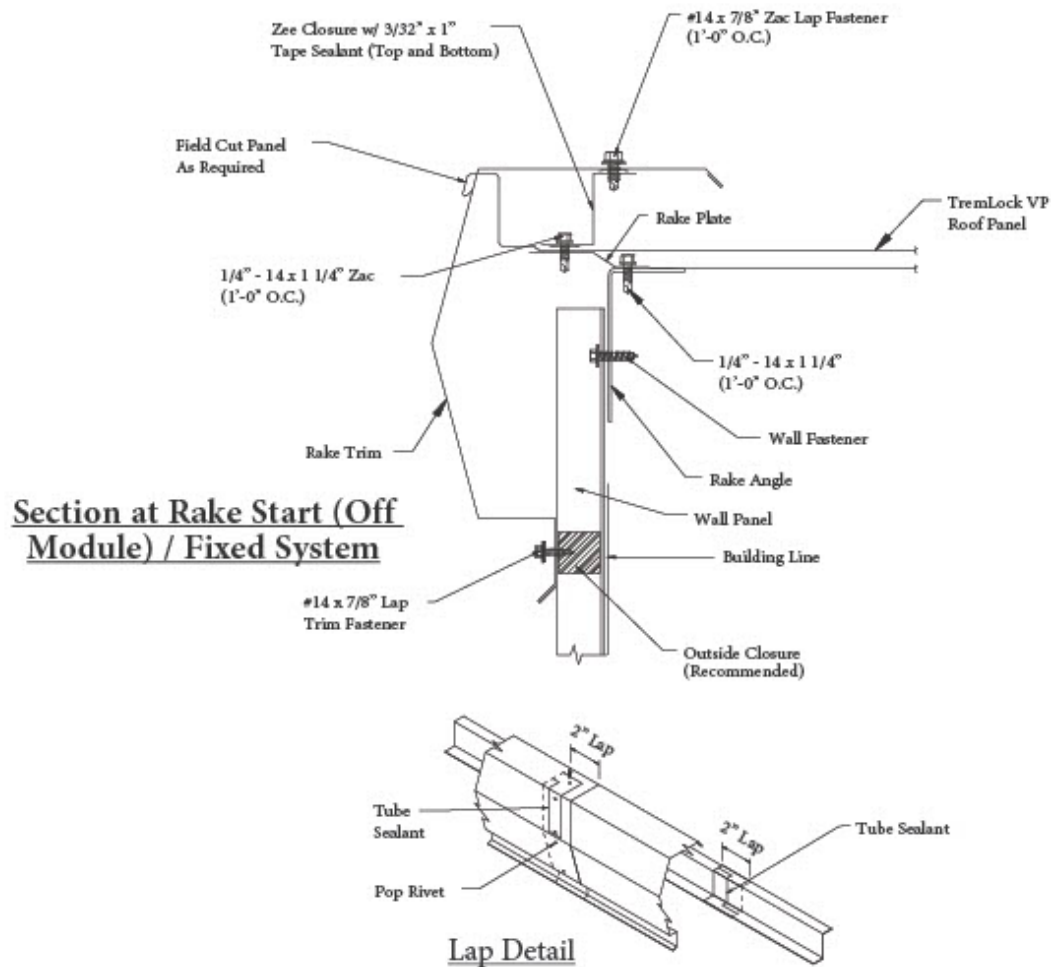
1. Trim to start even with face of sidewall panels.
2. Place roll tape sealant on rib of roof panel.
3. Attach trim to panel #14 x 7/8" zac lap fasteners at 1'-0" centers.
4. Attach rake slide to panel ribs with #14 x 7/8" zac lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim lap.



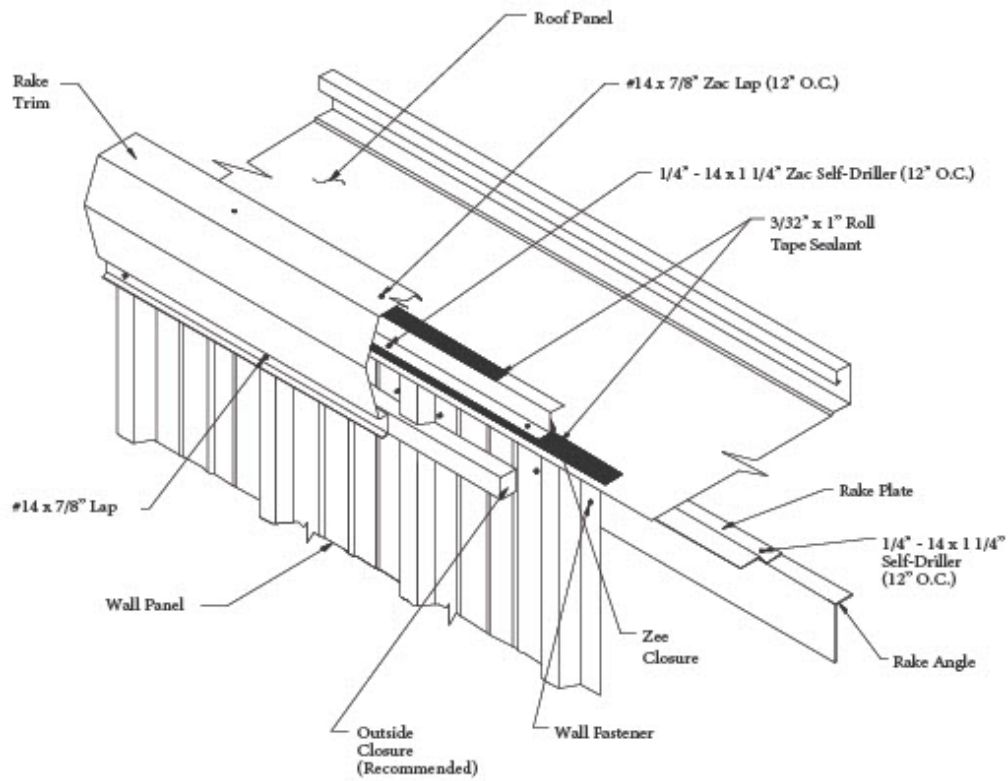
Rake End (On Module) / Floating System

Lap Detail





1. Trim to start even with face of sidewall panels.
2. Place roll tape on panel flat.
3. Attach zee trim with 1/4" - 14 x 1 1/4" zac fasteners at 1'-0" centers.
4. Place roll tape on zee trim.
5. Attach trim to zee with #14 x 7/8" zac lap fasteners at 1'-0" centers.
6. Attach rake slide to panel ribs with #14 x 7/8" lap fasteners.
7. Apply tube sealant before lapping.
8. Pop-rivet trim lap.

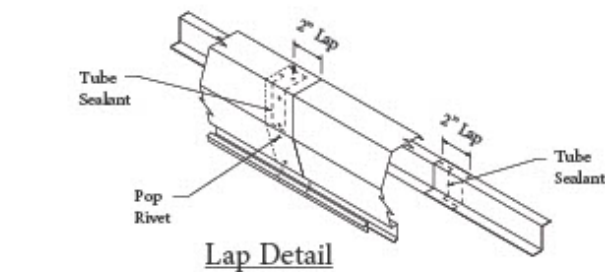
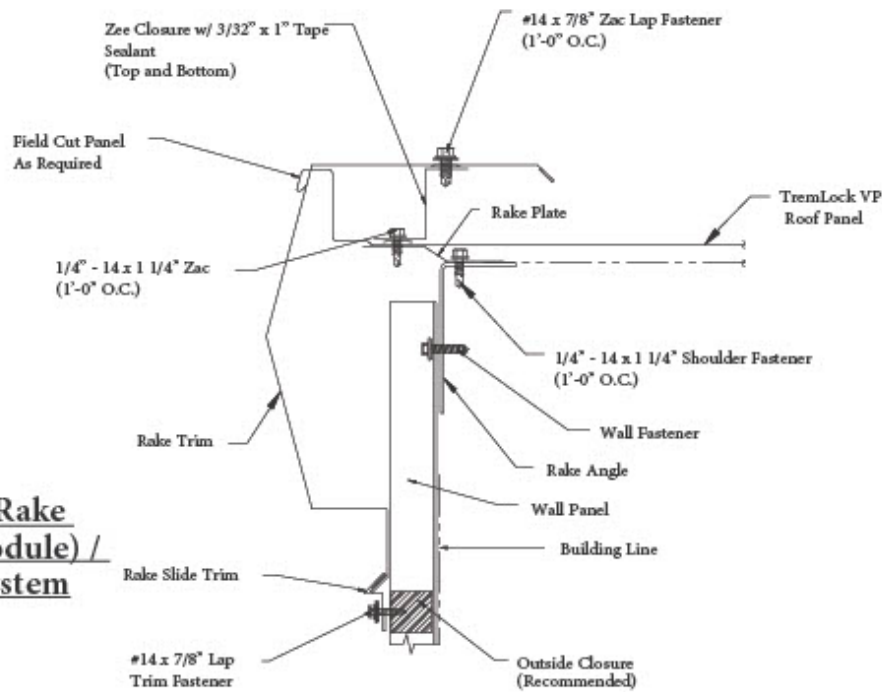


Rake Start (Off Module) / Fixed System

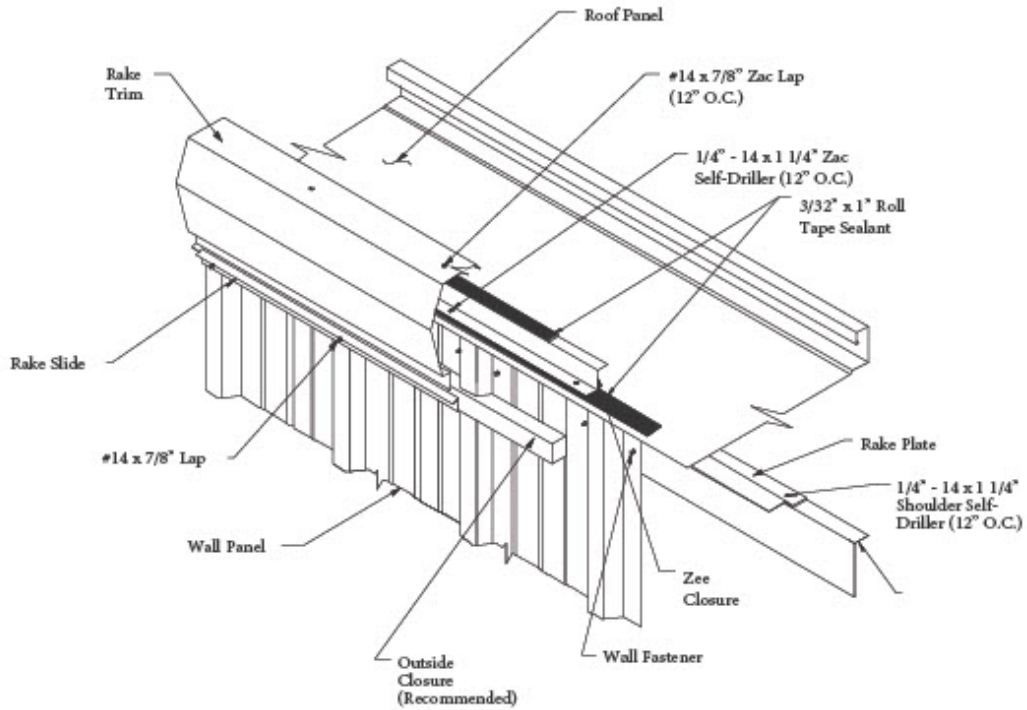
Lap Detail



Section at Rake Start (Off Module) / Floating System

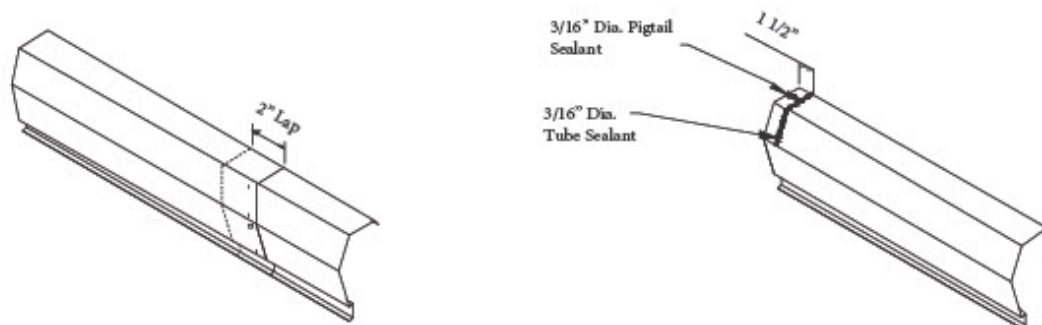


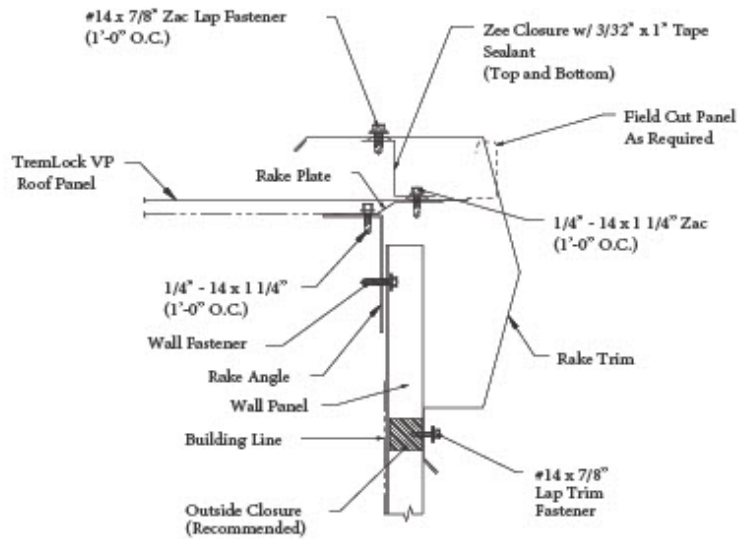
1. Trim to start even with face of sidewall panels.
2. Place roll tape on panel flat.
3. Attach zee trim with 1/4" - 14 x 1 1/4" zac fasteners at 1'-0" centers.
4. Place roll tape on zee trim.
5. Attach trim to zee with #14 x 7/8" zac lap fasteners at 1'-0" centers.
6. Attach rake slide to panel ribs with #14 x 7/8" lap fasteners.
7. Apply tube sealant before lapping.
8. Pop-rivet trim lap.



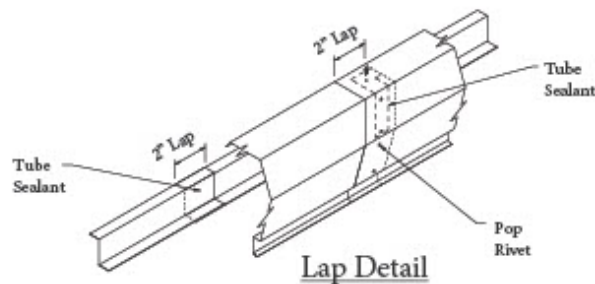
Maxima Rake Start (Off Module) / Floating System

Rake Trim Splice

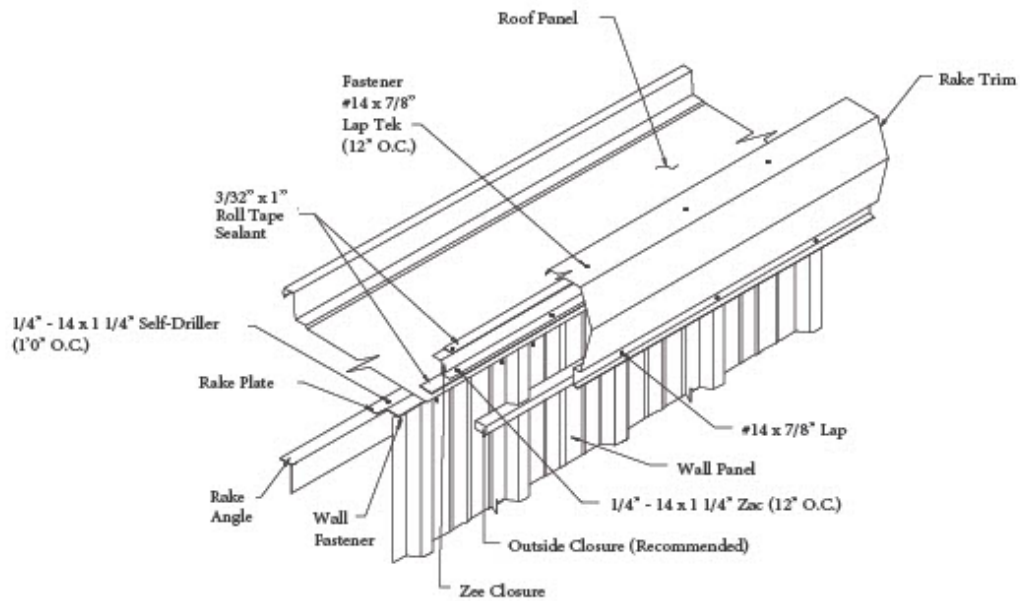




Section at Rake End (Off Module) / Fixed System

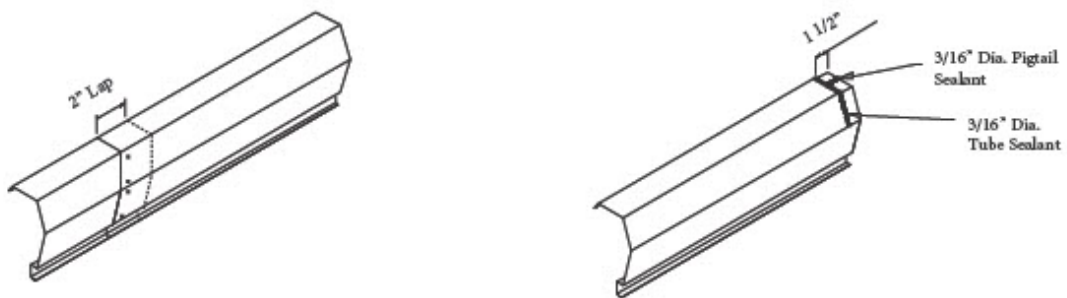


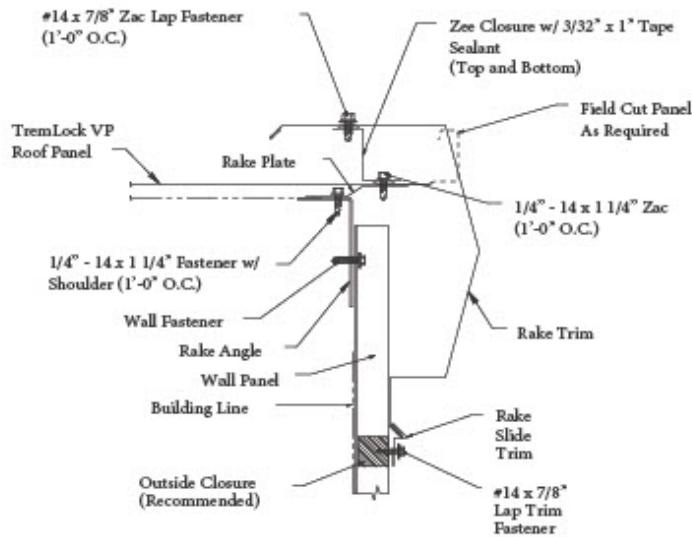
1. Trim to start even with face of sidewall panels.
2. Place roll tape on panel flat.
3. Attach zee trim with 1/4" - 14 x 1 1/4" zac fasteners at 1'-0" centers.
4. Place roll tape on zee trim.
5. Attach trim to zee with #14 x 7/8" zac lap fasteners at 1'-0" centers.
6. Attach rake slide to panel ribs with #14 x 7/8" lap fasteners.
7. Apply tube sealant before lapping.
8. Pop-rivet trim lap.



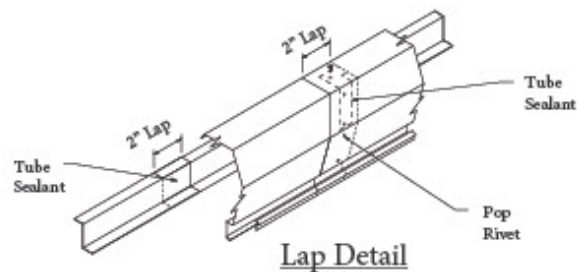
TremLock VP Rake Start (Off Module) / Fixed System

Rake Trim Splice

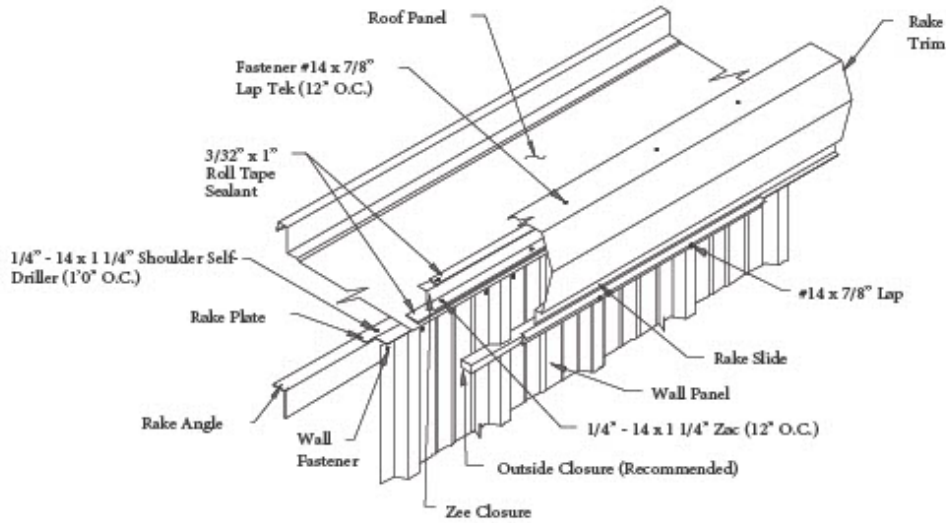




Section at Rake End (Off Module) / Floating System

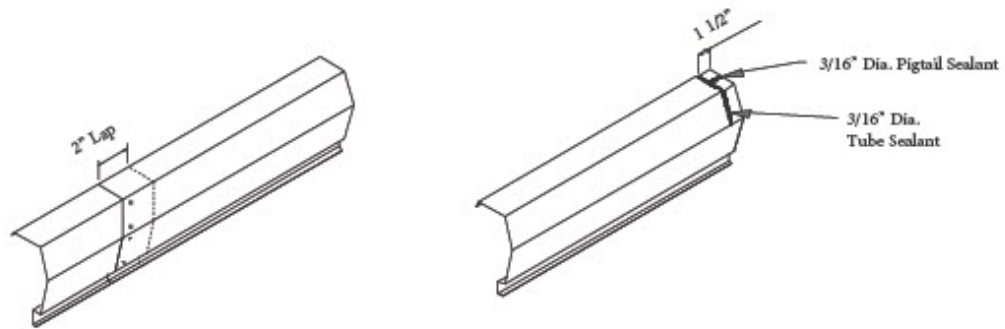


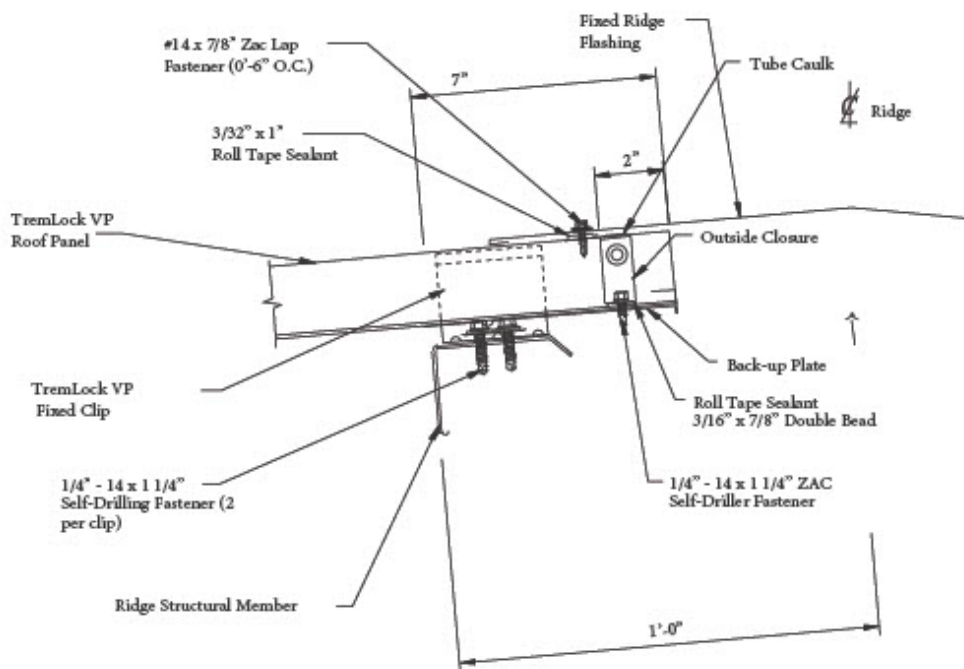
1. Trim to start even with face of sidewall panels.
2. Place roll tape on panel flat.
3. Attach zee trim with 1/4" - 14 x 1 1/4" zac fasteners at 1'-0" centers.
4. Place roll tape on zee trim.
5. Attach trim to zee with #14 x 7/8" zac lap fasteners at 1'-0" centers.
6. Attach rake slide to panel ribs with #14 x 7/8" lap fasteners.
7. Apply tube sealant before lapping.
8. Pop-rivet trim lap.



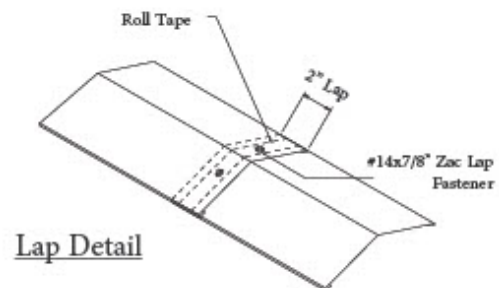
Rake End (Off Module) / Floating System

Lap Detail



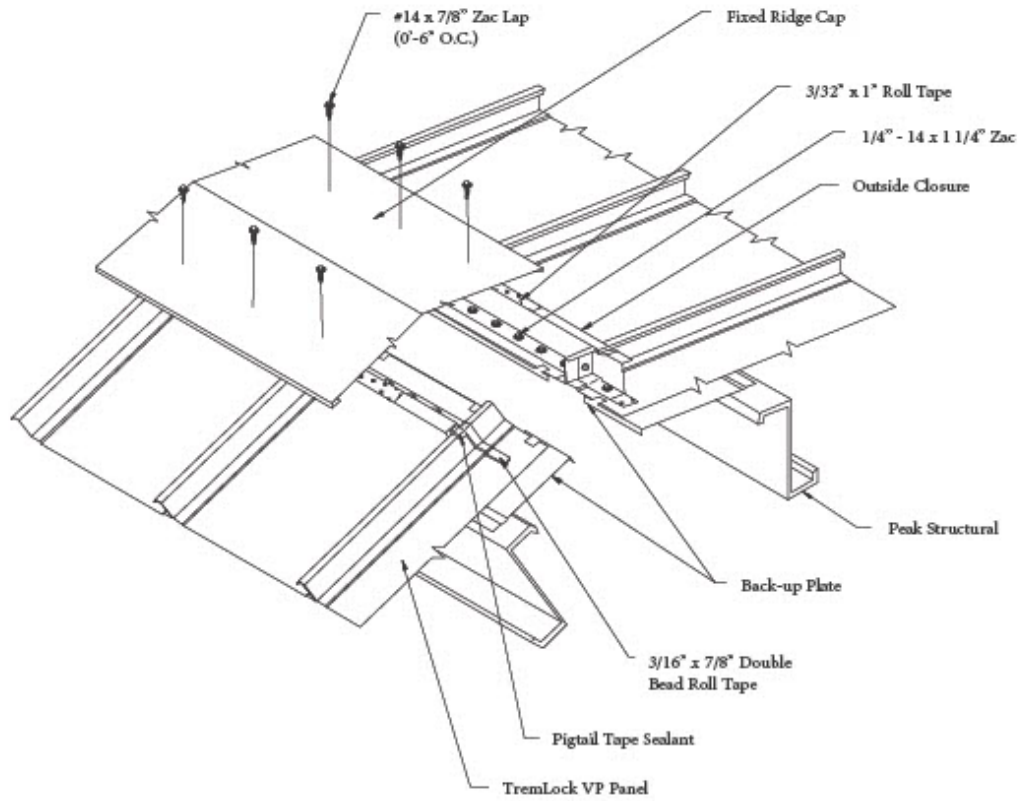


Section at Ridge / Fixed System

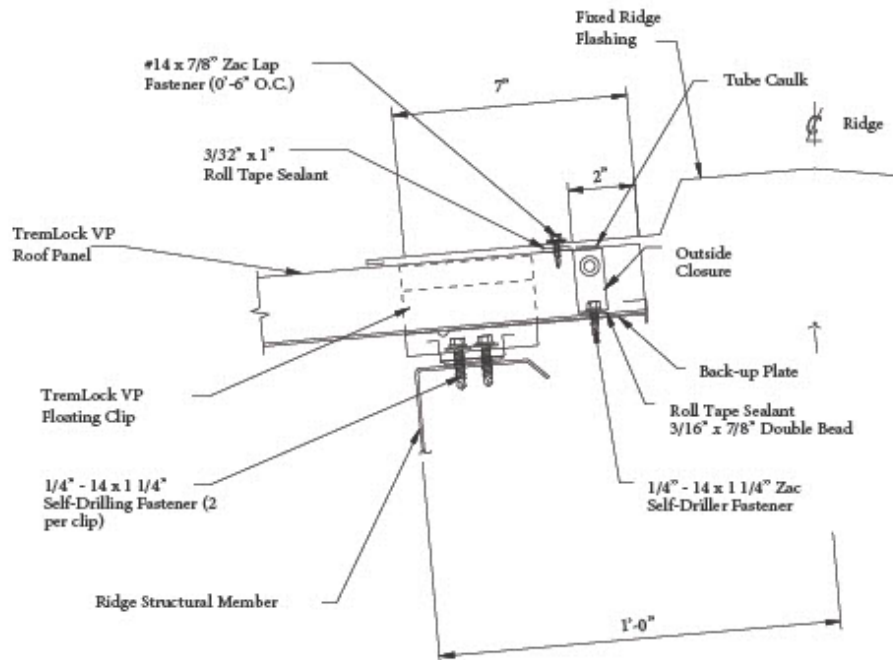


Lap Detail

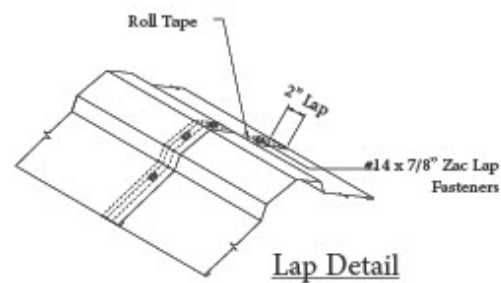
1. Trim to start 2" outside of face of wall panels.
2. Place roll tape on top flange of closure.
3. Attach trim with #14 x 7/8" Zac lap fasteners.
5. Apply roll tape before lapping.
6. Fasten lap with #14 x 7/8" zac lap fasteners at 3" centers.



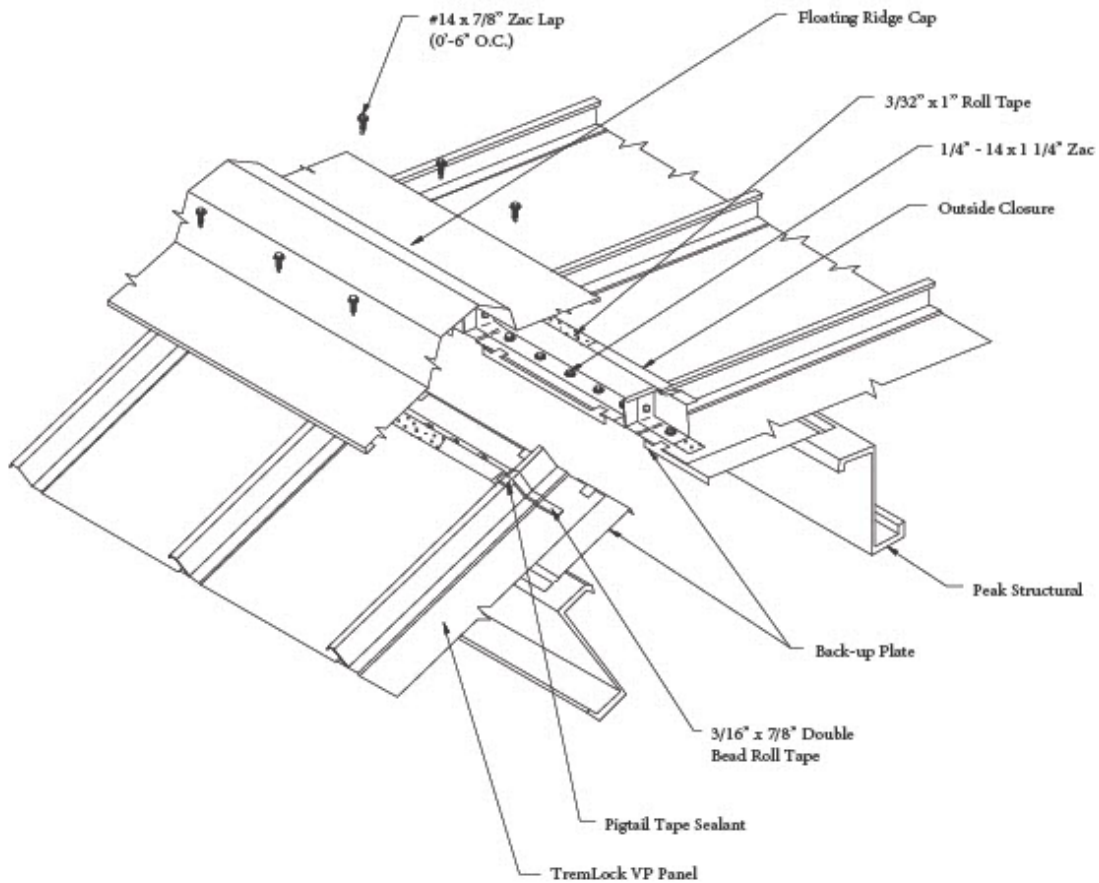
Ridge / Fixed System



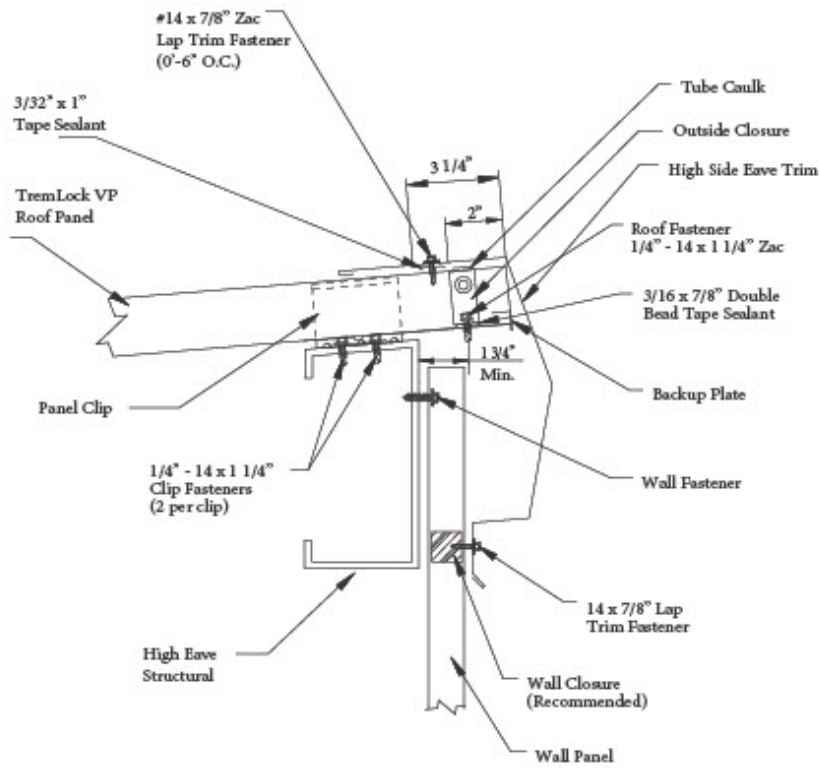
Section at Ridge / Floating System



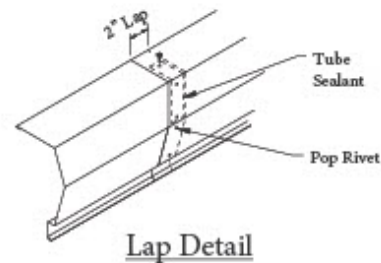
1. Trim to start 2" outside of face of wall panels.
2. Place roll tape sealant on top flange of closure.
3. Attach trim with #14 x 7/8" zac lap fasteners.
5. Apply roll tape before lapping.
6. Fasten lap with #14 x 7/8" zac lap fasteners at 4" centers.



Ridge / Floating System

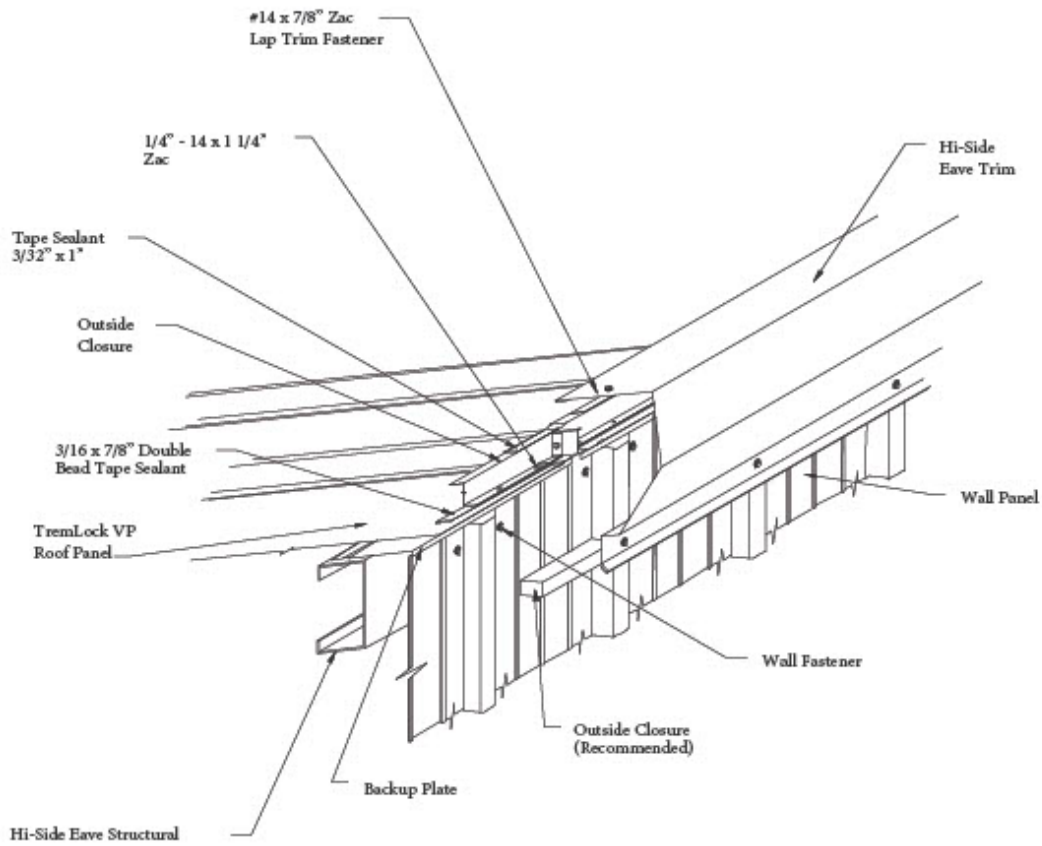


Section at High Eave / Fixed System

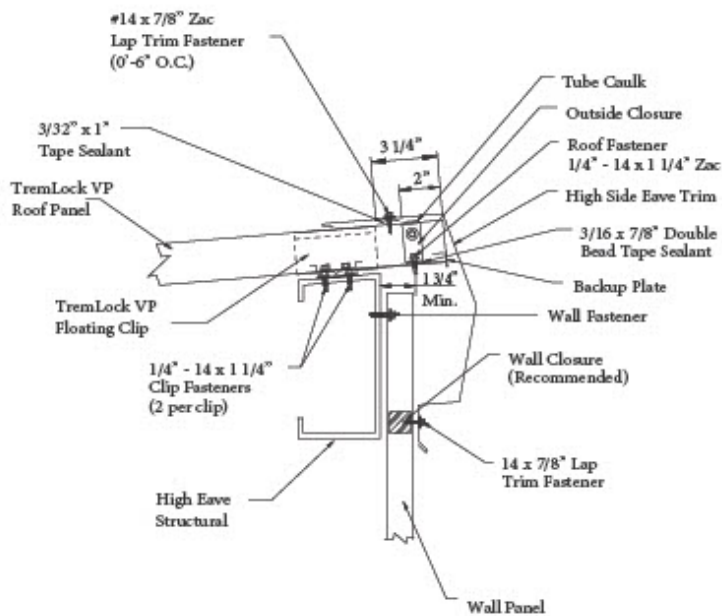


Lap Detail

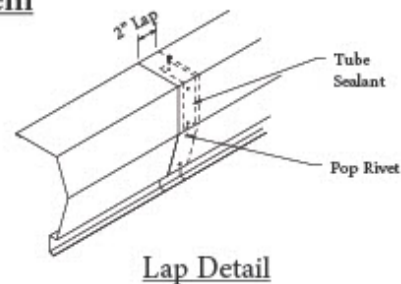
1. Trim to start and end at endwall steel-lines.
2. Place roll tape sealant on top flange of closure.
3. Attach trim with #14 x 7/8" zac lap fasteners at 6" centers.
4. Attach to panel ribs with #14 x 7/8" lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim lap.



High Eave / Fixed System

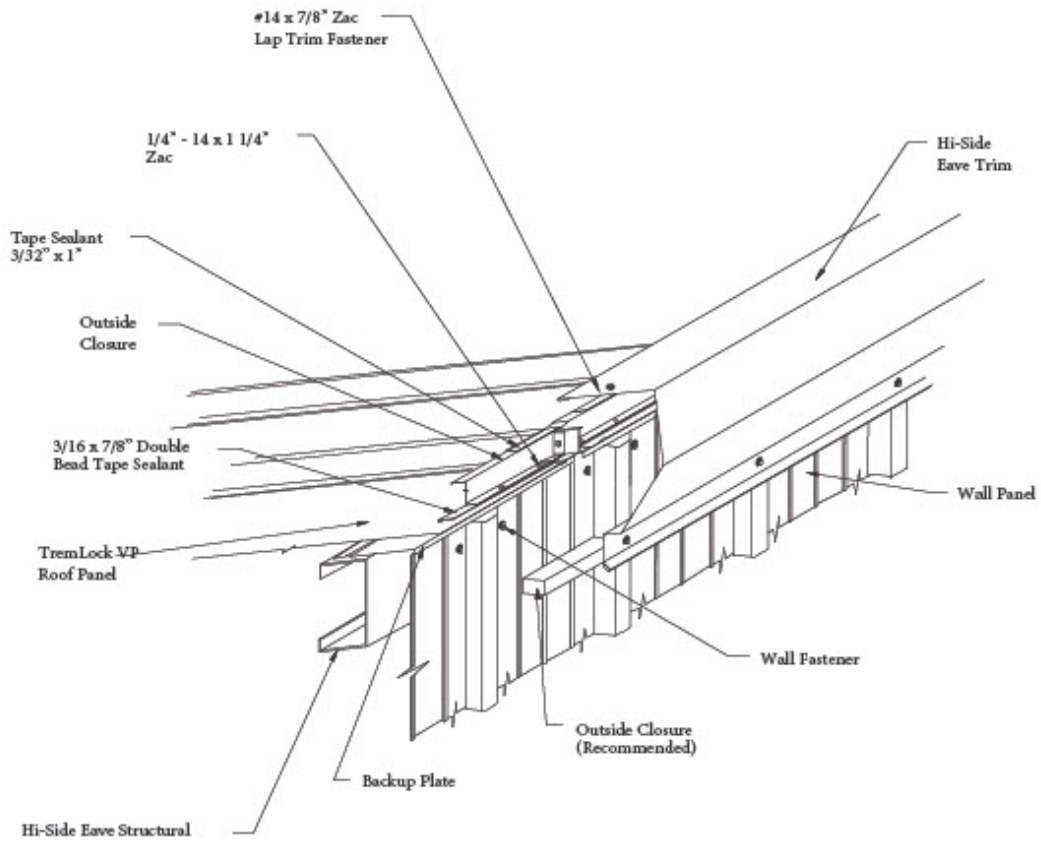


Section at High Eave / Floating System

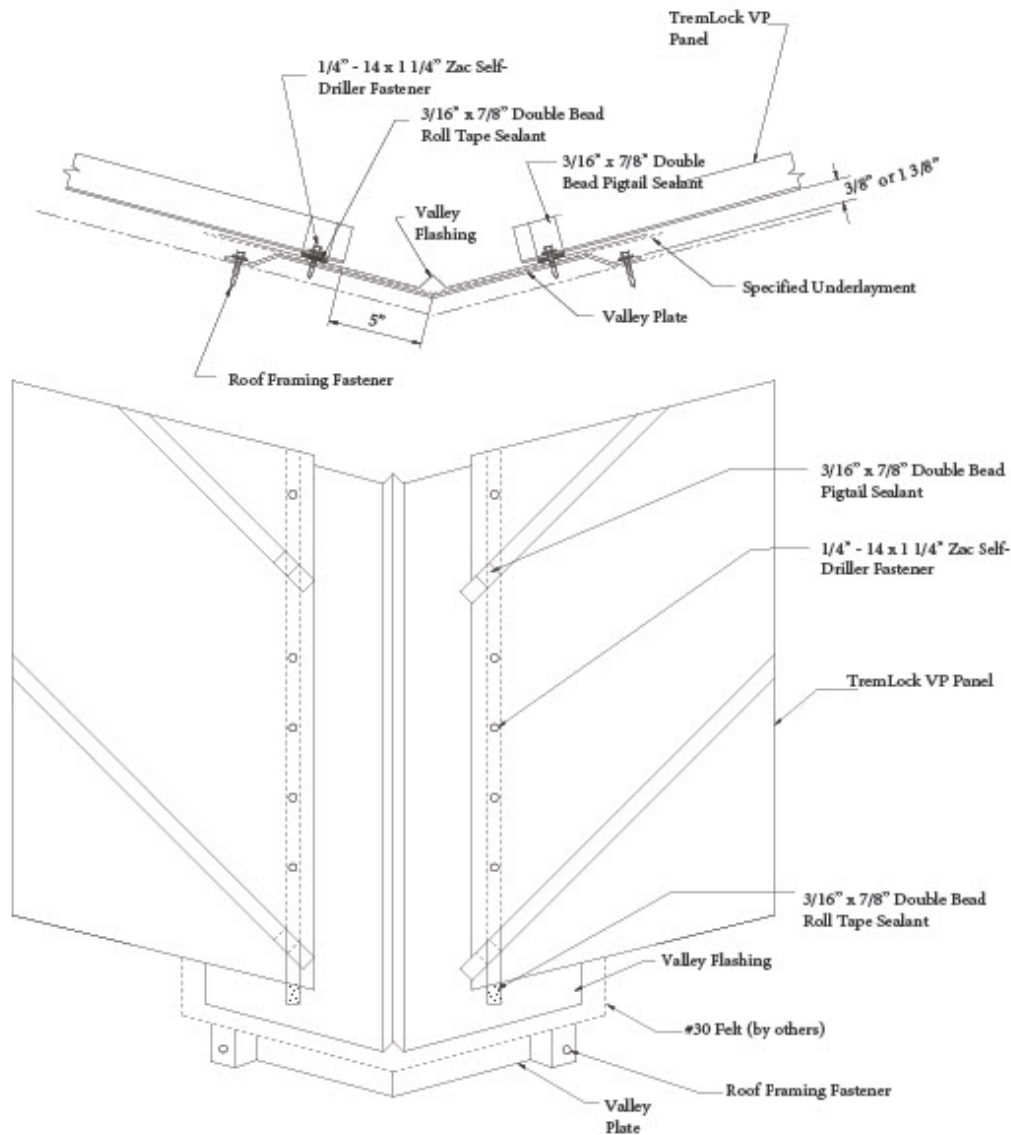


Lap Detail

1. Trim to start and end at endwall steel-lines.
2. Place roll tape sealant on top flange of closure.
3. Attach trim with #14 x 7/8" zac lap fasteners at 6" centers.
4. Attach to panel ribs with #14 x 7/8" lap fasteners.
5. Apply tube sealant before lapping.
6. Pop-rivet trim lap.



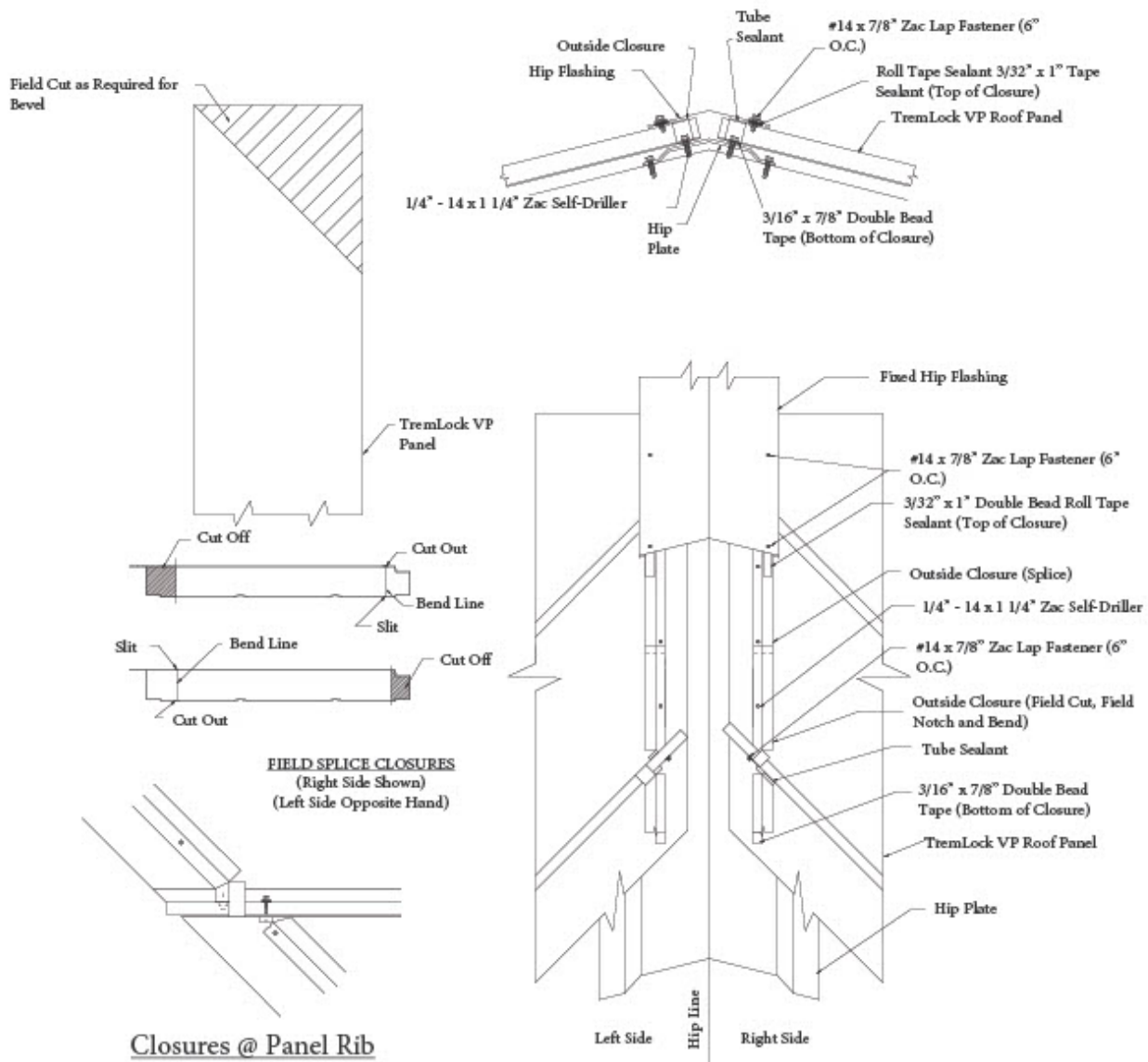
High Eave / Floating System



Section at Valley / Fixed System

Valley Plate: Not by Tremco Roofing and Building Maintenance (Unless Ordered)

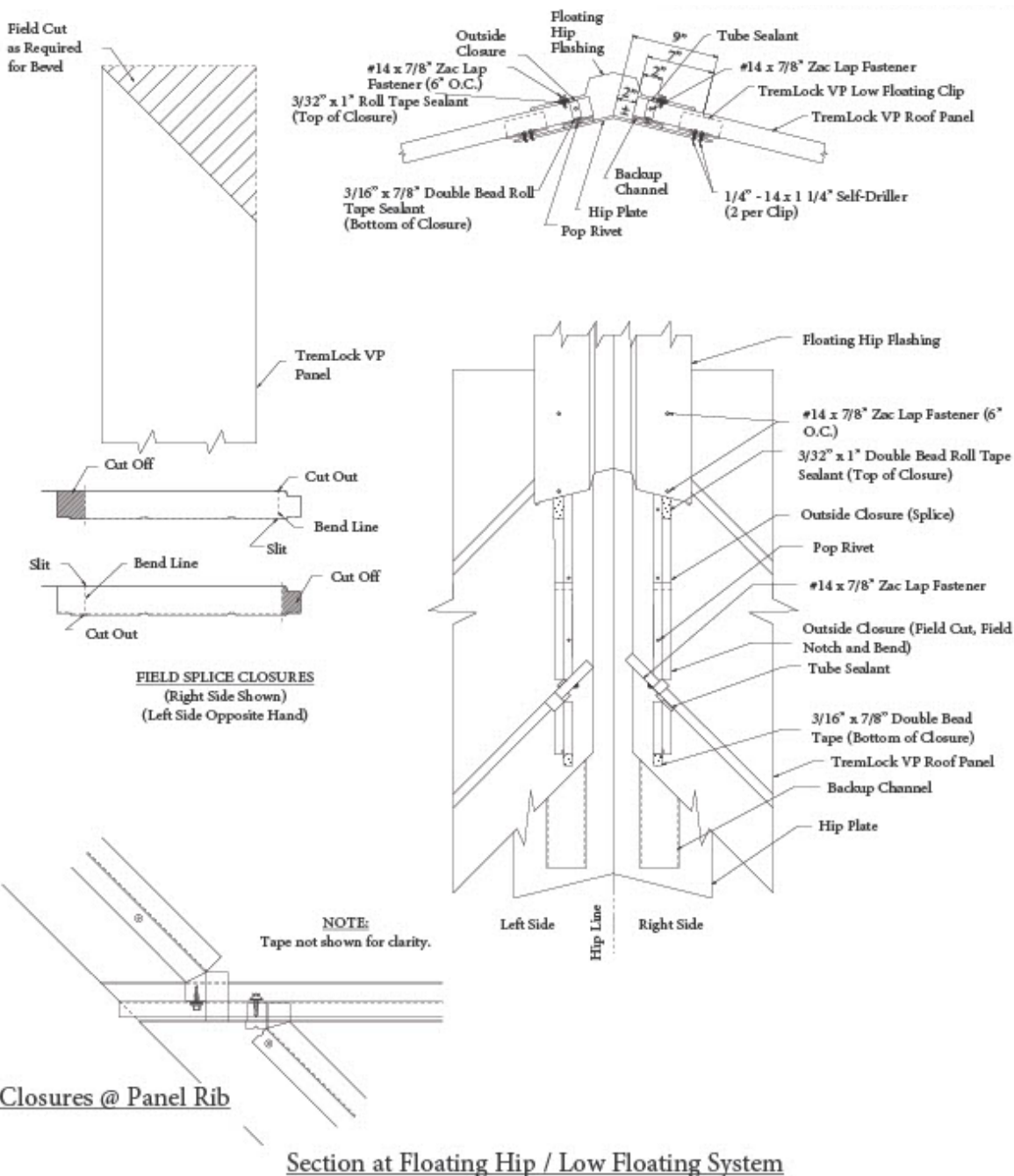
1. Install valley flashing from eave to ridge. Lap 6"
2. Cut panels at required bevel for valley condition.
3. Run continuous line of roll tape sealant.
4. Attach panels with 1/4"-14 x 1 1/4" zac fasteners.



Section at Hip / Fixed System

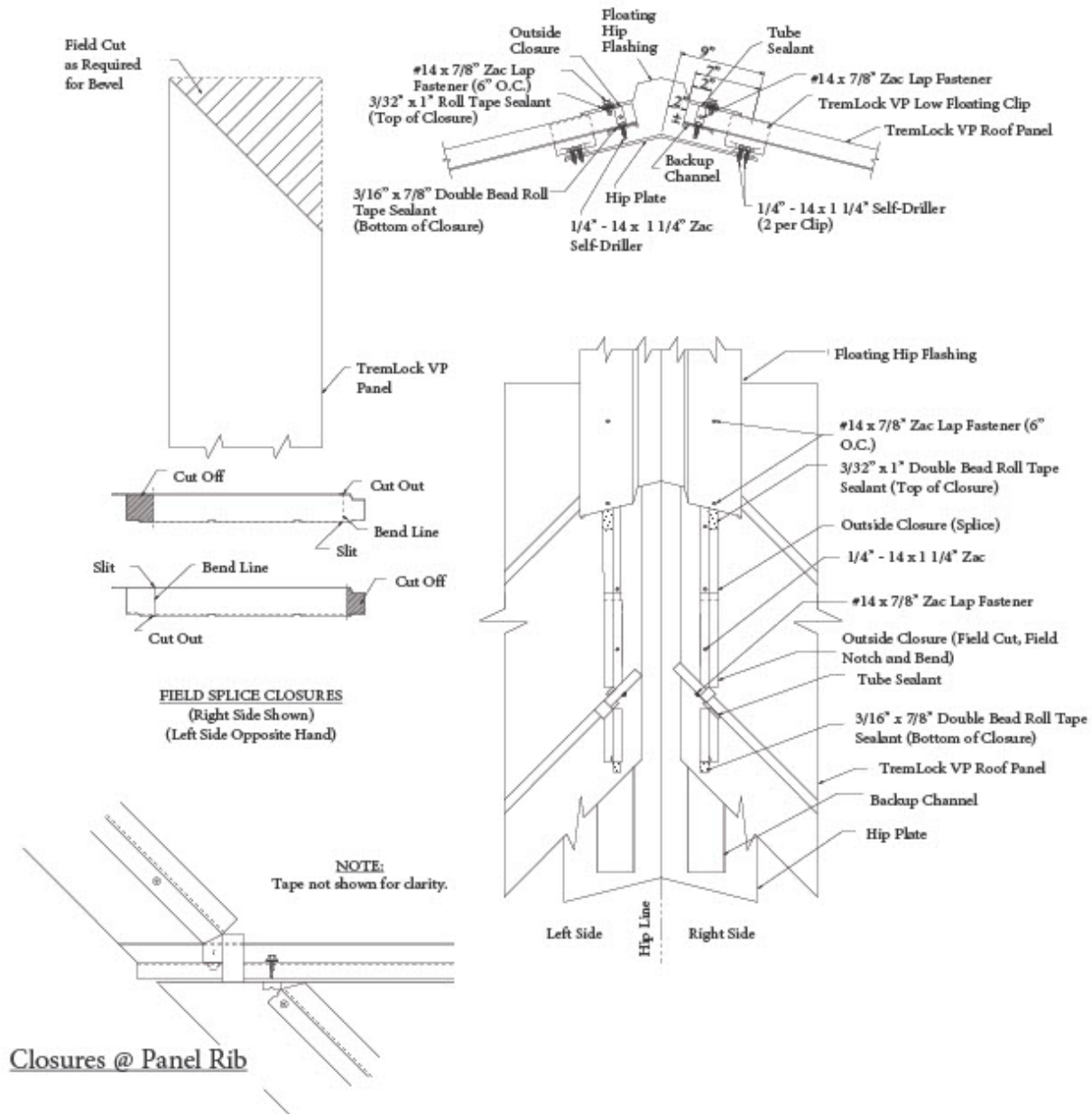
Hip Plate: Not by Tremco Roofing and Building Maintenance (Unless Ordered)

1. Cut panels at required bevel for hip condition.
2. Two outside closures required per panel. Cut off, cut out, slit and bend to required bevel.
3. Install closures over tape sealant and fasten with 1/4" - 14 x 1 1/4" zac fasteners.
4. Run continuous line of roll tape sealant over top flange of closure.
5. Fill void areas with tube sealant.
6. Install hip flashing from eave to ridge. Lap 2" (min.)
7. Attach hip flashing to top flange of closure with #14 x 7/8" zac lap fasteners.



Hip Plate: Not by Tremco Roofing and Building Maintenance (Unless Ordered)

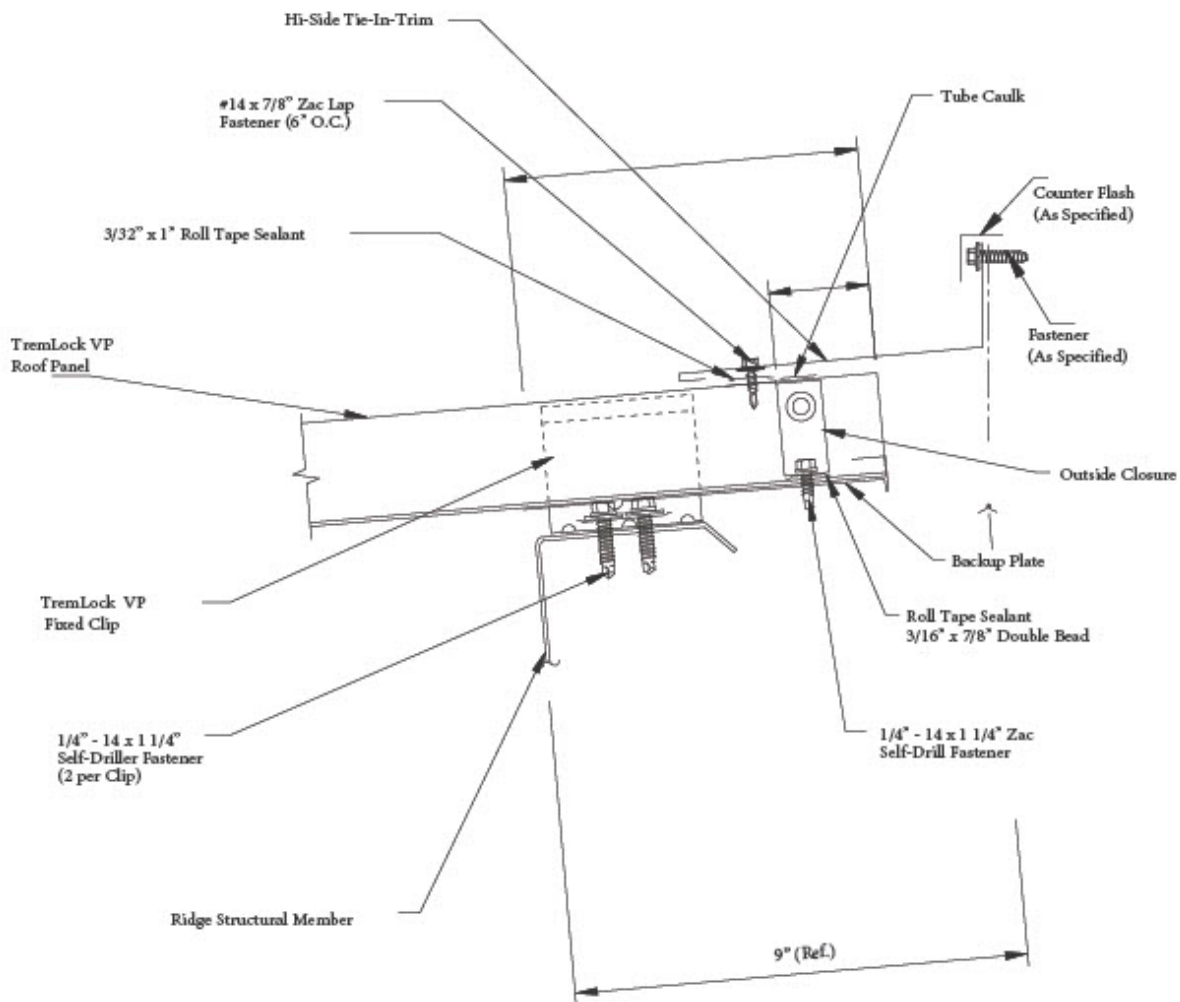
1. Cut panels at required bevel for hip condition.
2. Two outside closures required per panel. Cut off, cut out, slit and bend to required bevel.
3. Install closures over tape sealant. Field drill thru closure, panel and back-up channel, then fasten with pop-rivets.
4. Run continuous line of roll tape sealant over top flange of closure.
5. Fill void areas with tube sealant.
6. Install hip flashing from eave to ridge. Lap 2" (min.)
7. Attach hip flashing to top flange of closure with #14 x 7/8" zac lap fasteners.



Section at Floating Hip / High Floating System

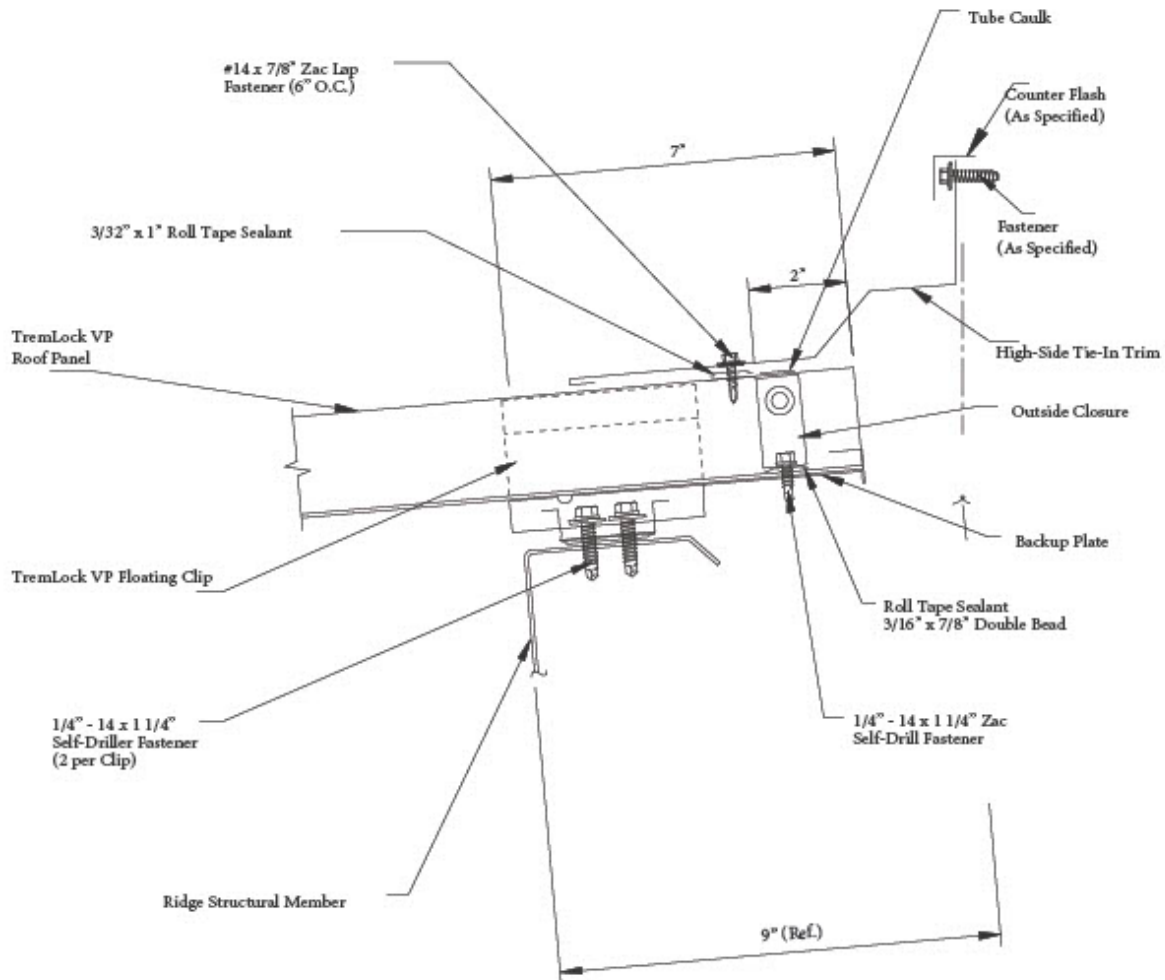
Hip Plate: Not by Tremco Roofing and Building Maintenance (Unless Ordered)

1. Cut panels at required bevel for hip condition.
2. Two outside closures required per panel. Cut off, cut out, slit and bend to required bevel.
3. Install closures over tape sealant and fasten with 1/4" - 14 x 1 1/4" zac fasteners.
4. Run continuous line of roll tape sealant over top flange of closure.
5. Fill void areas with tube sealant.
6. Install hip flashing from eave to ridge. Lap 2" (min.)
7. Attach hip flashing to top flange of closure with #14 x 7/8" zac lap fasteners.



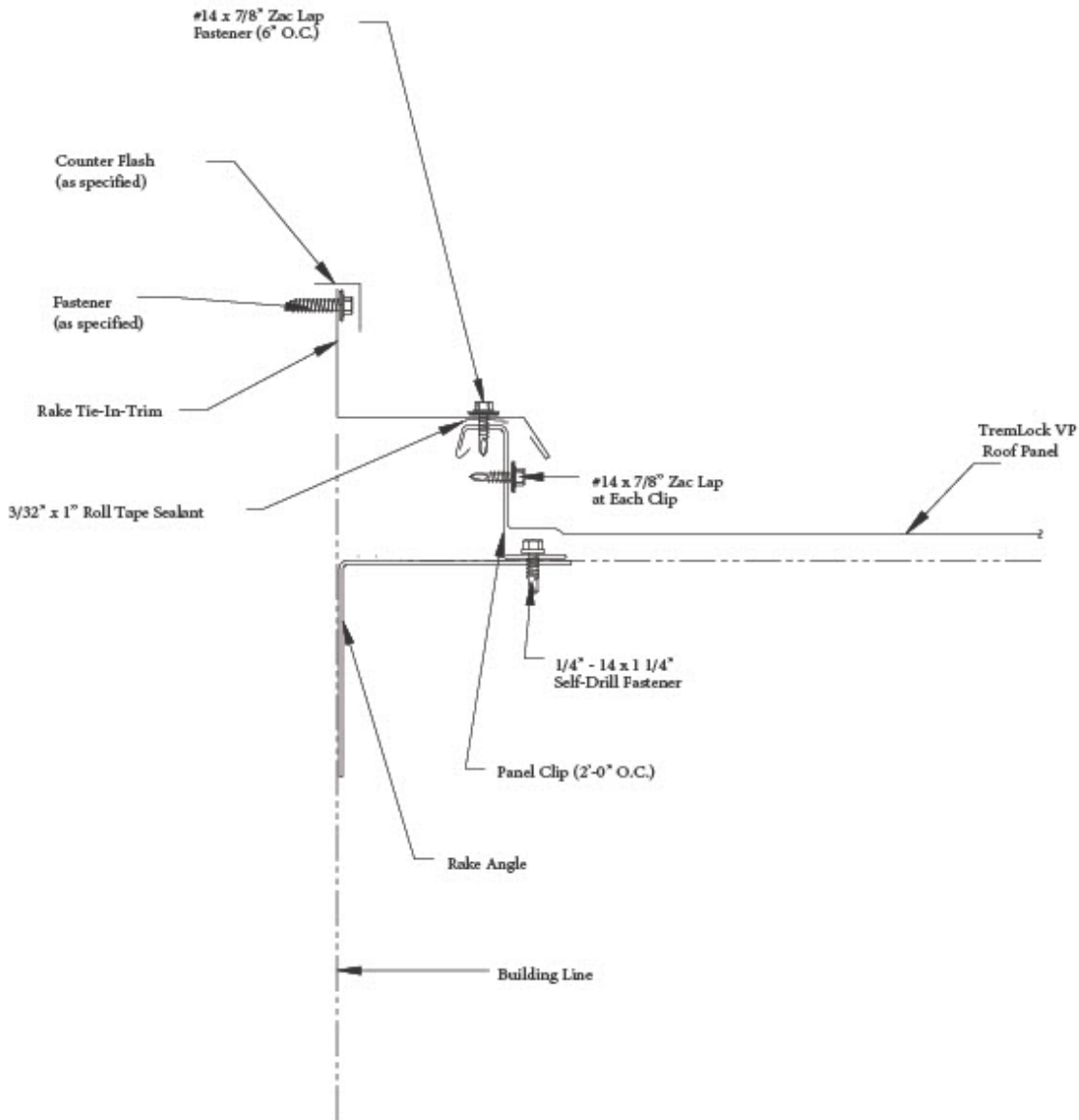
High-Side Tie-In / Fixed System

1. Run continuous line of roll tape sealant over top flange of closure.
2. Fill voids with tube sealant.
3. Install tie-in flashing. Lap 2" (min.)
4. Attach tie-in flashing to top flange of closure with #14 x 7/8" zac lap fastener.



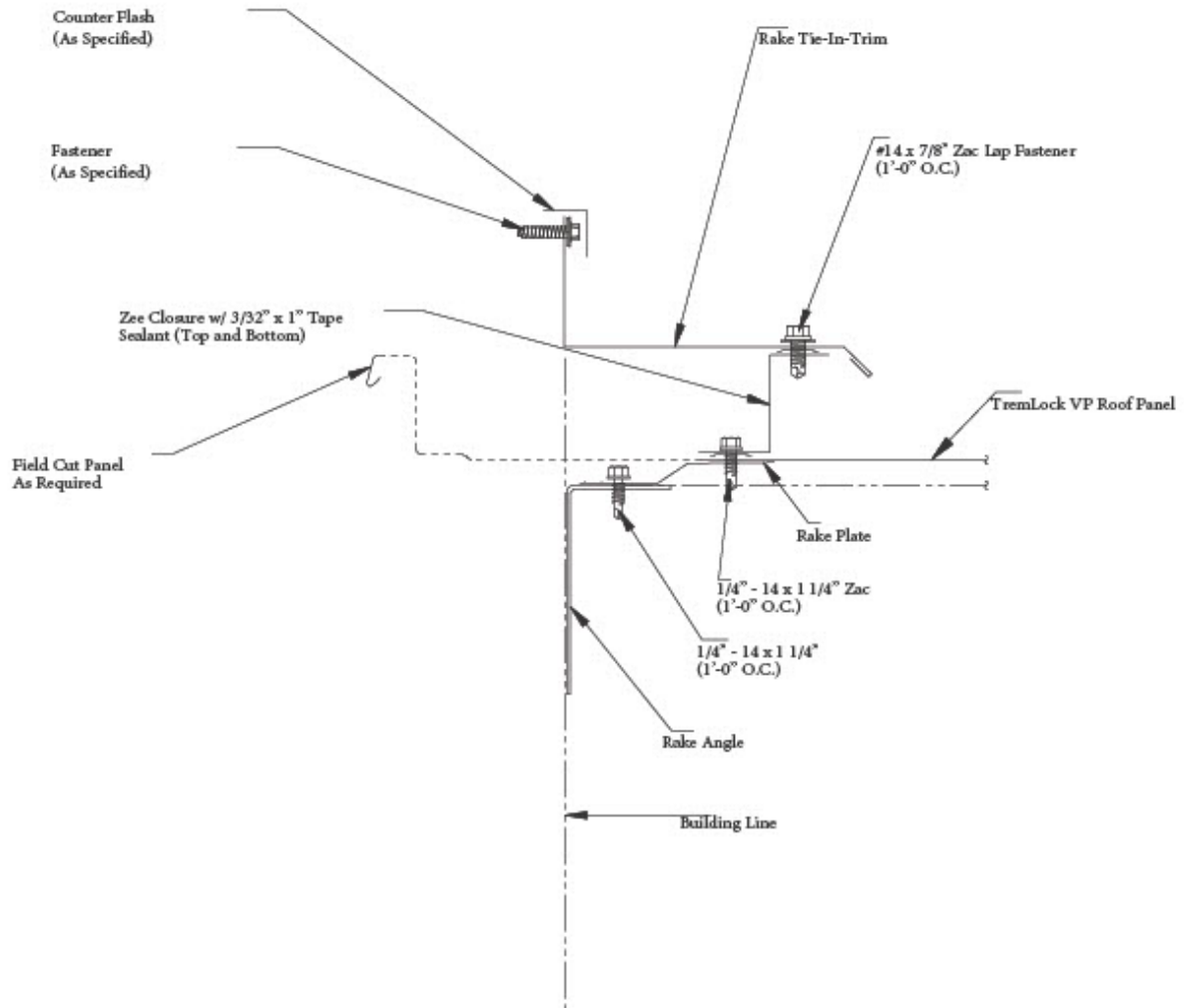
High-Side Tie-In / Floating System

1. Run continuous line of roll tape sealant over top flange of closure.
2. Fill voids with tube sealant.
3. Install tie-in flashing. Lap 2" (min.)
4. Attach tie-in flashing to top flange of closure with #14 x 7/8" zac lap fastener.



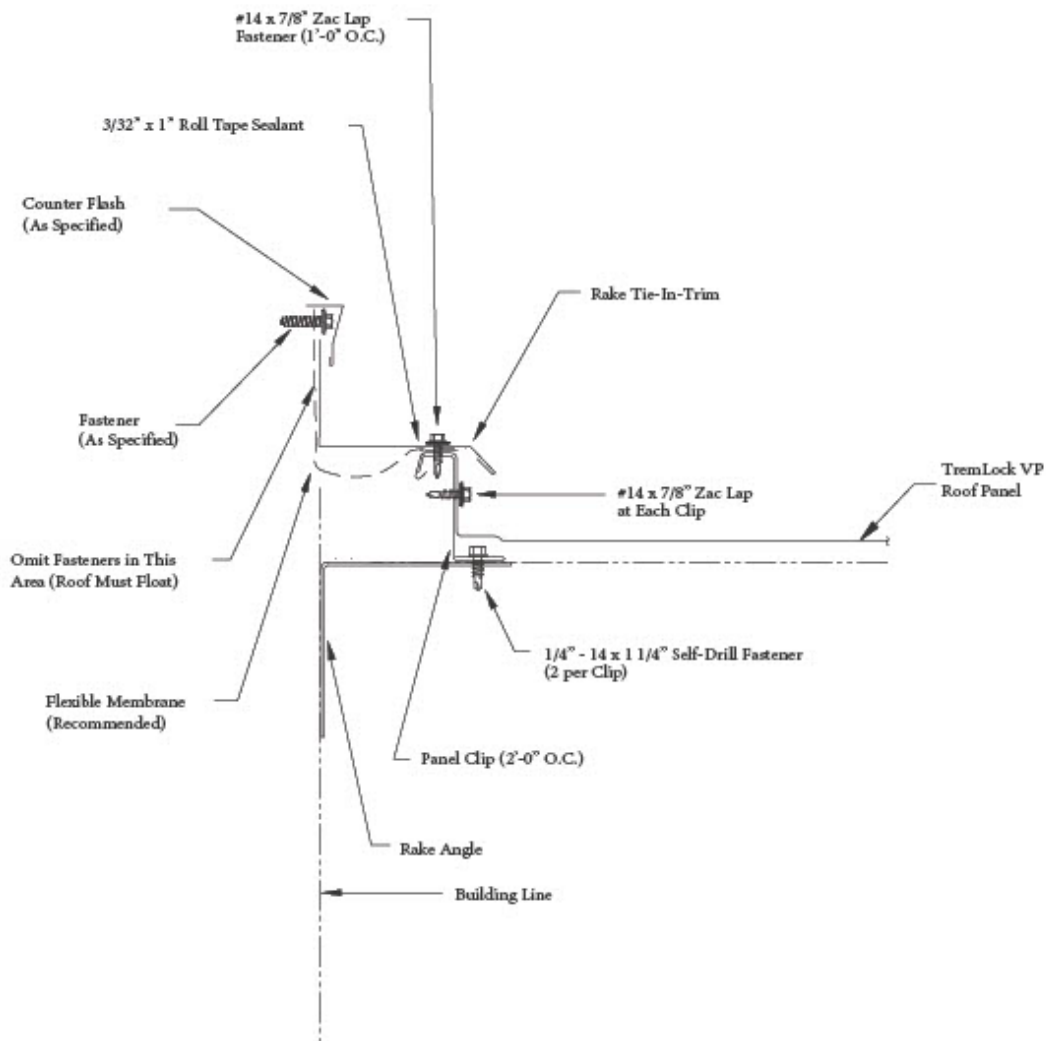
Tie-In at Rake Start (On Module) / Fixed System

1. Run continuous line of roll tape sealant over top flange of closure.
2. Install tie-in flashing. Lap 2" (min.)
3. Attach tie-in flashing to top flange of closure with #14 x 7/8" zac lap fastener.



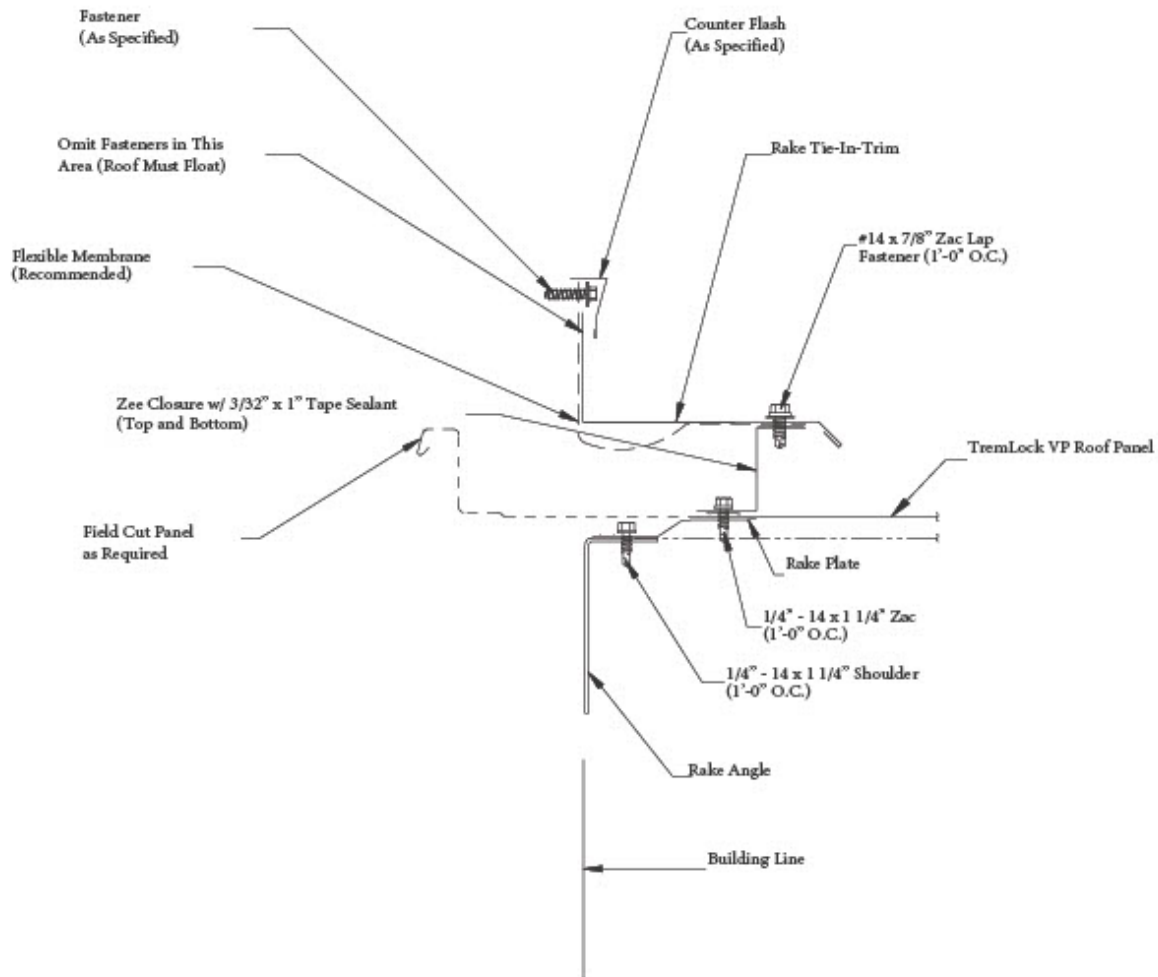
Tie-In at Rake Start (Off Module) / Fixed System

1. Place continuous run of roll tape sealant on panel flat.
2. Attach zee closure with 1/4" - 14 x 1 1/4" zac fasteners.
3. Place continuous run of roll tape on top flange of zee closure.
4. Attach tie-in flashing to top flange of zee closure with #14 x 7/8" zac fastener.



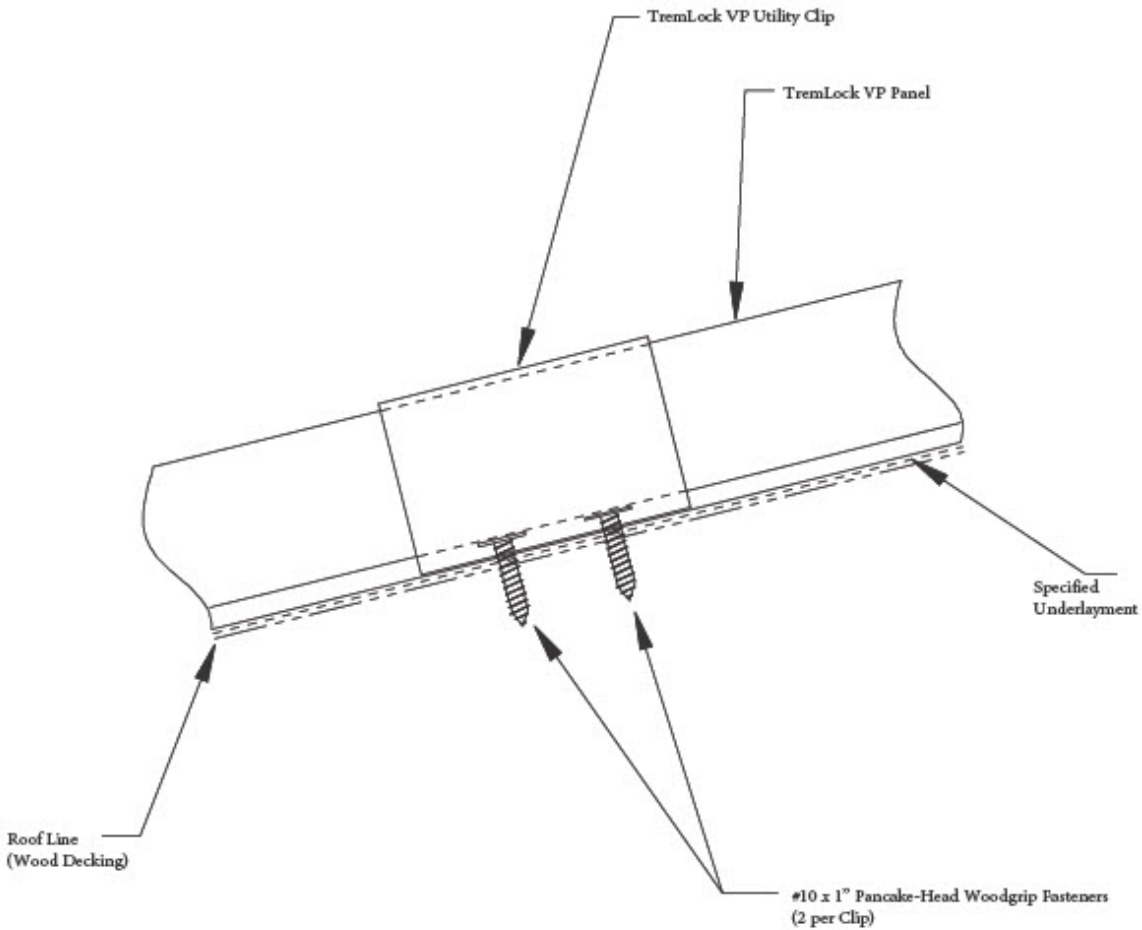
Tie-In at Rake Start (On Module) / Floating System

1. Place continuous run of tape sealant on top flange of panel.
2. Attach tie-in flashing to top flange of panel with #14 x 7/8" zac lap fasteners.

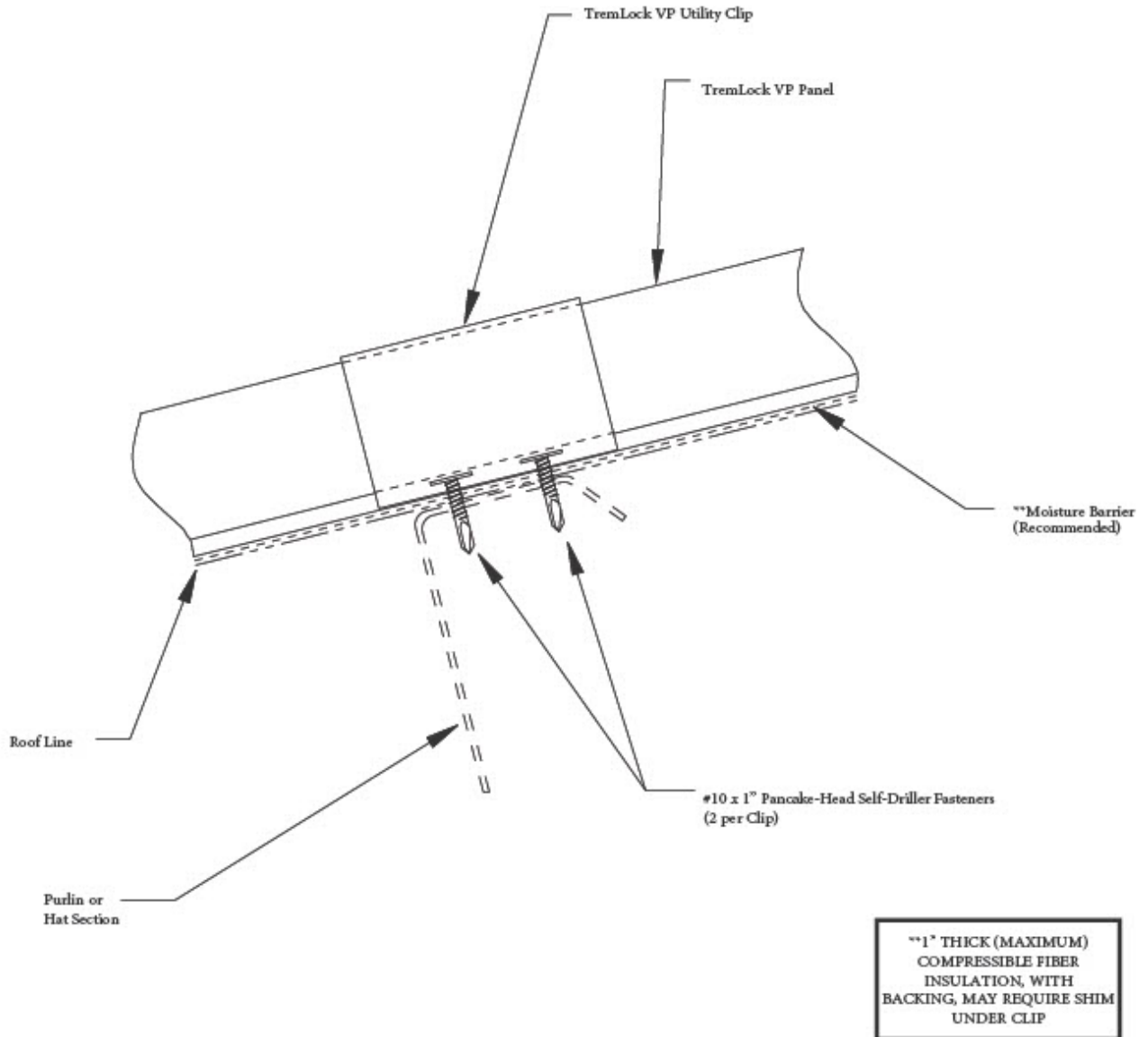


Tie-In at Rake Start (Off Module) / Floating System

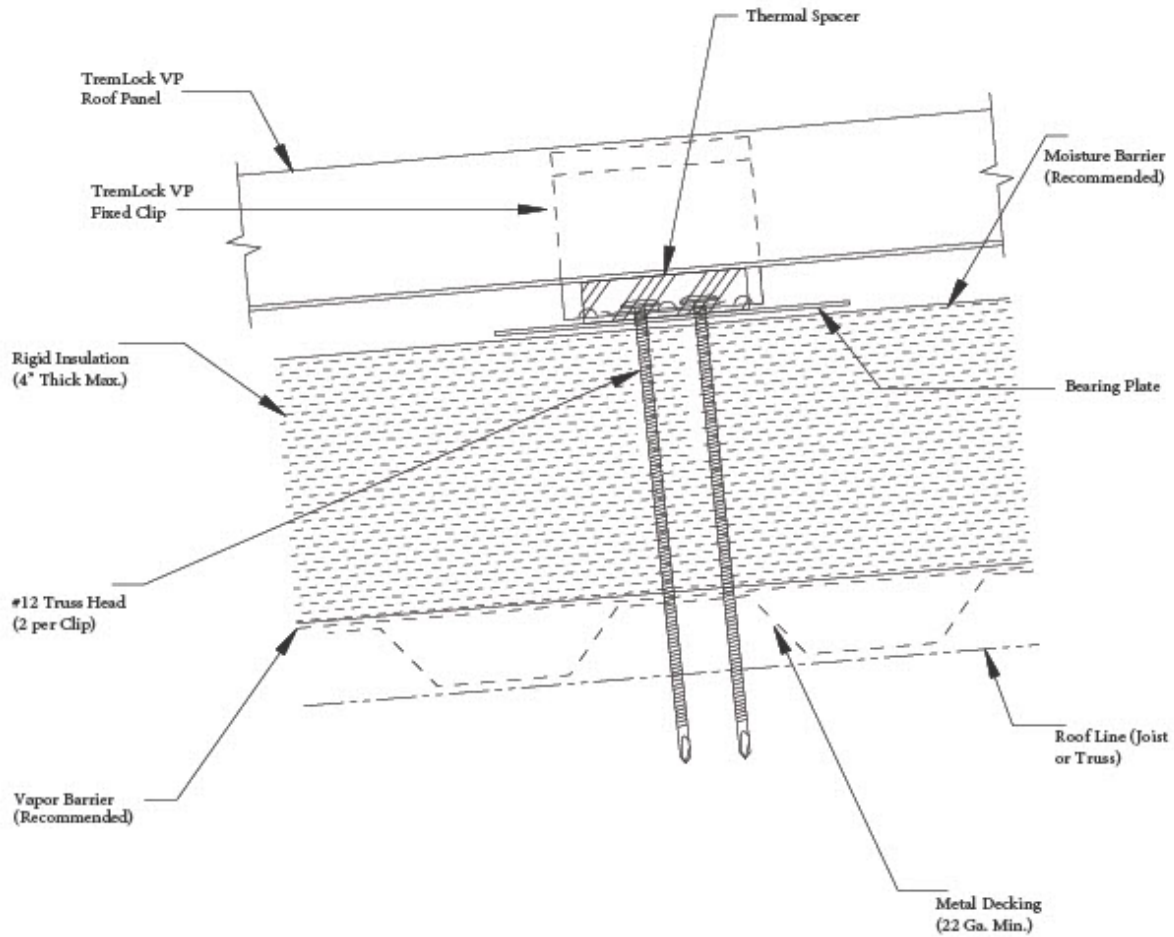
1. Field cut panel to required width.
2. Place continuous run of tape sealant on panel.
3. Attach zee closure to panel and rake plate.
4. Place continuous run of tape sealant on zee closure.
5. Attach tie-in trim to zee closure.



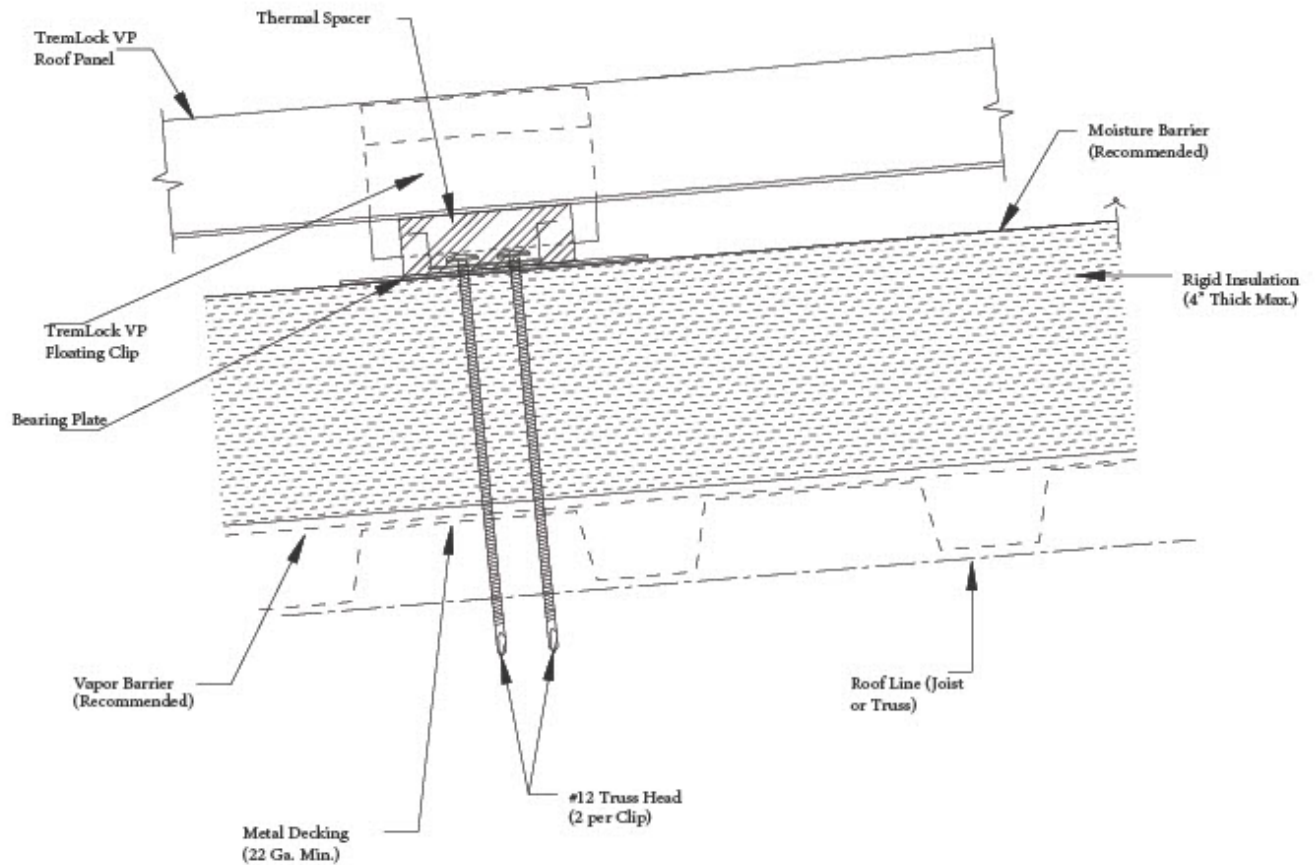
Intermediate Utility Clip Attachment To Wood



Intermediate Utility Clip Attachment To Structural Framing

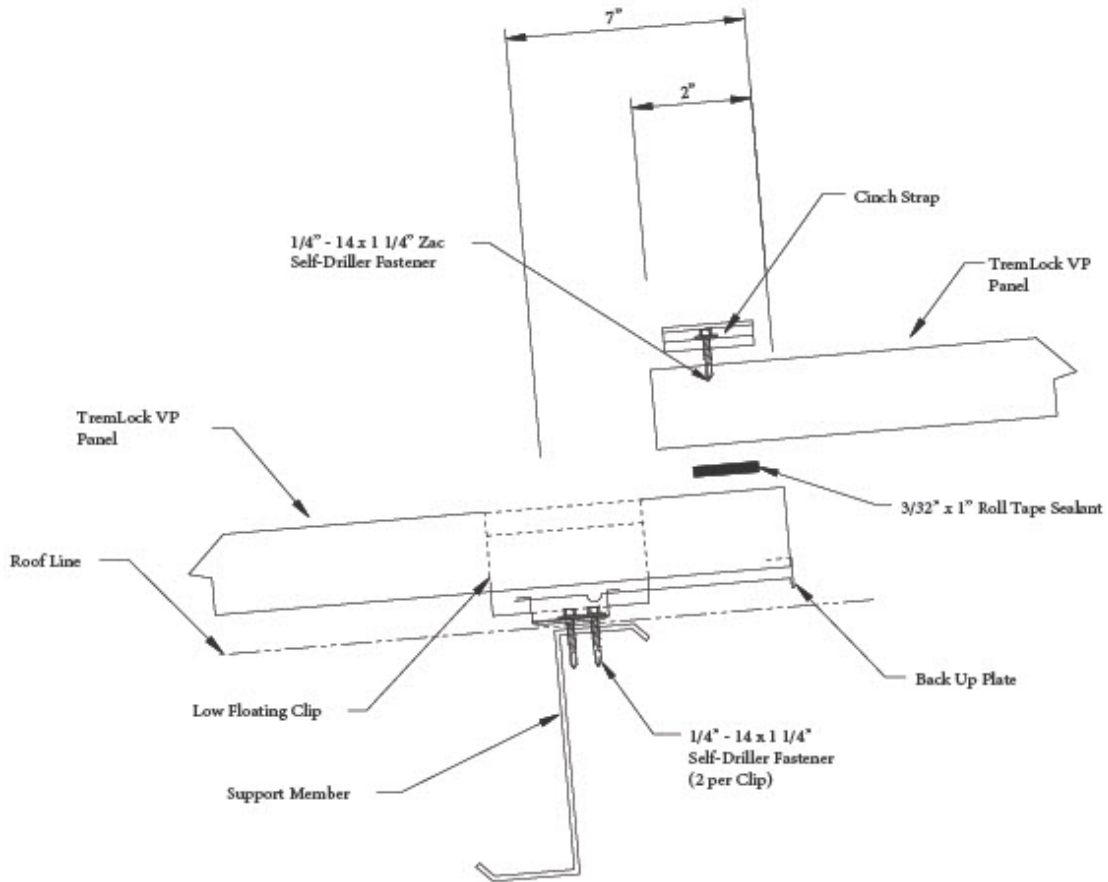


Intermediate Fixed Clip Attachment to Metal Deck High or Low System

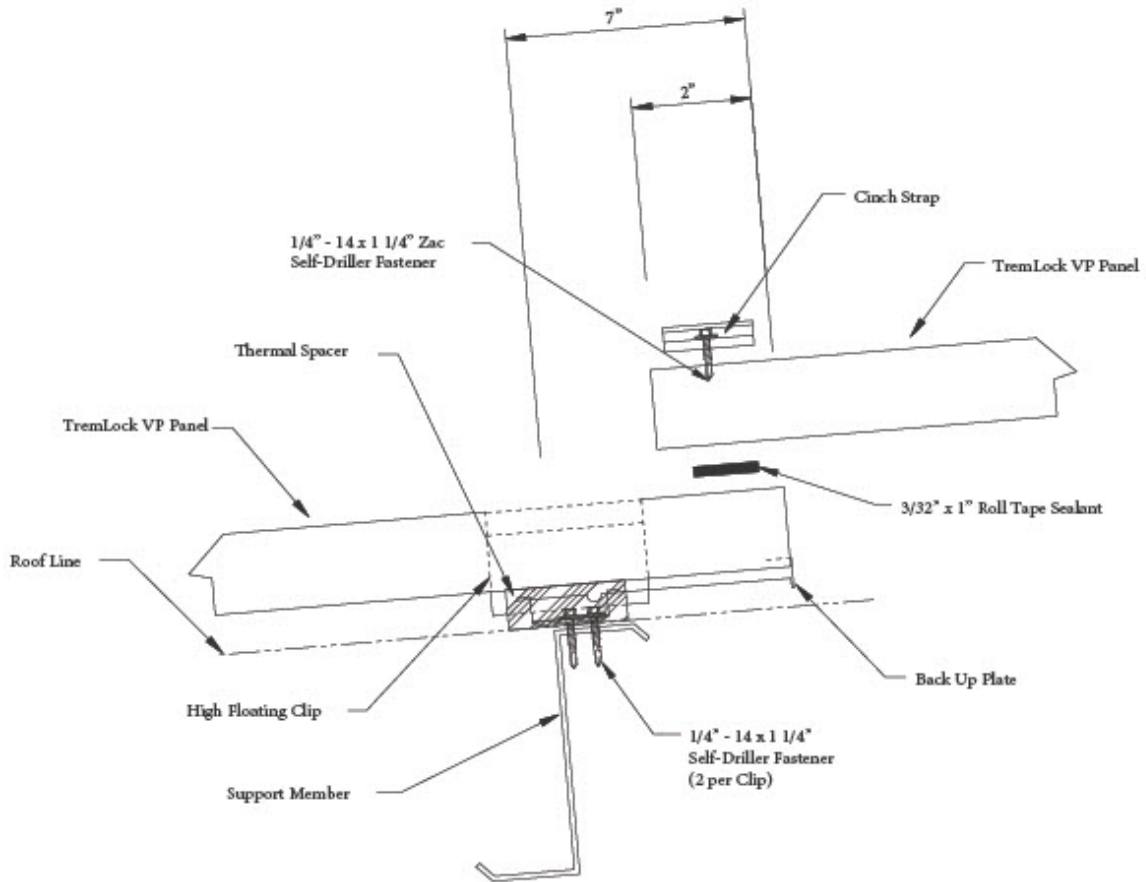


Intermediate Floating Clip Attachment to Metal Deck High or Low System

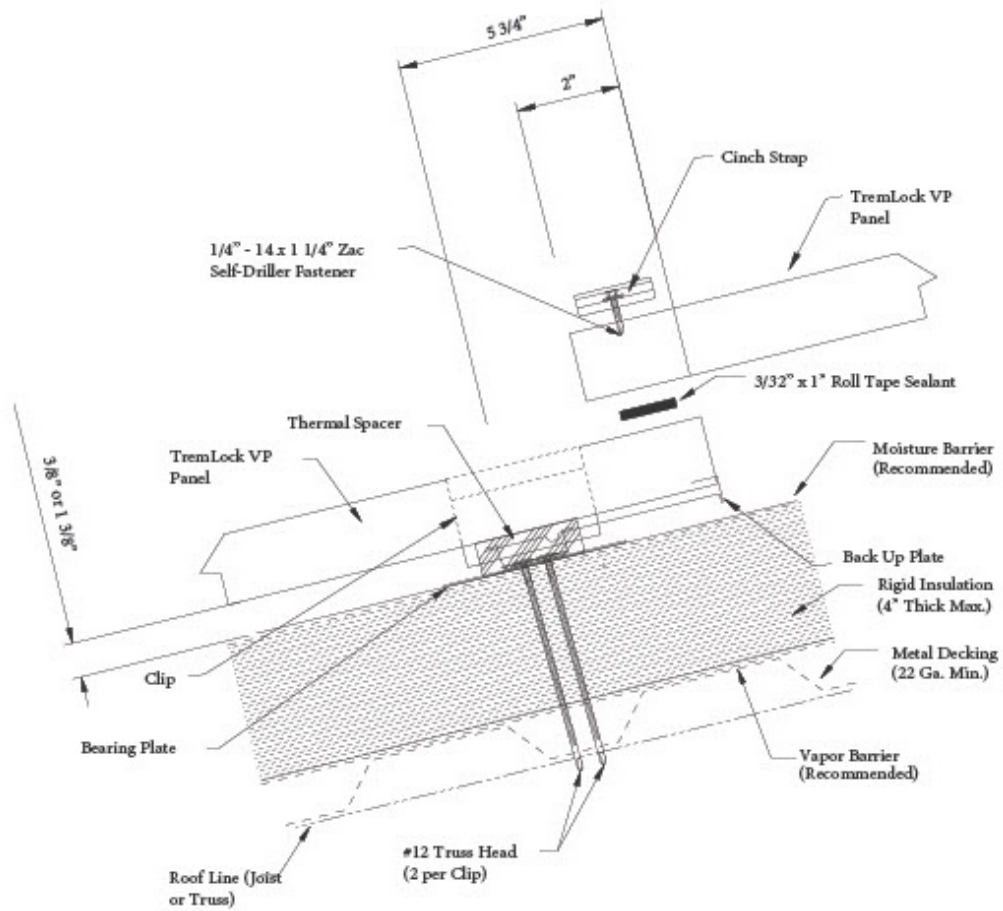
Section at Lap / Low Floating w/ compressible blanket insulation (not shown)



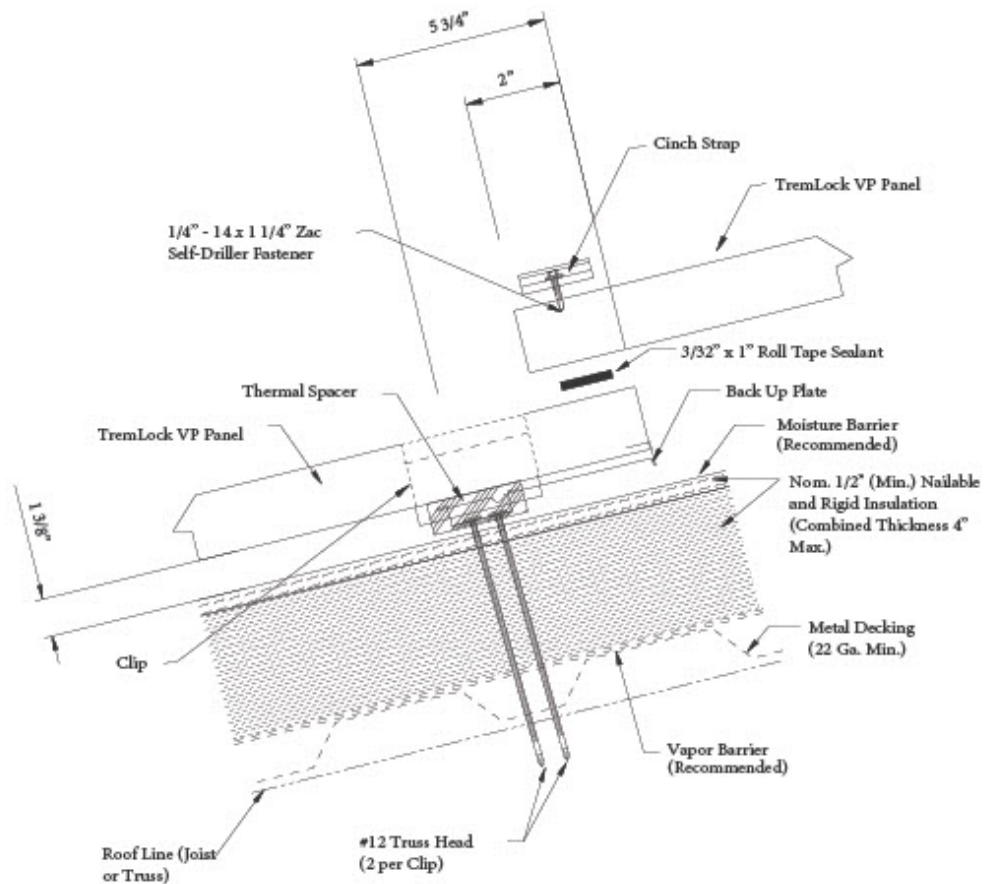
Section at Lap / High Floating w/ compressible blanket insulation (not shown)



Section at Lap / Rigid Insulation and Metal Deck

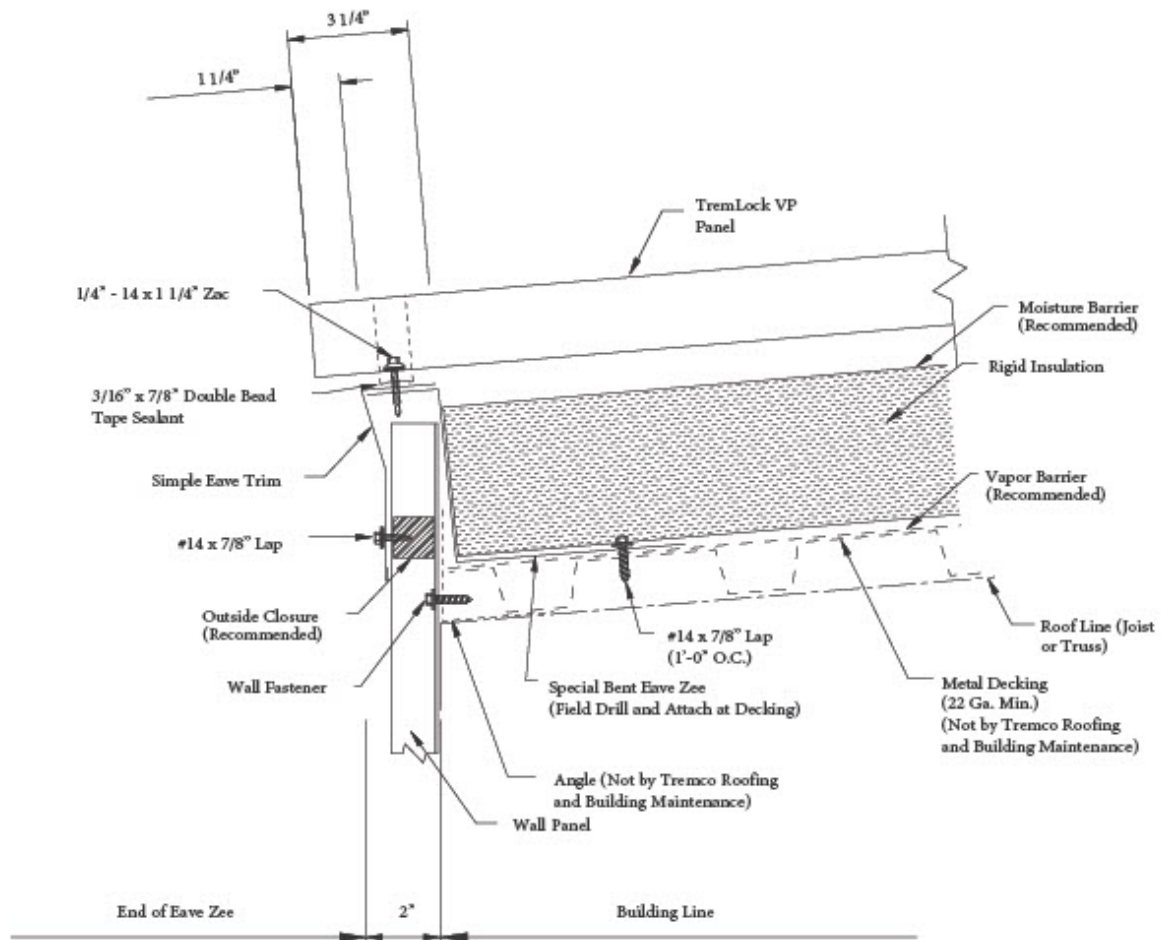


Section at Lap / Nailable Rigid Insulation and Metal Deck

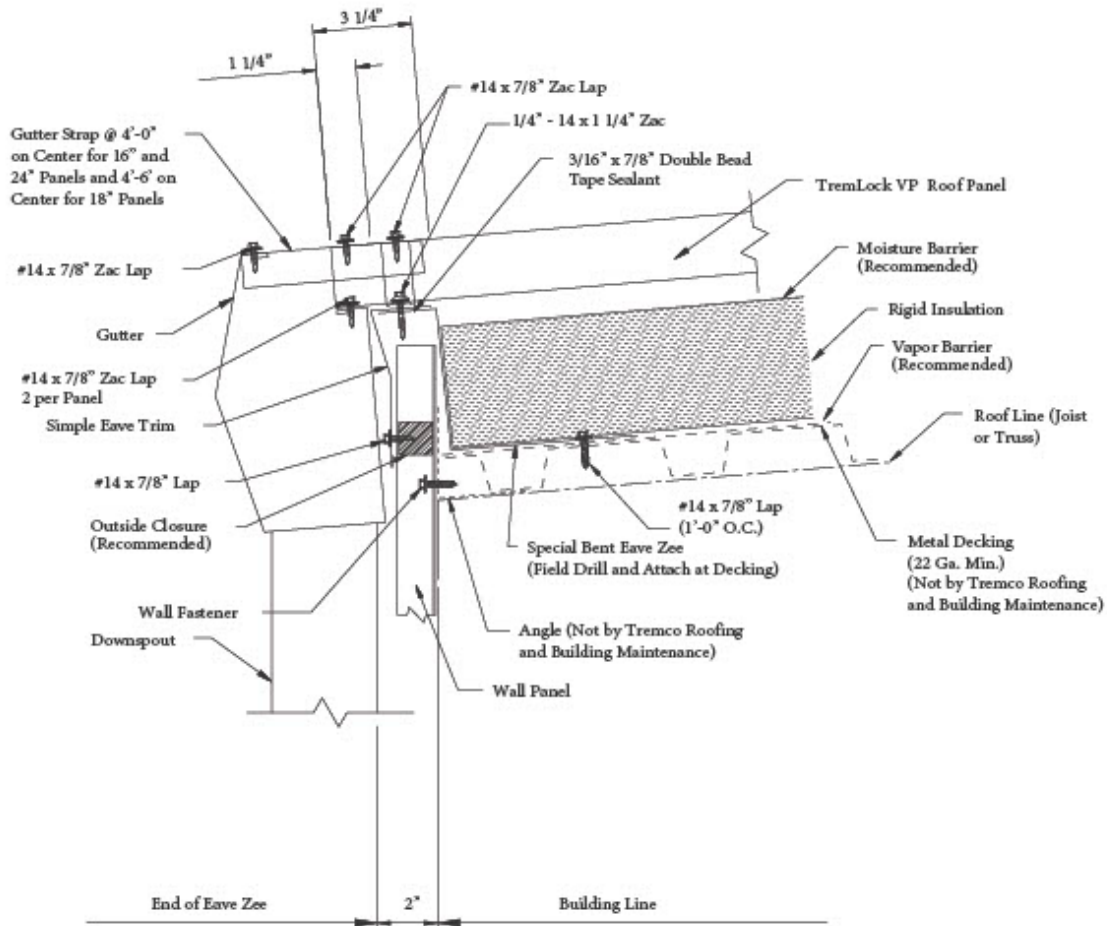


Note: Low system may be utilized by cutting away $3\frac{1}{2}"$ of nailable substrate under lap screw. This needs to be done to prevent fixing the system at this point.

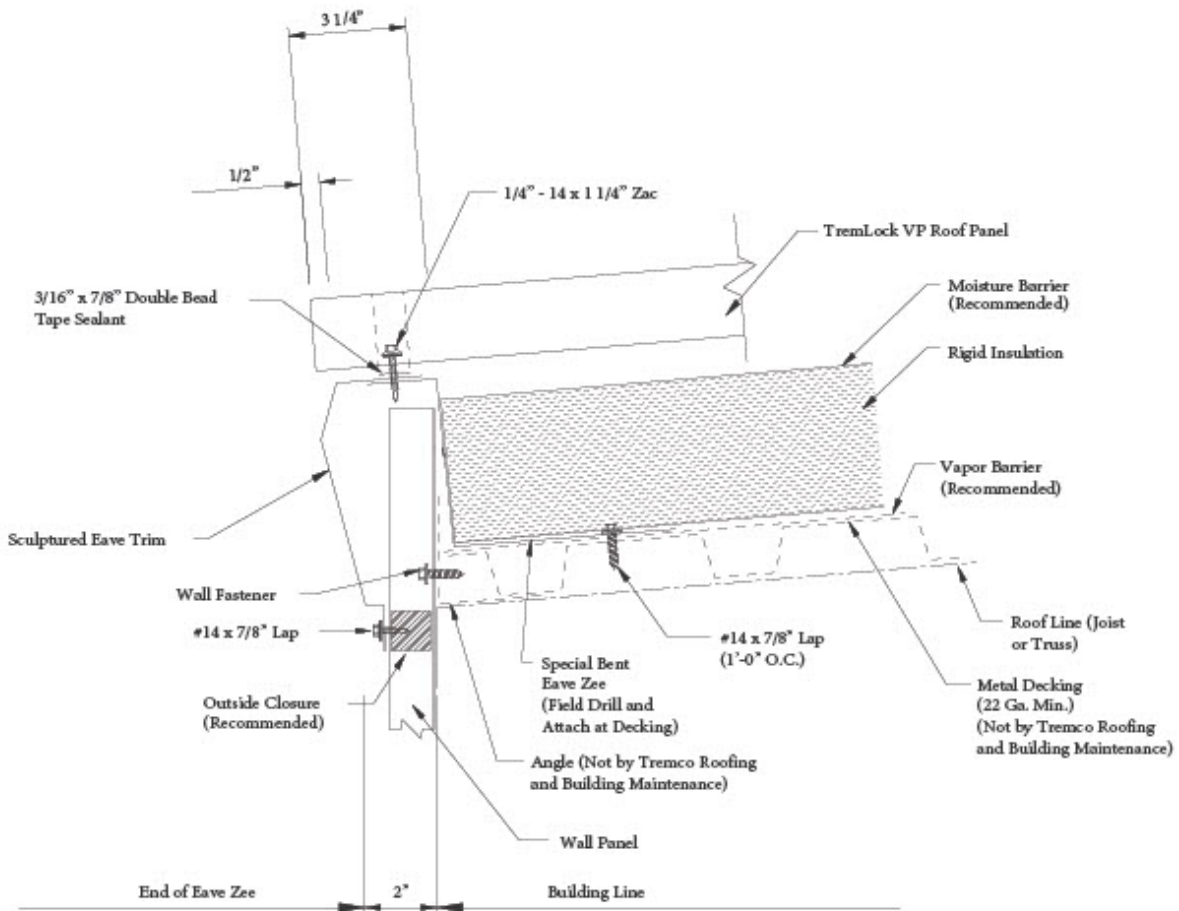
Section at Eave / Simple Eave Trim / Rigid Insulation and Metal Decking



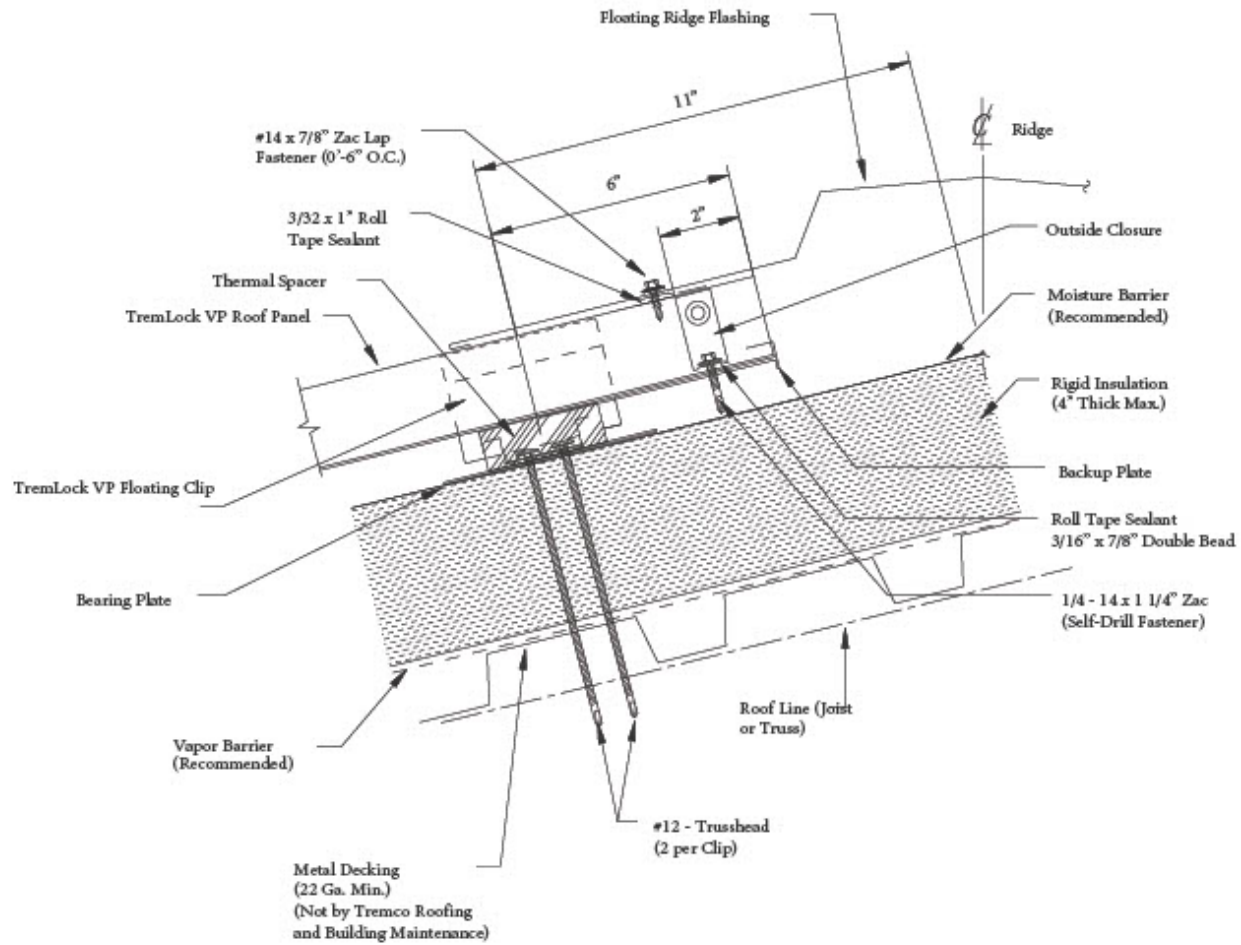
Section at Eave / Gutter and Downspout / Rigid Insulation and Metal Deck



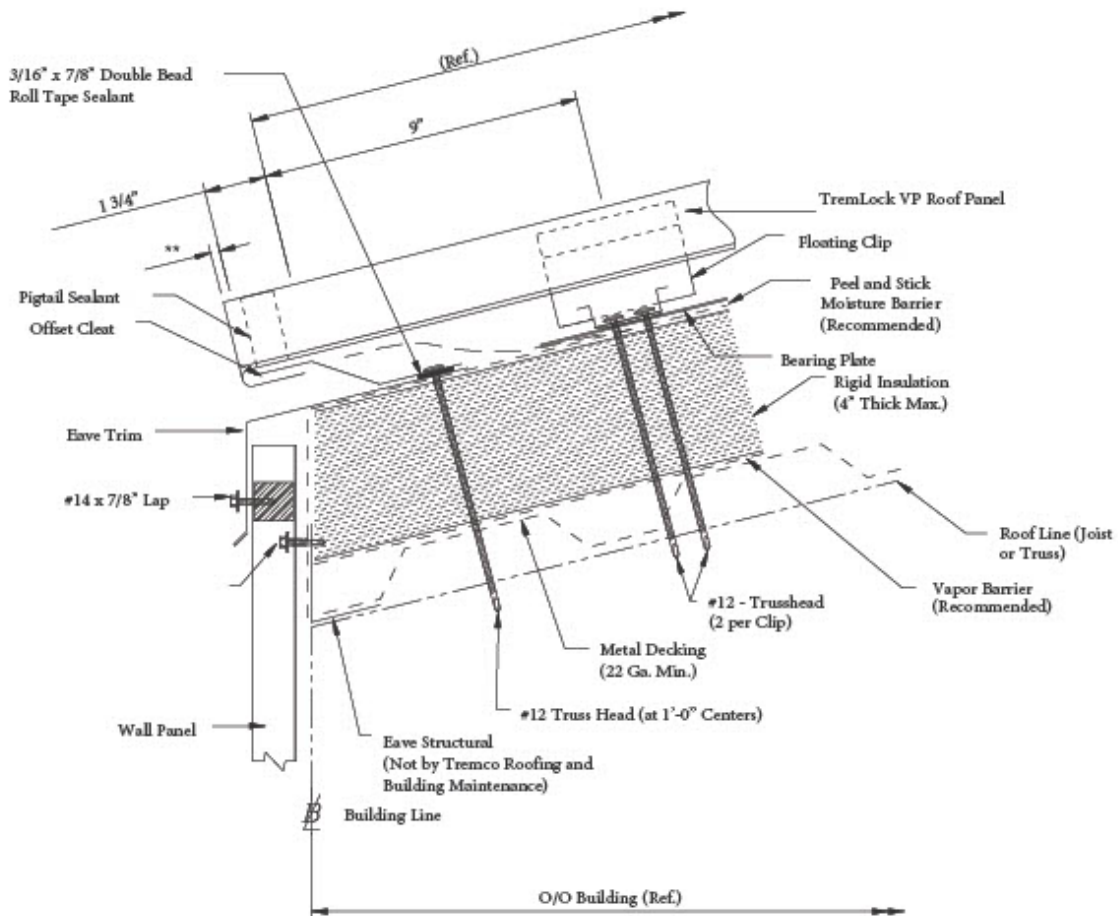
Section at Eave / Sculptured Eave Trim / Rigid Insulation and Metal Deck



Section at Ridge / Rigid Insulation and Metal Deck Floating System

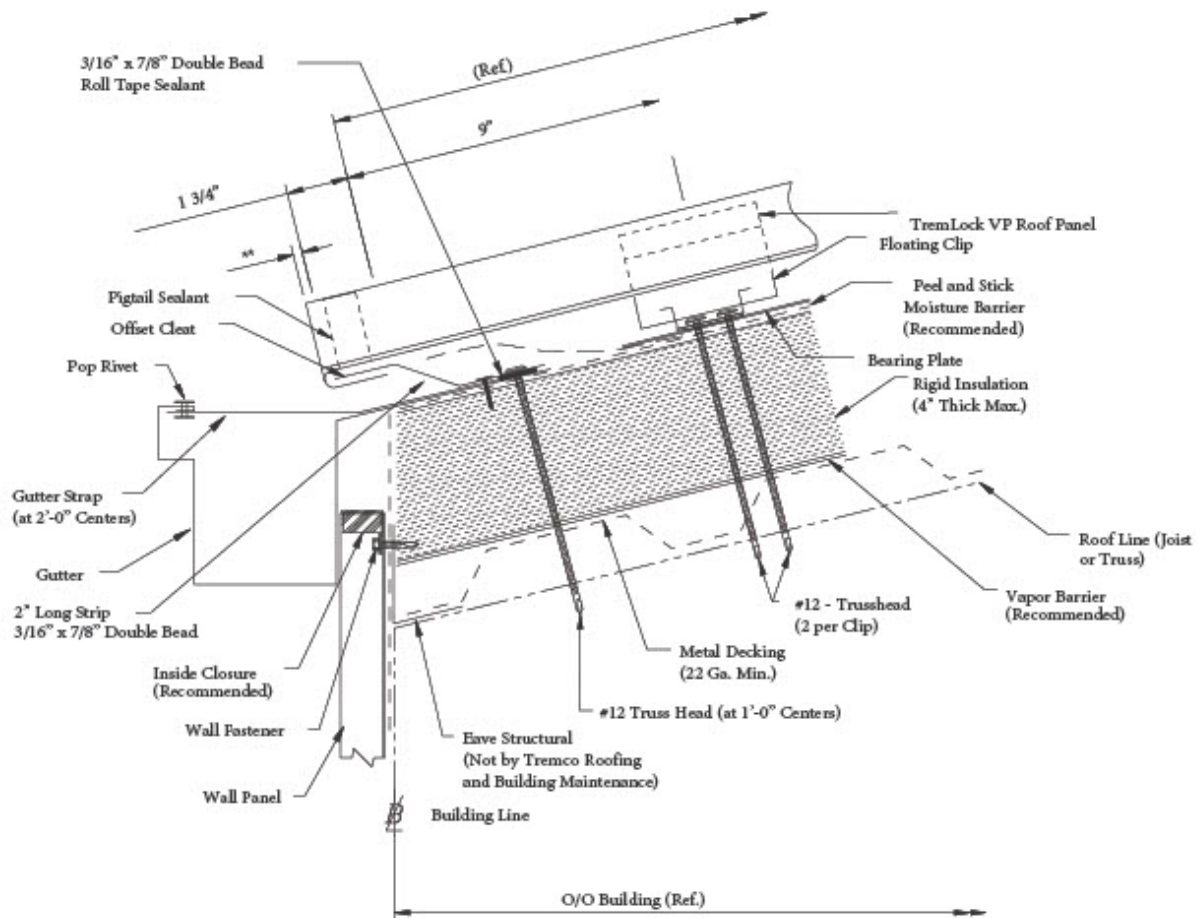


Section at Eave / Architectural Details - Eave Trim Rigid Insulation and Metal Deck



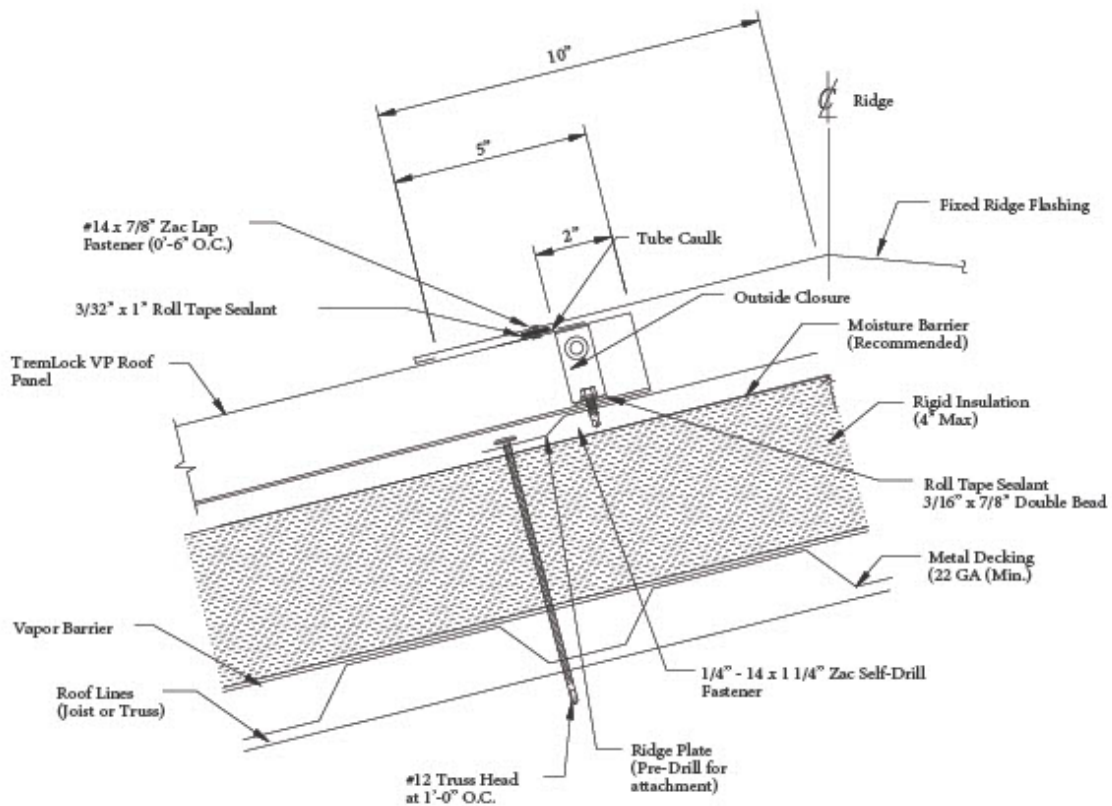
** CLEARANCE REQUIRED FOR THERMAL MOVEMENT

Section at Eave / Architectural Details - Gutter Rigid Insulation and Metal Deck

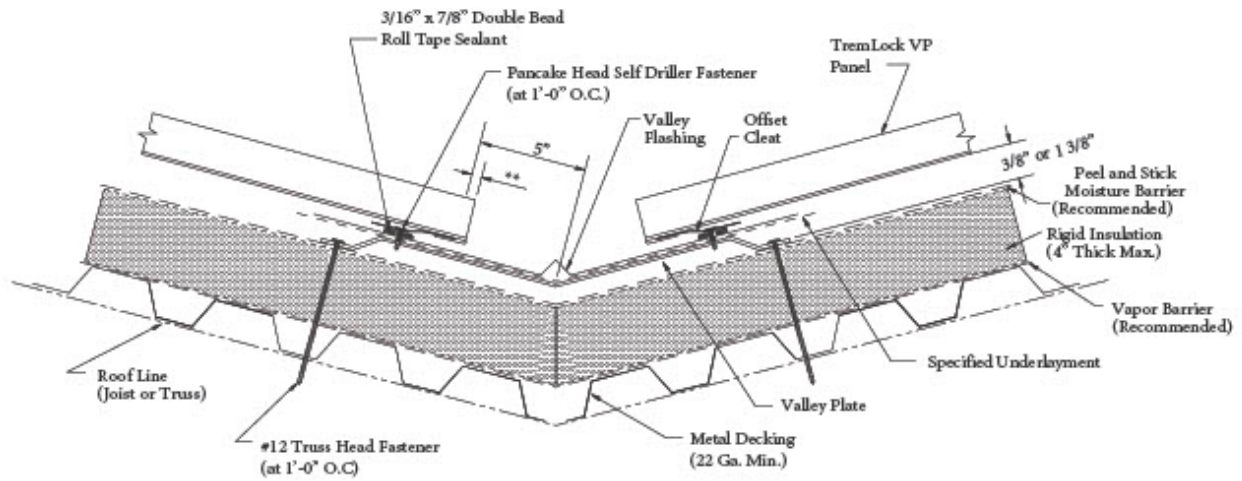


** CLEARANCE REQUIRED FOR THERMAL MOVEMENT

Section at Ridge / Architectural Details - Ridge Rigid Insulation and Metal Deck

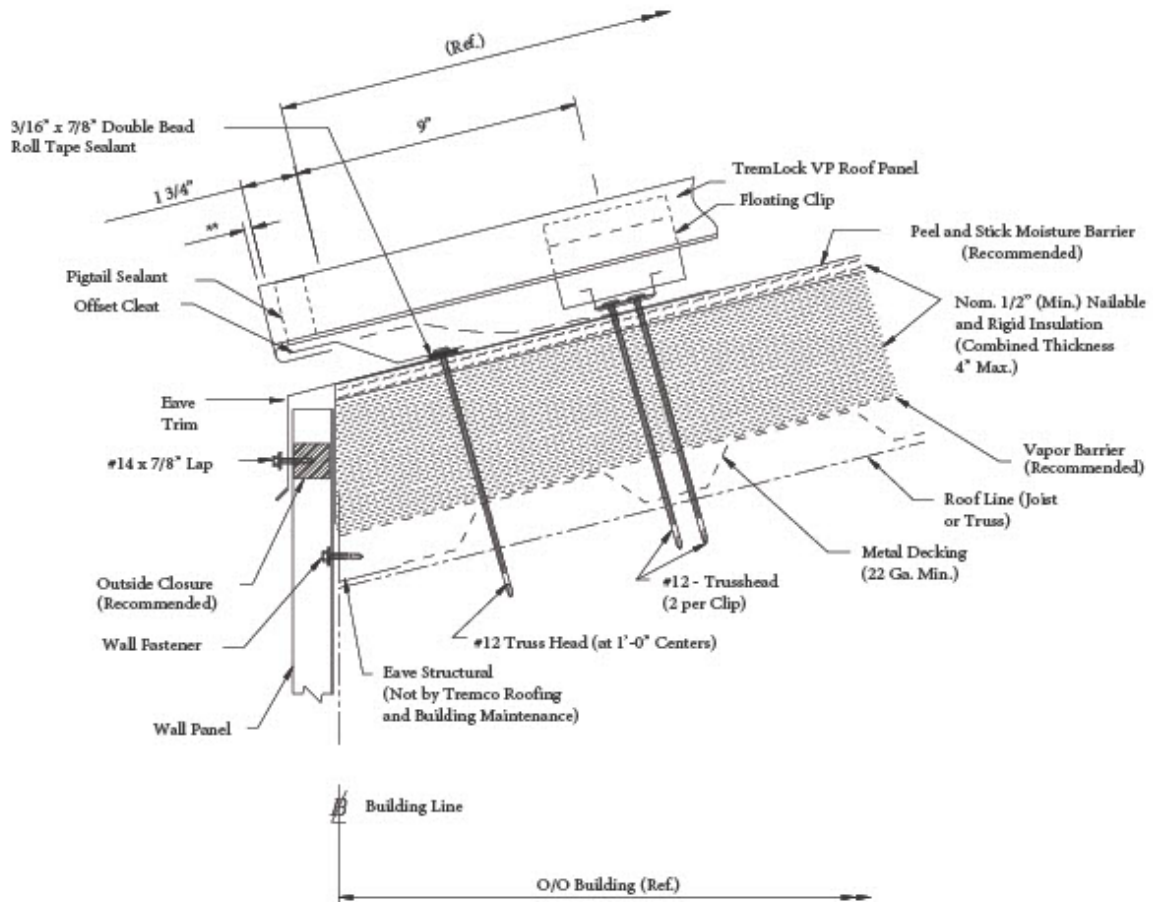


Section at Valley / Architectural Detail - Valley Rigid Insulation and Metal Deck



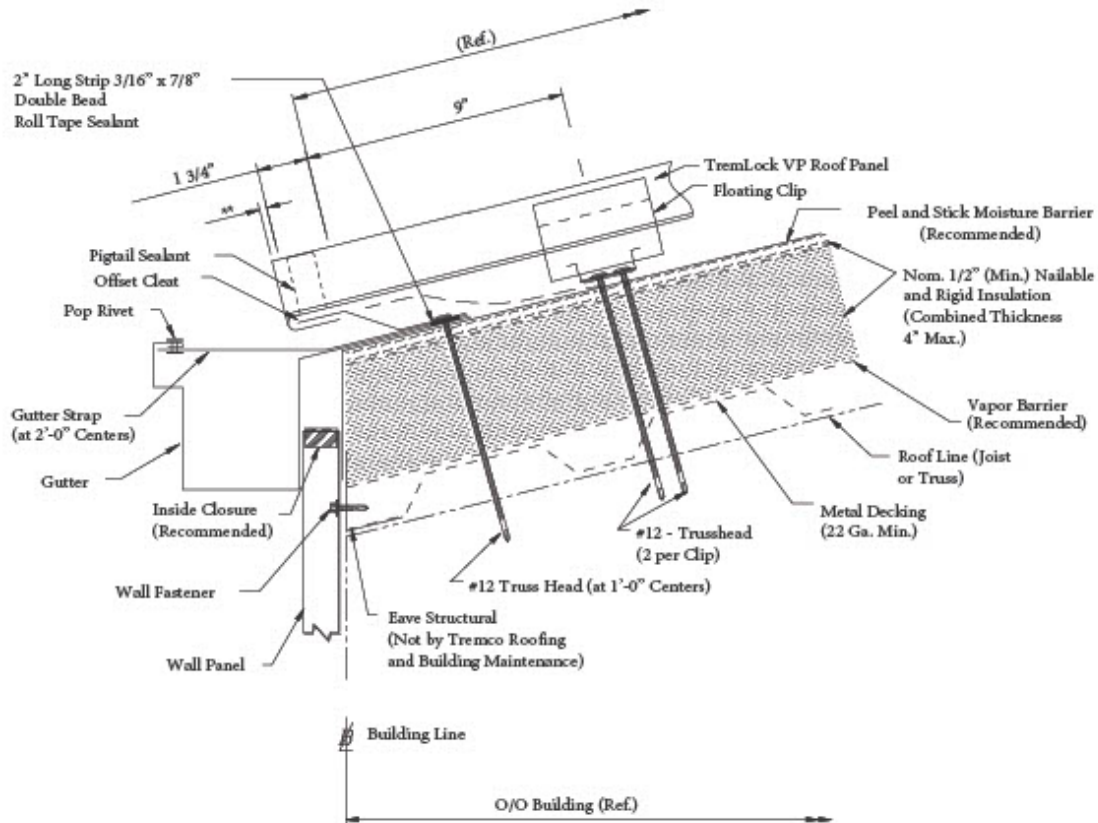
** DIMENSION REQUIREMENT
FOR THERMAL EXPANSION

Section at Eave / Architectural Details - Eave Trim Nailable, Rigid Insulation and Metal Deck



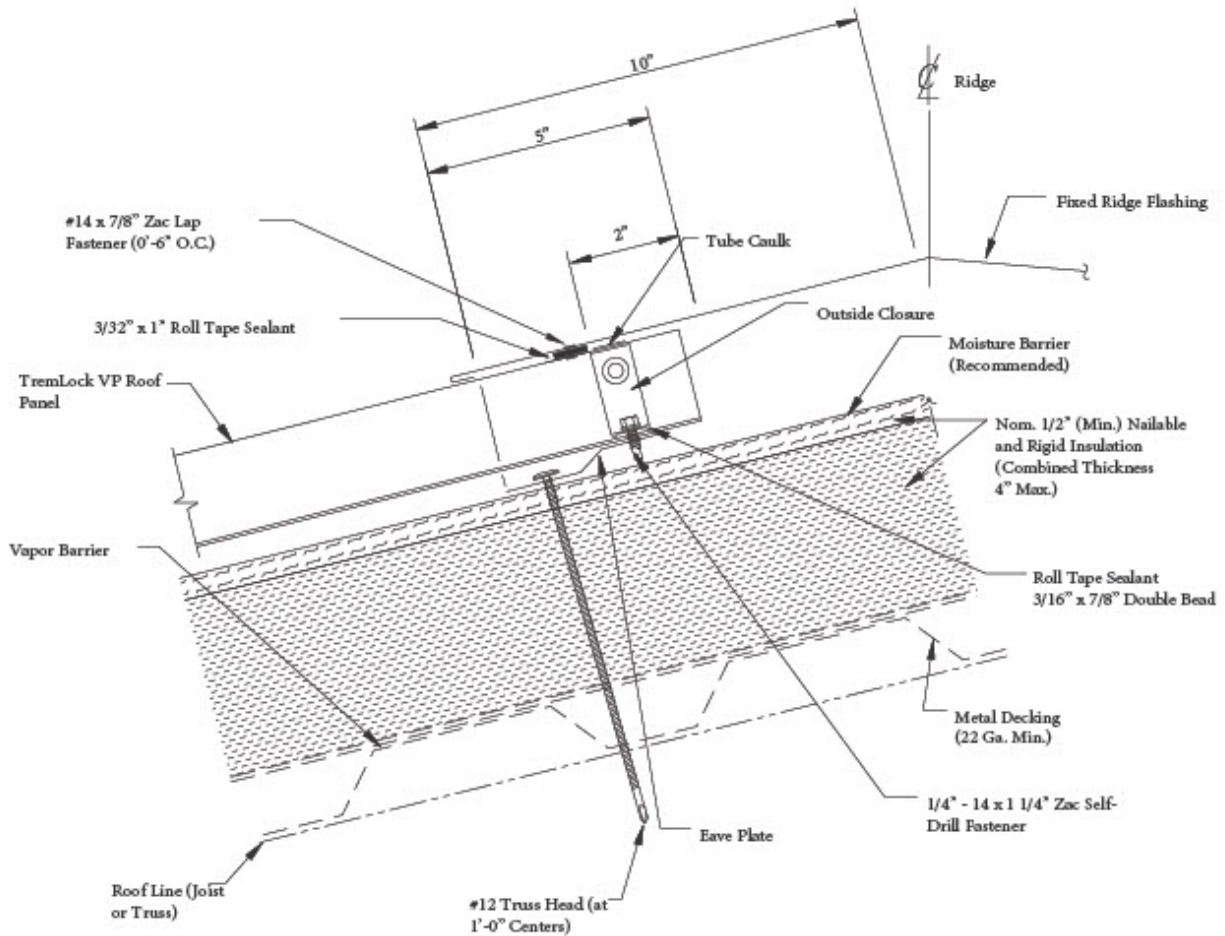
** CLEARANCE REQUIRED FOR THERMAL MOVEMENT

Section at Eave / Architectural Details - Gutter Nailable, Rigid Insulation and Metal Deck

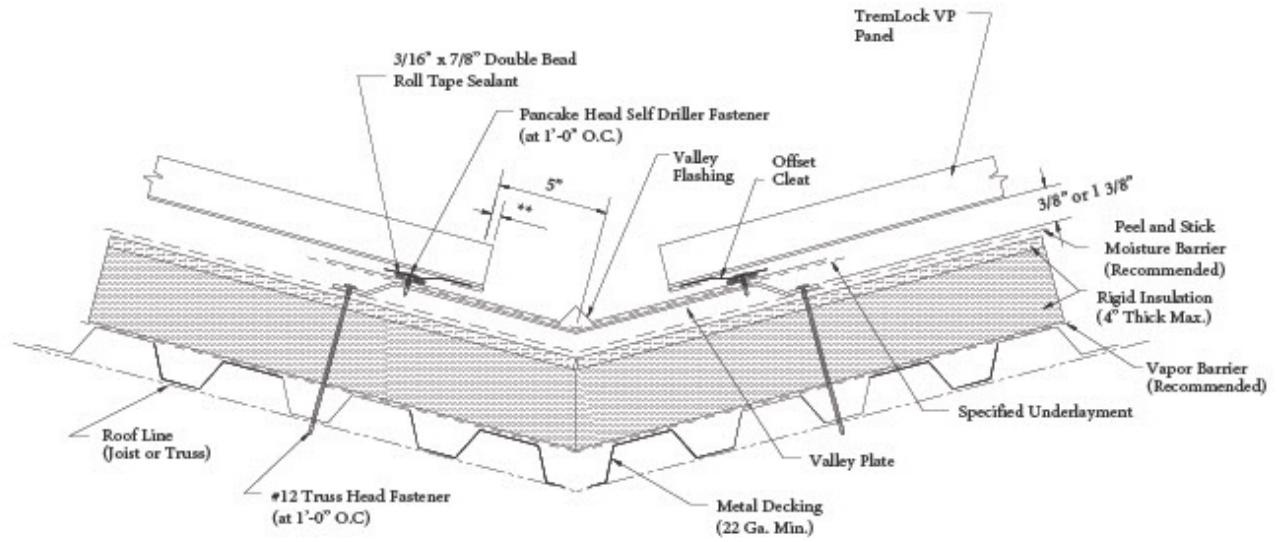


**** CLEARANCE REQUIRED FOR THERMAL MOVEMENT**

Section at Ridge / Architectural Details - Ridge Nailable, Rigid Insulation and Metal Deck



Section at Valley / Architectural Detail - Valley Nailable, Rigid Insulation and Metal Deck



** DIMENSION REQUIREMENT
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