Guardian I & II

Standing Seam Roof System

Erection Manual

THIS MANUAL APPLIES TO “GUARDIAN I” & “GUARDIAN II” SYSTEMS. “GUARDIAN II” REQUIRES PANEL SIDE LAPS TO BE MECHANICALLY SEAMED.

THIS MANUAL REPLACES ALL PREVIOUS MANUALS
EFFECTIVE JANUARY 1, 2006 / JC & JEN

IMPORTANT NOTICE

READ THIS MANUAL COMPLETELY PRIOR TO BEGINNING THE INSTALLATION OF THE GUARDIAN I & II ROOFING SYSTEMS. U.S.A. DETAILS MUST BE FOLLOWED AS A MINIMUM TO INSURE APPROPRIATE WARRANTIES WILL BE ISSUED.

IF THERE IS A CONFLICT BETWEEN PROJECT ERECTION DRAWINGS PROVIDED OR APPROVED BY U.S.A. AND DETAILS IN THIS MANUAL, PROJECT ERECTION DRAWINGS WILL TAKE PRECEDENCE.

THERMAL SPACER DISCLAIMER

The thermal spacer chart on page GEM-2 is intended to be used as a general guideline only. Because of the various densities of insulation currently available, the manufacturer cannot guarantee that this chart will be accurate in all situations. Further, the manufacturer does not specifically require that the roofing contractor use thermal spacers with it's Guardian I & II roof system. However, please review the following information:

- Although the manufacturer does not require a thermal spacer, the architect or building owner may.
- In certain environments, the compression of the fiberglass insulation, without a thermal spacer, may create a thermal break which can cause condensation to form on the purlins/ joists.
- On uninsulated buildings, eliminating the thermal spacer: (1) may cause "roof rumble" and (2) you may encounter problems holding panel module.
- When a high clip is used without a thermal spacer: (1) may encounter problems holding panel module and (2) foot traffic on the panel ribs may result in bent clips.
- Using a low clip with too much insulation or too thick a thermal spacer: (1) may cause "purlin read" (2) may cause difficulty in properly installing the panel side laps, and (3) you may encounter problems holding panel module.
- Thermal calculations should be performed on each project to ensure that the thermal move ment of the roof is not greater than the floating clip's capacity. Various densities of blanket insulation and or the appearance of a metal roof system. The installer is responsible for selecting the proper clip and thermal spacer for their conditions. THERMAL BLOCKS AND INSULATION ARE OPTIONAL.

CONTROL OF GUARDIAN PANEL MODULE

Standing seam panel modules can vary. The panel clips attach to the locking legs of the panel. This connection point is 3 3/8” or 4 3/8” higher than the base connection. Due to the distance of the connection points, the panel module can change based on personnel working in panels, the thickness of the insulation, etc.

MEASUREMENT OF PANEL MODULE

- Employee standing in the panel, during the measurement of panel module will change the measurement reading.
- The frame line(s) can be used as a location to measure the panel.

CLIPS / THERMAL BLOCKS

- Low clips are used for up to 4’ of insulation, thermal blocks are not required.
- High clips required the use of thermal blocks.
  * Thermal block sizing (high clip)
    1. 4” of insulation requires use of 3/4” thermal blocks
    2. 6” of insulation - USA standard is to supply 3/8” thermal blocks but some erectors prefer 3/4” thermal blocks. The 3/4” thermal block is only supplied when requested on the contract.
- Employees working in the panel during installation of panel clip and backup plates will affect the panel module. If employees are to work in the panel during the installation of the panel, then it is suggested the employee work over a secondary member, not in between the secondary members.

EAVE (METAL INSIDE CLOSURE)

- The installation of the inside closure is based on field measurement between the inside closures, therefore, the eave module should be at the proper location.
- An overall measurement at various inside closures or at frame line(s) is recommended since individual measurements (deviations between the individual closures) can be cumulative.

BACK UP PLATES

- The backup plate can be used to help to increase or decrease the panel module. The outer legs of the backup plate can be bent inward (toward the center of the plate) to decrease the panel module or bent outward (away from the center of the plate) to increase panel module.

NOTE: The panel must form to the shape of the backup plate. The backup plates must remain connected together (tab in slot).

RIDGE

- Installing the outside closures along the ridge/high eave during panel installation will help to control the panel module at this location. The outside closure can act as a spacer. The outside closure will need to be one run behind the installation. The panel must fully form to the backup plate and the backup plate must remain attached to the previous back up plate.

OTHER

- Wood blocking can be used to help stretch the panel module at clip locations. The wood blocking will help to control the clips at the wider location.
- Wood blocking can be cut from any available wood at the site.
- The wood blocking will be located between the vertical locking legs of the panel.
- The wood blocking should be cut + 1/4” to + 3/8” longer than required for a 2’-0” module.
- The blocking will remain in panels or 4 - 5 runs. If additional width gain is required, move the first installed block to the current panel run. All intermediate runs will remain.
- Use this method until the desired position is obtained. At this point the use of blocking can be discontinued. The wood blocking can be used, as required, during later stages of installation.
- The panel clips must remain tight to the panels.

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INDEX

GENERAL INFORMATION

ERECTION SEQUENCE

TRIM SECTIONS

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ERECTION Guardian I & II

IMPORTANT! READ THIS

It will greatly facilitate DESIGNING, QUOTING, ORDERING or ERECTING the U.S.A. Guardian I or Guardian II roof if you determine which system you need or have based on building width and insulation requirements.

NOTE: THE PROPER CLIP MUST BE USED OR PANEL WILL NOT HOLD MODULE.

LOW FIXED - Double slope buildings 200' wide or less and single slope buildings 100' wide or less, with or without ⅜" thermal spacer for added insulation. **See Insulation/Thermal Spacer Chart Below.**

HIGH FIXED - Double slope buildings 200' wide or less and single slope buildings 100' wide or less, with ⅜", ¾" or 1" thermal spacer for added insulation. **See Insulation/Thermal Spacer Chart Below.**

Fixed systems utilize fixed clips that do not allow the roof panels to float on the substructure. For this reason, use fixed systems only on pre-engineered metals buildings with purlins, subject to the building width restrictions outlined above. **Do not use fixed systems on building with bar joist construction, wood decks or metal decks.**

LOW FLOATING - Double slope buildings 200' wide or less and single slope buildings 100' wide or less, with or without ⅜" thermal spacer for added insulation. **See Insulation/Thermal Spacer Chart Below.**

HIGH FLOATING - Double slope buildings 200' wide or less and single slope buildings 100' wide or less, with ⅜", ¾" or 1" thermal spacer for added insulation. **See Insulation/Thermal Spacer Chart Below.**

Thermal calculations should be performed on each project to ensure that the thermal movement of the roof is not greater than the floating clip's capacity. Various densities of blanket insulation may affect the insulation and or the appearance of a metal roof system. The installer is responsible for selecting the proper clip and thermal spacer for their conditions. THERMAL BLOCKS AND INSULATION ARE OPTIONAL.

Thermal Spacer Selection Chart

For use over blanket insulation (.60 pcf maximum density) installed over purlins or joist.

	Low System	High System
No insulation	⅜" Thermal Spacer - Attached with dbl sided tape on purlin	N/A
3" Insulation	⅜" Thermal Spacer. May cause bulge at spacer. Do not use if aesthetics are a concern.	1" Thermal Spacer
4" Insulation	N/A	¾" Thermal Spacer
6" Insulation	N/A	⅜" Thermal Spacer

NOTE:
1. Bar joist construction (all widths) requires a floating system.
2. Low or high articulating clips are optional and must be specified on work order.
3. All metal roofs should be designed by a registered, professional engineer for loads specified by the governing code, including the higher pressures encountered at the edge zones of the roof.
4. Floating clips have a maximum 1" movement each direction. Articulating clips have a maximum 1 ¼" movement each direction.

OIL CANNING IS NOT A CAUSE FOR REJECTION.

This manual is to be used in conjunction with the "ST" drawings furnished in the building erection package. Together, they are to be used by the roof system erector as a guide for the erection of the Guardian I & II roofs. **IT IS THE RESPONSIBILITY OF THE ERECTOR TO INSTALL THIS ROOF USING SAFE CONSTRUCTION PRACTICES.** The manufacturer is not responsible for the performance of this roof system if it is not installed in accordance with the instructions. If there are any questions regarding proper installation of parts or materials on this roof system, please inquire before proceeding.

CAUTION

Diaphragm capabilities and purlin stability are not provided by U.S.A.'s **Guardian I & II** roof system. Therefore, other bracing is required to conform to A.I.S.C. or A.I.S.I. specifications, which is provided, if structure is by U.S.A. As with all standing seam roof systems, sound attenuation (example: blanket insulation) is required between the panel and the substructure to prevent "roof rumble" during windy conditions. Some composite roof systems may require additional acoustical consideration to ensure that thermal vibration noises are isolated from the building interior.

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UNDERWRITERS LABORATORIES REQUIREMENTS

Guardian I & II

Construction Number	Panel Width (In)	Gauge	Clip Type	Clip	Substrate	UL-2218 Impact	UL-263 Fire Rating	UL-90 Rating
534	24	24 min	B	5'-0"	Open Framing	Class 4	Class A	Class 90
535	24	24 min	C	5'-0"	Open Framing	Class 4	Class A	Class 90
536	24	24 min	A	5'-0"	Composite	Class 4	Class A	Class 90
537	24	24 min	B	5'-0"	Composite	Class 4	Class A	Class 90
541	24	24 min	B	5'-0"	Plywood	Class 4	Class A	Class 90

Clip Type: **A** - (Fixed, Floating or Articulating); **B** - (Floating or Articulating); **C** - (Fixed or Floating); **D** - (Utility or Articulating).

Notes:

1. Test procedures are in accordance with Underwriters Laboratories Standard UL-580 under "Tests For Uplift Resistance of Roof Assemblies".
2. A detailed installation method is available for each Construction Number Above and can be found in the UL Roofing Materials and Systems Directory. The panels must be installed in a certain manner to achieve the published results.
3. The panel qualifies for a Class A fire rating in compliance with Underwriters Laboratories Standard UL-263.
4. The panel system is listed under the following Fire Resistance Design Numbers: P224, P225, P227, P230, P233, P237, P265, P268, P508, P510, P512, P701, P711, P715, P717, P720, P722, P724, P726, P731, P734, P736, P801, P803, P814, P815, P819, P821, and P823. Refer to the UL Fire Resistance Directory for specific construction methods and hourly ratings.
5. Guardian I & II panels carry a Class 4 rating under UL-2218 "Test Standard For Impact Resistance."

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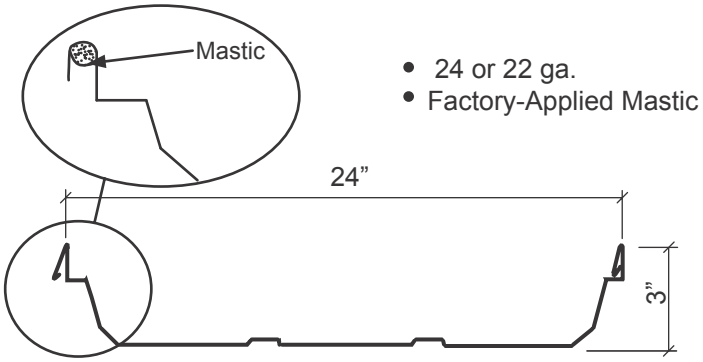
ERECTION Guardian I & II

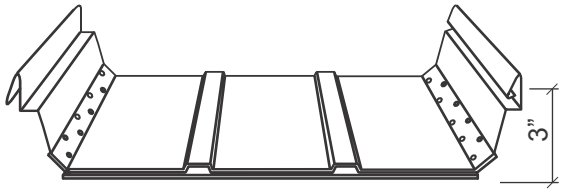
PRODUCT CHECKLIST

Guardian Panel

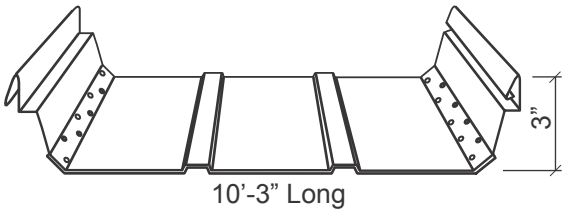


- 24 or 22 ga.
- Factory-Applied Mastic

Skylight, Standard - UL-90
Insulated - with Stiffener Plate (shipped loose)

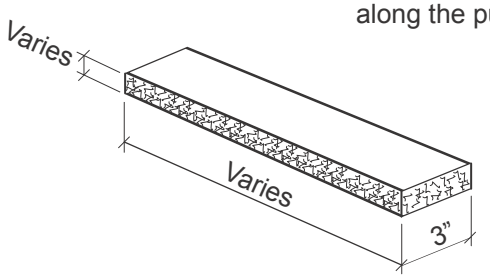


Skylight, Standard - UL-90
UnInsulated - with Stiffener Plate

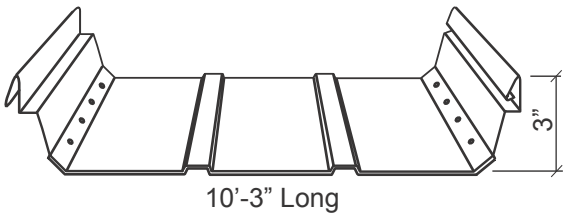


Thermal Spacer
Available Depths: ⅜”, ¾” & 1”
Available Size: 3” X 17 ⅞”
3” X 23 ⅞”

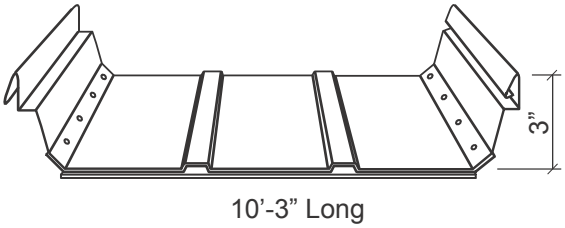
- Polystyrene block used to increase the insulation capacity along the purlins



Skylight, Standard
UnInsulated

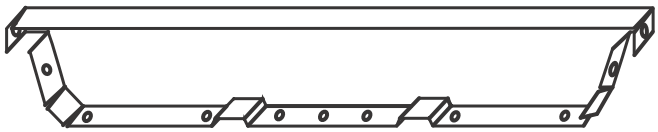


Skylight, Standard
Insulated



Outside Closure

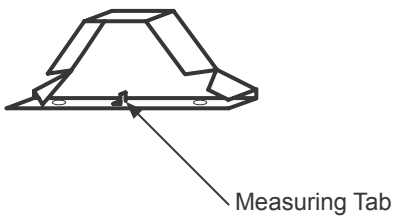
- 24 ga.
- For use at ridge, roof penetrations, etc.



☐ 24” - HW-430

Inside Closure
(Metal)

- For use at eaves



☐ HW-426

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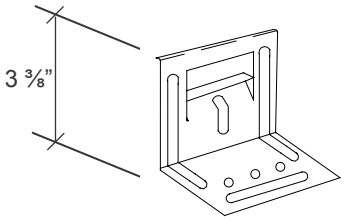
ERECTION Guardian I & II

PRODUCT CHECKLIST

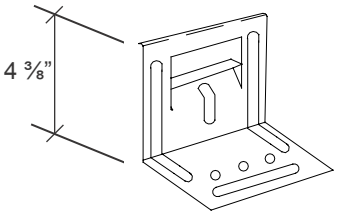
Standard Low Fixed Clip
(Coated)



2 Screws Per Clip

☐ M-0560
☐ HW-200

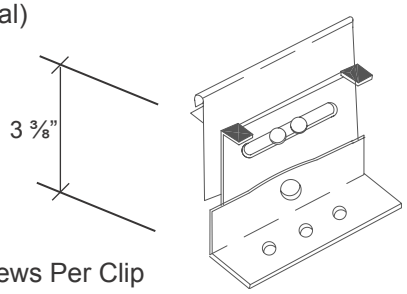
Standard High Fixed Clip
(Coated)



2 Screws Per Clip

☐ M-0570
☐ HW-204

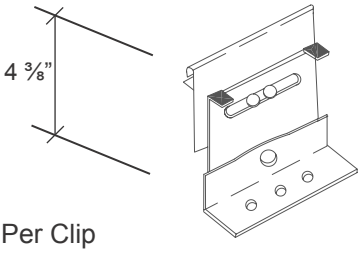
Low Articulating Clip (Coated)
(Optional)



2 Screws Per Clip

☐ HW-210

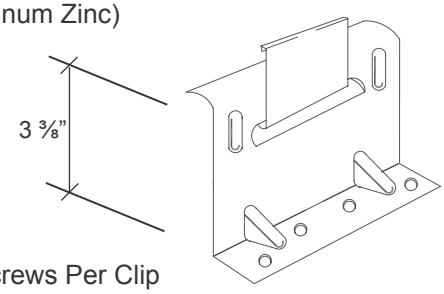
High Articulating Clip (Coated)
(Optional)



2 Screws Per Clip

☐ HW-212

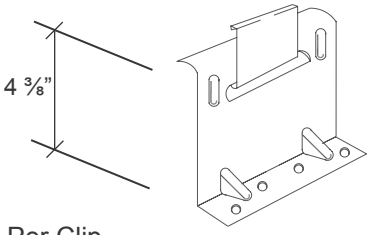
Standard Low Floating Clip
(Aluminum Zinc)



2 Screws Per Clip

☐ HW-2100

Standard High Floating Clip
(Aluminum Zinc)

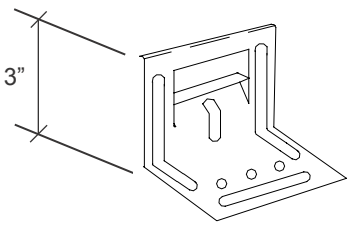


2 Screws Per Clip

☐ HW-2120

Standard Utility Clip (Coated)

- For applications that do not require the ⅜” insulation clearance provided by the low and high clips.
- For applications over a solid deck.



2 Screws Per Clip

☐ HW-208

*Total clip movement should be calculated for each project based on the anticipated temperature differential of the area in which the project is located.

*Floating clips have a maximum of 1” movement each direction. Articulating clips have a maximum movement of 1¼” each direction. The recommended panel run length is less when the system is installed over bar joist sub-framing.

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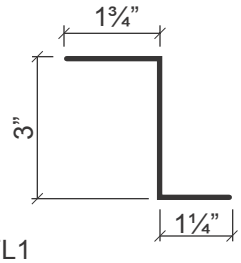
ERECTION Guardian I & II

PRODUCT CHECKLIST

Rake Support Zee - UFX1
(Fixed Low & Utility System)

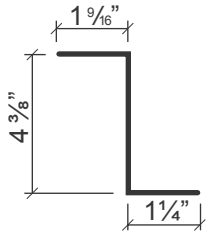
- 20'-0" Length
- 16 Ga. Painted



Low Floating: UFL1
Same profile with slots

Rake Support Zee - HFX1
(Fixed High System Only)

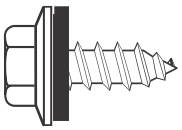
- 20'-0" Length
- 16 Ga. Painted



High Floating:HFL1
Same profile with slots

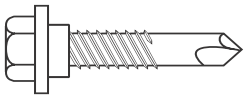
STITCH SCREW
#14 x 1" Self Tapping
Screw, w/ Sealing Washer
(Optional)

- Trim to Panel



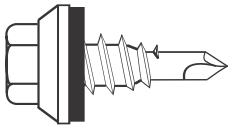
SHOULDER SCREW
#14 x 1¼"
(Floating System Only)

- Floating Rake Support Zee



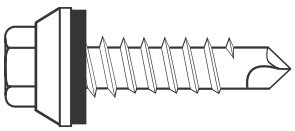
STITCH SCREW
#14 x ⅞"LapTek Stitch Screw
with Sealing Washer

- Trim to Panel
- Panel to Panel
- Trim /Panel to Closure



MEMBER SCREW
12-14 x 1¼" Self Drilling
with Sealing Washer

- Clip to Purlin
- Rake support to purlin (Fixed system only)
- Inside closure to Eave Strut
- Steel to Steel
- Panel to Steel
- Clip to Steel
- Inside Closure to Steel



⅛" x 3/16" Pop Rivet

- All Trim Splices

⅛" x ⅜" Pop Rivet

- Hip Trim to Z Closure

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ERECTION Guardian I & II

PRODUCT CHECKLIST

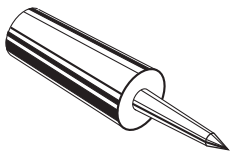
Triple Bead Tape Sealer
3/16" x 2½"x20'-0

- For use at valleys, endlaps, and roof curbs

Tri Bead Tape Sealer
3/16" x ⅞" x 25'-0"

- Used at the eave strut, outside closures hips, and trim connections.

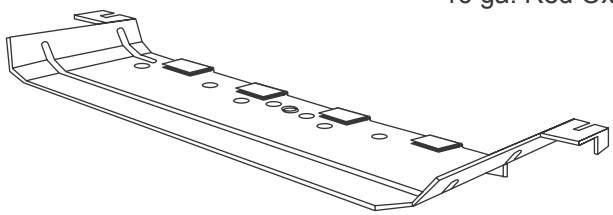
Tube Sealant
10.1 oz, clear



36 lineal feet of ⅜" bead per tube of sealant

Back-up Plate
(24" Width)

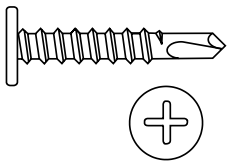
- For use at endlaps and at the ridge.
- 16 ga. Red Oxide



☐ HW-7740 (24")

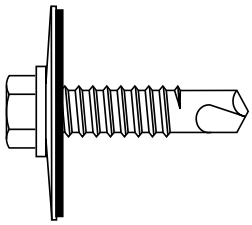
10 x 1"
#2 Phillips Pancake Head Driller

- Support plate to purlins at valley and hip conditions



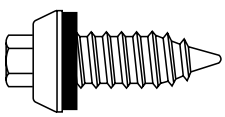
¼" - 14 x 1¼" Driller with 1 ⅛" O.D. Washer, ⅜" Hex Washer Head

- Skylight panel to back-up plate



#17 x 1 Type AB Long Life Screw w/Sealing Washer

- Use in place of fastener at all stripouts



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ERECTION Guardian I & II

PREPARATORY REQUIREMENTS

1. A single pitch eave strut must be used with the Guardian I or Guardian II roof systems.
2. Make sure rake angle has been installed on top of the purlins to accept the “Rake Support’.
3. The walls do not have to be erected before the roof is installed. However, for the purposes of this manual, we have assumed that the wall panels have been installed.
4. All primary and secondary framing must be erected, plumbed and squared with bolts tightened according to accepted building practices.
5. The substructure (eave to ridge) must be on plane with a tolerance of ¼” in 20’ and ⅜” in 40’.
6. The Guardian roof can be erected on various types of construction. However, for the purposes of this manual, we have assumed that the roof will be installed on a new, pre-engineered metal building.
7. It is critical that the purlins or joists at the ridge and end laps be exactly located as detailed and that they are straight from rafter to rafter. Any mislocation or bowing of these members can cause the fasteners at the endlaps or outside closures to foul as the panels expand and contract.
8. For the purpose of this manual, we have assumed that this is a standard roof. If your roof is to be UL 90 rated, see special UL 90 requirements on page GEM-3.
9. Read recommended erection practices on pages GEM-28 thru GEM-29 before proceeding with roof installation.
10. 2 screws per panel clip - all conditions. Eave plates for high fixed or high floating systems have been omitted. See job drawings for exact details.
11. It is recommended that a screw gun with a speed range of 0 - 2000 RPM be used to properly install all fasteners referenced in this manual. Tools rated to 4000 RPM should never be used for self drilling fasteners typically supplied with metal building components.
12. Field cutting of the panels should be avoided where possible. If field cutting is required, the panels must be cut with nibblers, snips or shears to prevent edge rusting. Do not cut the panels with saws, abrasive blades, grinders or torches.

WARNING: Light transmitting panels are not designed or intended to bear the weight of any person walking, stepping, standing or resting on them. **U.S.A. DISCLAIMS ANY WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED**, that any person can safely walk, step, stand or rest on, or near these light transmitting panels or that they comply with any OSHA regulation.

CAUTION

Application and design details are for illustration purposes only, and may not be appropriate for all environmental conditions or building designs. Projects should be engineered to conform to applicable buildings codes, regulations, and accepted industry practices.

Note:

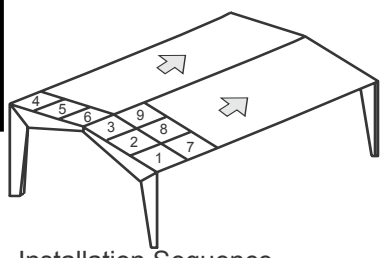
It is the responsibility of the erector to install this roof using safe construction practices that are in compliance with OSHA regulations. U.S.A. is not responsible for the performance of this roof system if it is not installed in accordance with the instructions shown in this manual. Deviations from these instruction and details must be approved in writing by U.S.A.

CAUTION

Diaphragm capabilities and purlin stability are not provided by the Guardian roof system. Therefore, other bracing may be required, and supplied if structure is by USA.

CAUTION

The minimum recommended slope for the roof system is ¼ on 12. A slope of less than 1/4 on 12 could cause severe ponding and will void material warranties.



Installation Sequence

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ERECTION Guardian I & II

Unloading & Receiving

UNLOADING & RECEIVING

Upon receiving material, check shipment against shipping list for shortages and damages. U.S.A. will not be responsible for shortages or damages unless they are noted on the shipping list

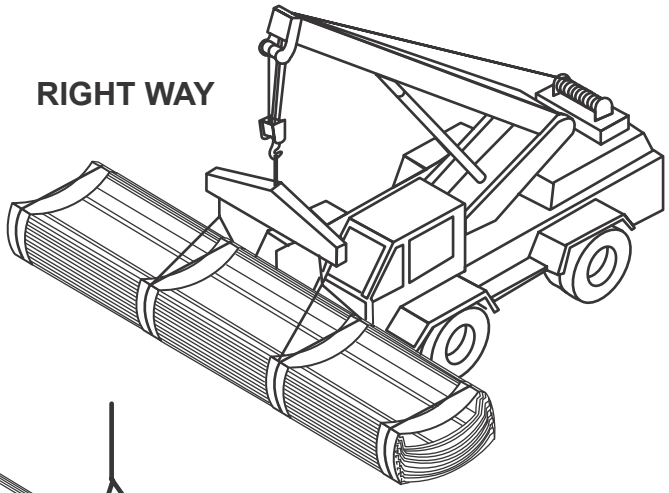
Each bundle should be lifted at its center of gravity. Where possible, bundles should remain banded until final placement on roof. If bundles must be opened, they should be re-tied before lifting.

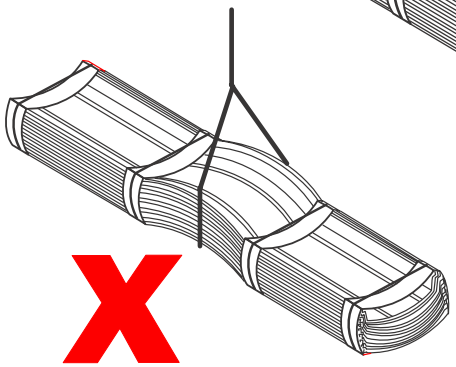
Panel crates less than 25 feet long may be unloaded with a forklift. Panel crates longer than 25 feet must be lifted by a crane with a spreader bar. When lifting bundles with a crane, a spreader bar and nylon straps should be used, and panel crates should be picked up at their center of gravity. **NEVER USE WIRE ROPE OR CHAIN SLINGS. THEY WILL DAMAGE THE PANELS.**

When lifting bundles with a forklift, forks must be a minimum of five feet apart. Do not transport open bundles. Drive slowly when crossing rough

CAUTION
Improper unloading and handling of bundles and crates may cause bodily injury or material damage. The manufacturer is not responsible for bodily injuries or material damages during unloading and storage.

RIGHT WAY

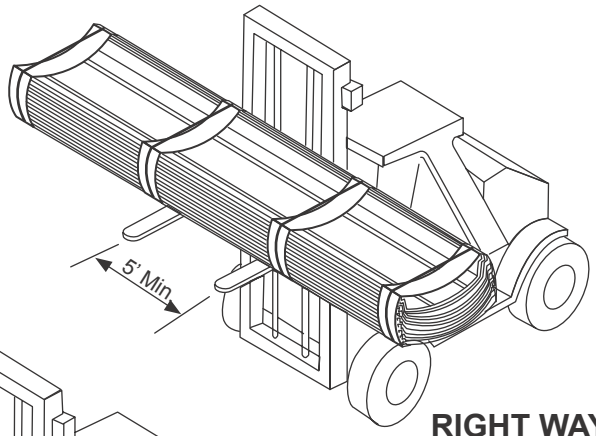




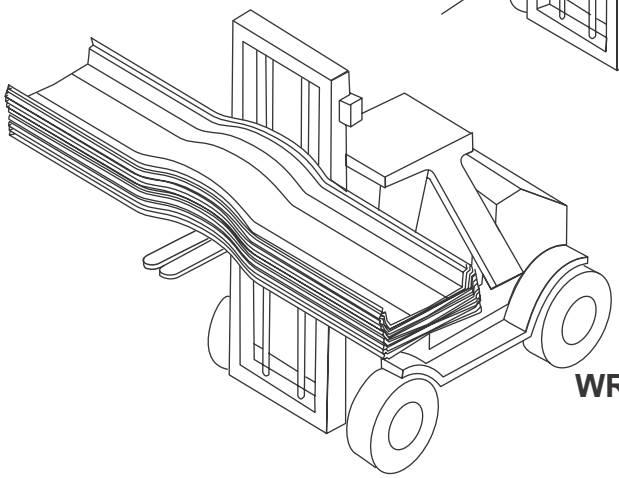
X

WRONG WAY

NOTE:
PANEL CRATES LONGER THAN 25 FEET MUST BE LIFTED BY A CRANE WITH A SPREADER BAR.



RIGHT WAY



X

WRONG WAY

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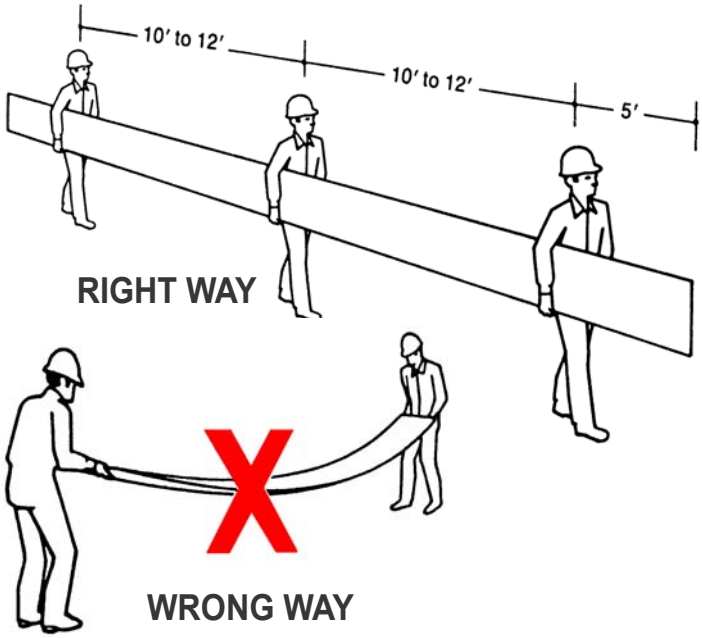
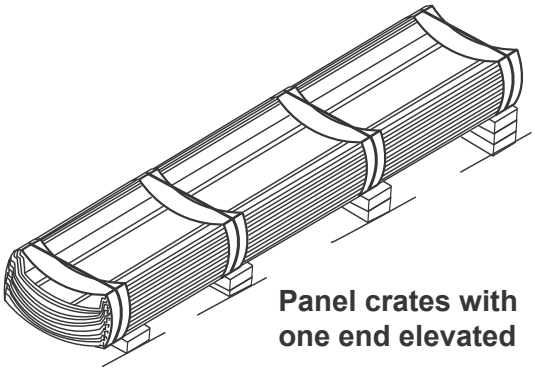
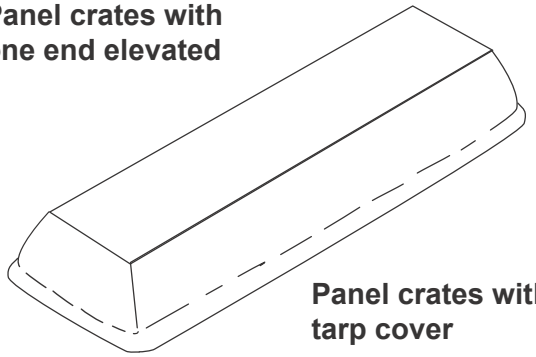


NOTE
Protective gloves should always be used while handling panels. OSHA safety regulations must be followed at all times.



Panel crates with one end elevated



Panel crates with tarp cover

NEVER ALLOW PANELS TO COME INTO CONTACT WITH LEAD, COPPER, GRAPHITE, GASOLINE OR OTHER HARSH CHEMICALS AS THIS WILL VOID THE GALVALUME® WARRANTY.

Handling & Storage

HANDLING & PANEL STORAGE

Standing on one side of the panel, lift it by the seam. If the panel is over 10' long, lift it with two or more people on one side of the panel to prevent buckling.

Do not pick panels up by the ends.

Store bundled sheets off the ground sufficiently high to allow air circulation beneath bundle and to prevent rising water from entering bundle. Slightly elevate one end of bundle. Prevent rain from entering bundle by covering with tarpaulin, making provision for air circulation between draped edges of tarpaulin and the ground.

PROLONGED STORAGE OF SHEETS IN A BUNDLE IS NOT RECOMMENDED.

If conditions do not permit immediate erection, extra care should be taken to protect sheets from white rust or water marks.

Check to see that moisture has not formed inside the bundles during shipment. If moisture is present, panels should be removed from their crate and wiped dry, then re-stacked and loosely covered so that air can circulate between the panels.

BAND ONLY

This method is used on all orders, unless otherwise specified by customer. The panels are banded together, causing them to curl up. This enhances the strength of the bundles. Panels bundled in this manner may be handled by a forklift in lengths to 30'. The forklift should have at least 5' between forks. Lengths in excess of 30' must be lifted utilizing a spreader bar. Special care must be given during handling to avoid damage to the locking edges of the panels.

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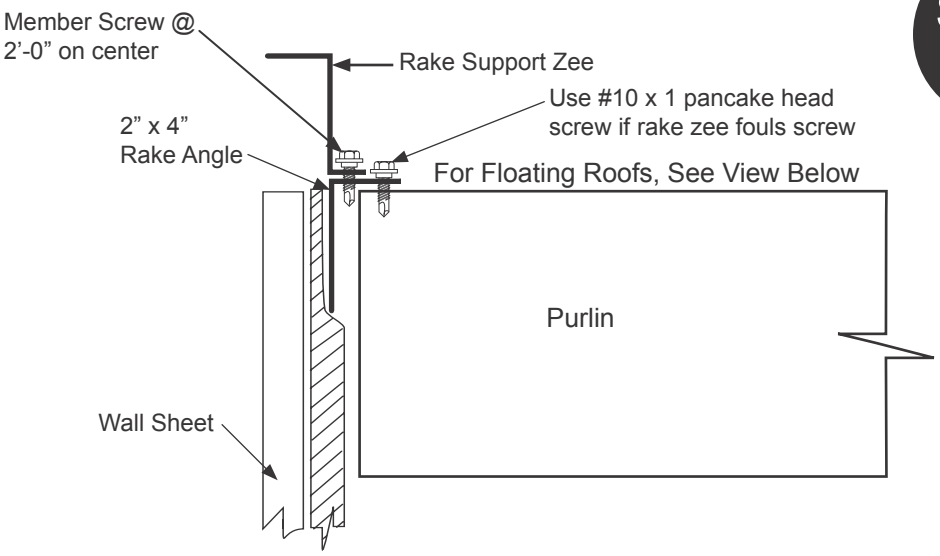
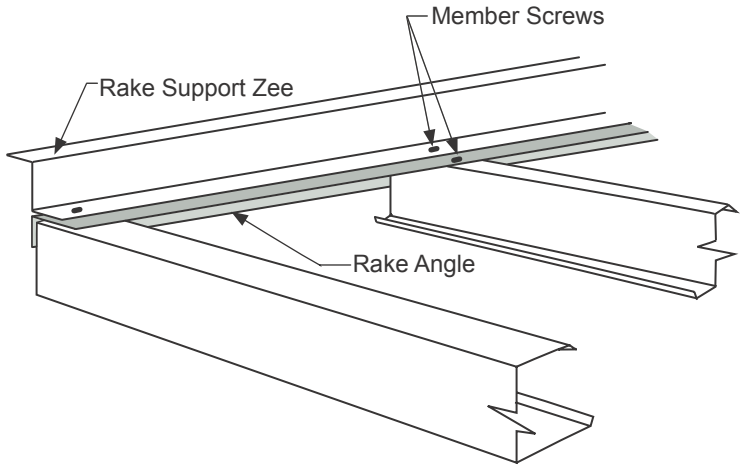
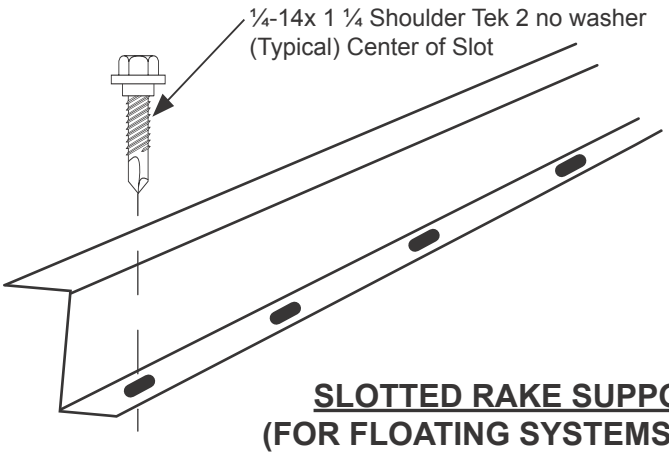
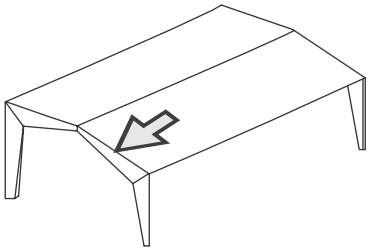






SLOTTED RAKE SUPPORT
(FOR FLOATING SYSTEMS ONLY)

STEP 1



RAKE SUPPORT

Install the rake support along the rake angle with member screws at each purlin and eave strut location from one eave to the other. The vertical leg is to be installed flush with the steel line.

IT IS IMPORTANT that the rake support zee is installed straight and square with the building, as it controls the alignment of the roof system.

(**FOR FLOATING SYSTEMS ONLY)**

CAUTION
It is important that shoulder self-drilling fasteners are installed through the center of the slotted holes to allow for expansion.

CAUTION
ALL PRIMARY AND SECONDARY FRAMING SHOULD BE ERECTED, PLUMBED, AND BOLTS TIGHTENED PRIOR TO SHEETING.

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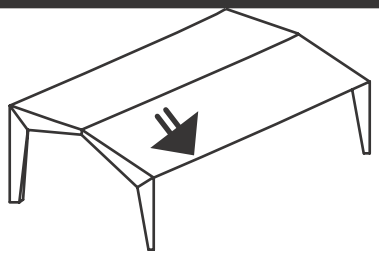


STEP 2

CAUTION:
ALL PRIMARY AND SECONDARY FRAMING SHOULD BE ERECTED, PLUMBED AND BOLTS TIGHTENED PRIOR TO SHEETING.

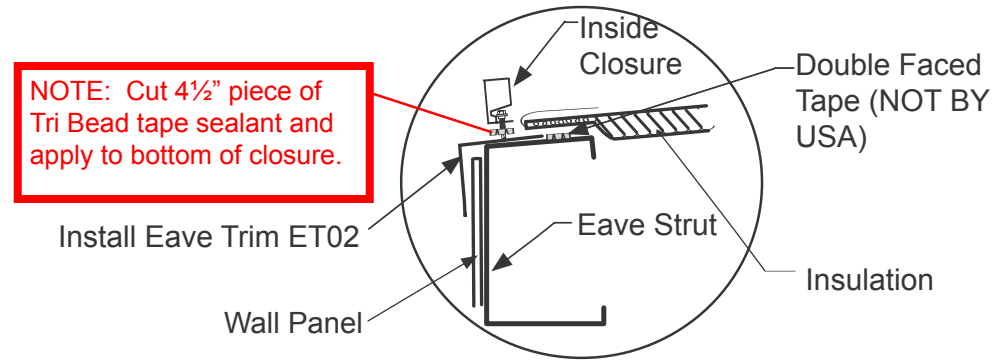
METAL INSIDE CLOSURE

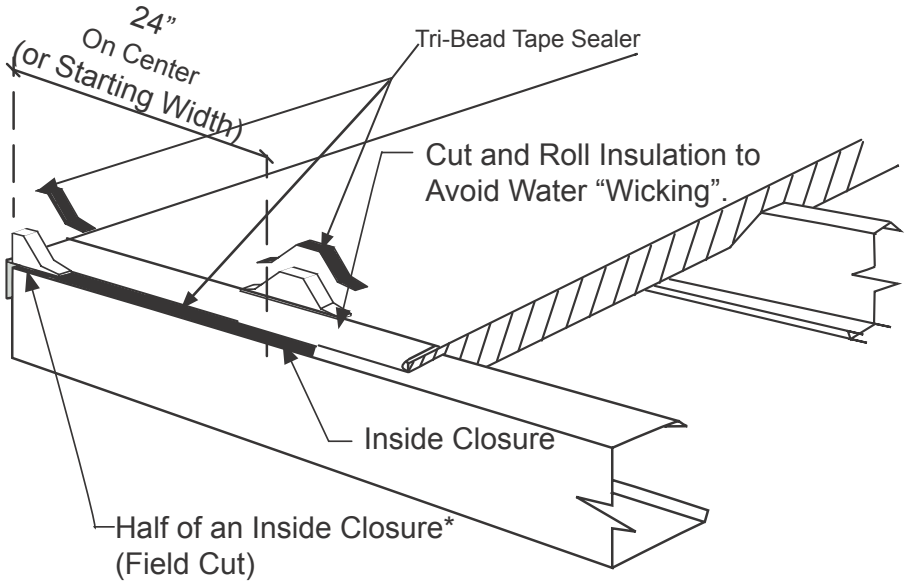
Lay the first roll of insulation with its leading edge inside the endwall steel line so the insulation joints will not fall at the panel laps. Stretch the insulation from one end to the other to AVOID BAGS AND WRINKLES.

Attach the metal inside closure flush with the outside edge of the eave strut, with (2) member screws. The first inside closure must be field cut in half to fill the void under the partial rib.

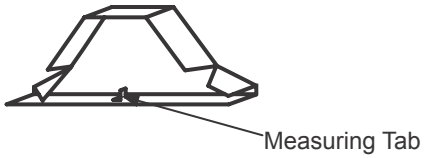
Locate additional closures on 24" centers from the first closure to maintain panel module. Install two fasteners per closure. The first fastener should be installed through the slotted hole to allow for any adjustment that may be required. Place Tri-bead tape sealer on the top and side of each closure to complete the seal at the eave. These may be pre-taped before installation. Measure from tab to tab located on the metal closure.

Roll out insulation from eave to peak, laying the side of the insulation of top of the rake support. The first roll should be 3" wide. This will keep insulation sidelaps 1" from panel sidelaps. Allow approximately 4" of insulation to hang past the double faced tape (downslope) before sticking the insulation to the double faced tape. Cut and remove the fiberglass approximately 4" and fold the vapor barrier back over the insulation (upslope).





CAUTION:
The fiberglass insulation must not interfere with Tri Bead tape sealer which provides a positive seal at the eave.



INSIDE METAL CLOSURE

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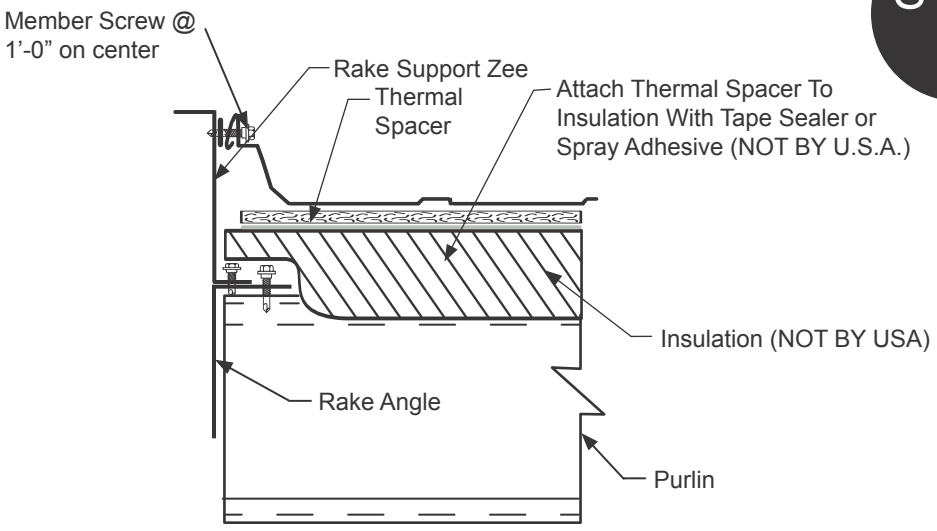
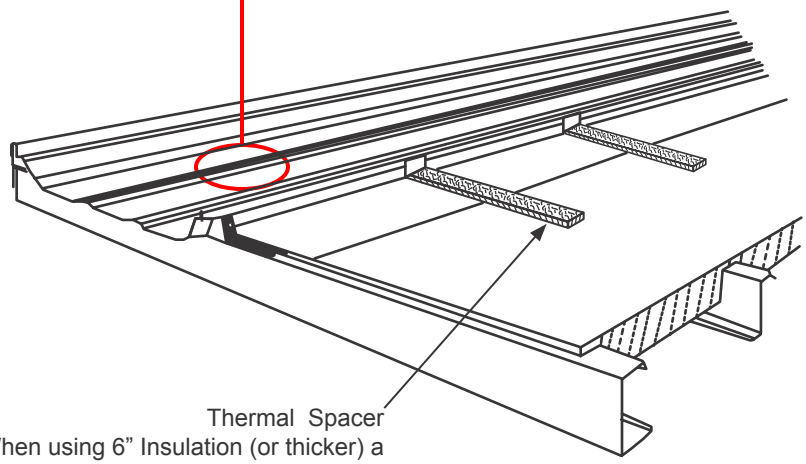
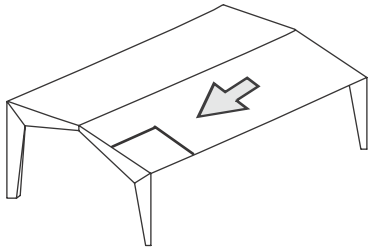


RAKE SECTION

NOTE: EXCESSIVE PRESSURE WITHOUT SUPPORT BETWEEN EAVE STRUT AND FIRST PURLIN, WILL CAUSE PONDING. (DO NOT STAND IN PANEL TO ERECT!!), USE BOARD OR OTHER MEANS TO KEEP WEIGHT OUT OF PANEL. ALSO SPECIAL CARE SHOULD BE TAKEN DURING GUTTER INSTALLATION FOR BUILDING SLOPE LESS THAN ½:12.



STEP 3



THERMAL SPACER

Position the thermal spacer on top of the insulation over each purlin and against the rake support zee, prior to installing the roof panel.

NOTE: INCREASED THICKNESS OF INSULATION REQUIRES THINNER THERMAL SPACER. (NOT BY U.S.A.) See page GEM-2 for selection chart for recommended thermal spacer thickness.

Using tape sealer or spray adhesive, (NOT BY U.S.A.) adhere the thermal spacers to the insulation. The thermal spacer increases the insulation capacity along the purlins.

NOTE: THERMAL SPACER MUST BE INSTALLED WHEN USING HIGH CLIPS. SEE SELECTION CHART FOR RECOMMENDED THERMAL SPACER THICKNESS GEM-2.

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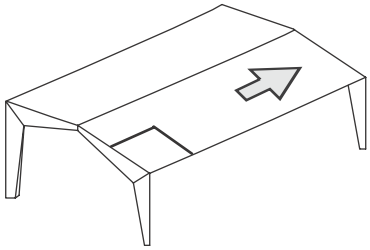


STEP 4

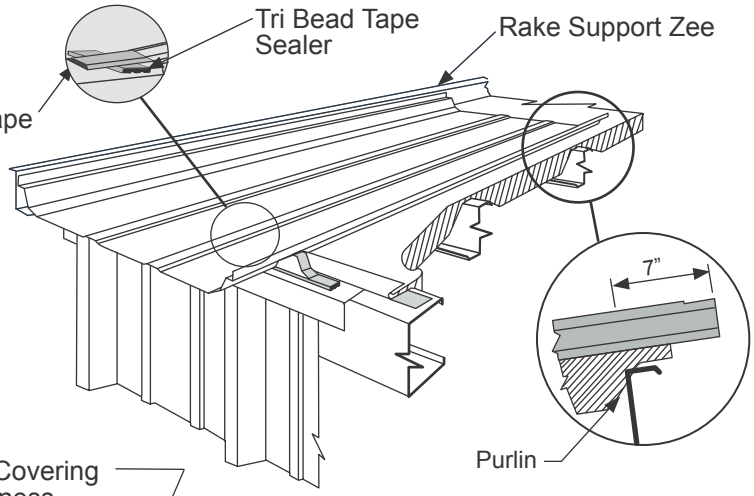
FOR FULL WIDTH STARTING PANEL (ON MODULE)

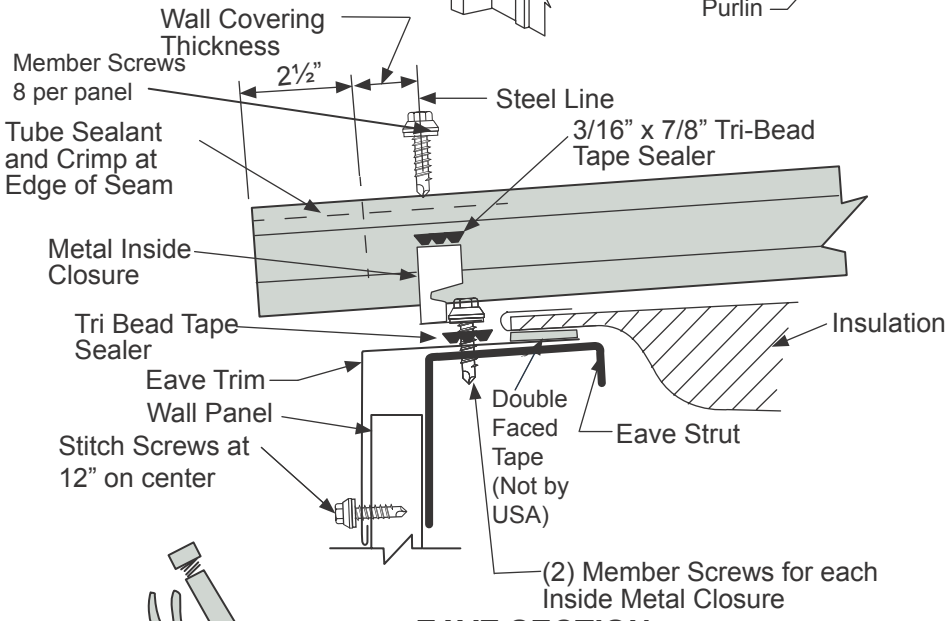
FIRST PANEL

Apply tri-bead tape sealer to the underside of the minor ribs of the panel. Position so that this tape sealer will cross the Tri-bead tape sealer on the eave trim (for low systems) or on the high eave plate (for high systems) when the panel is installed. Position the panel so that it overhangs the eave strut by the thickness of the wall covering plus 2½". The upper end of the panel must be 7" beyond the web of the purlin.

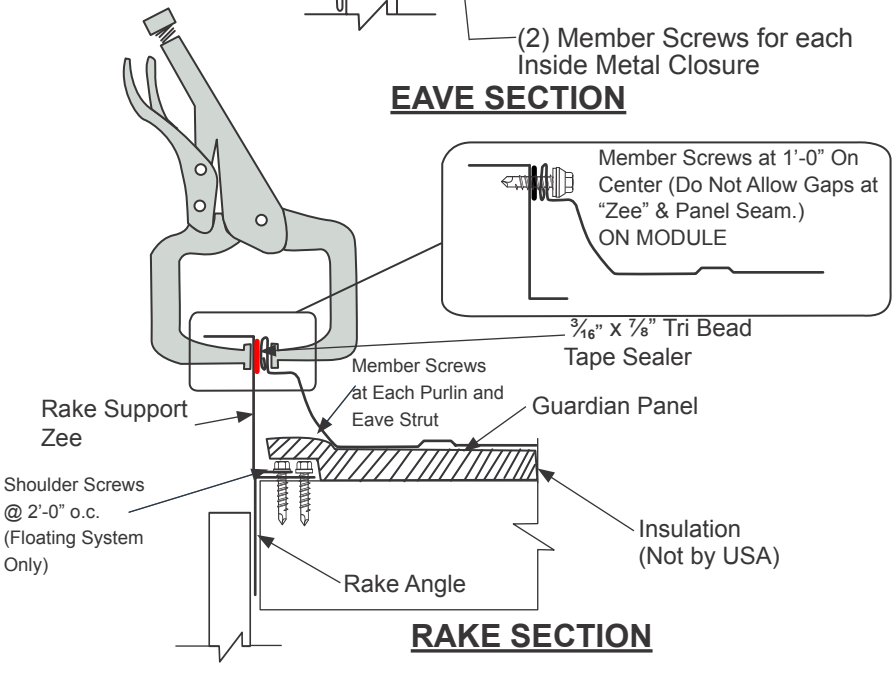
Apply 3⁄16" x 7⁄8" Tri Bead tape sealer along the extreme outside edge of the starting panel high rib. Position the panel against the rake support and clamp with "C" clamps. Fasten panel high rib to rake support with member screws at 12" on center.

CAUTION
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.





EAVE SECTION



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CAUTION

CHECK YOUR MODULE SPACING OFTEN. MODULE MUST BE HELD 2'-0" ON CENTER FOR FINISHED PANEL TO FIT PROPERLY.

NOTE:

EXCESSIVE WEIGHT ON PANEL WILL CAUSE INACCURATE MEASUREMENTS.

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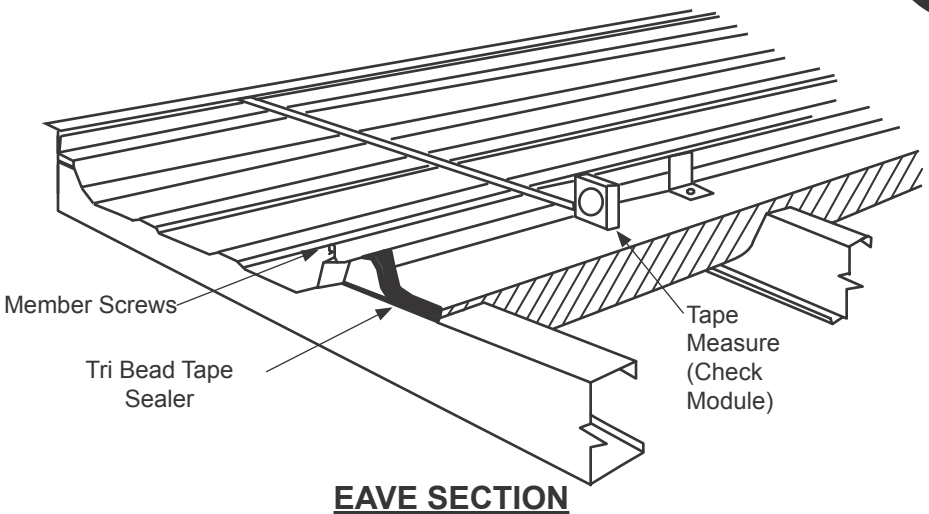
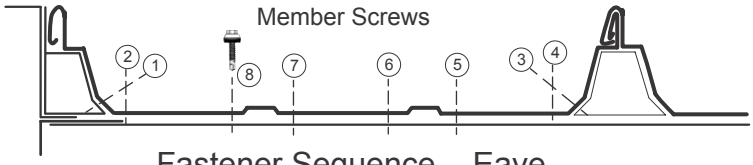
ERECTION Guardian I & II

NOTE: STRIPPED FASTENERS SHOULD BE REPLACED WITH OVERSIZE FASTENERS (NOT BY U.S.A.).

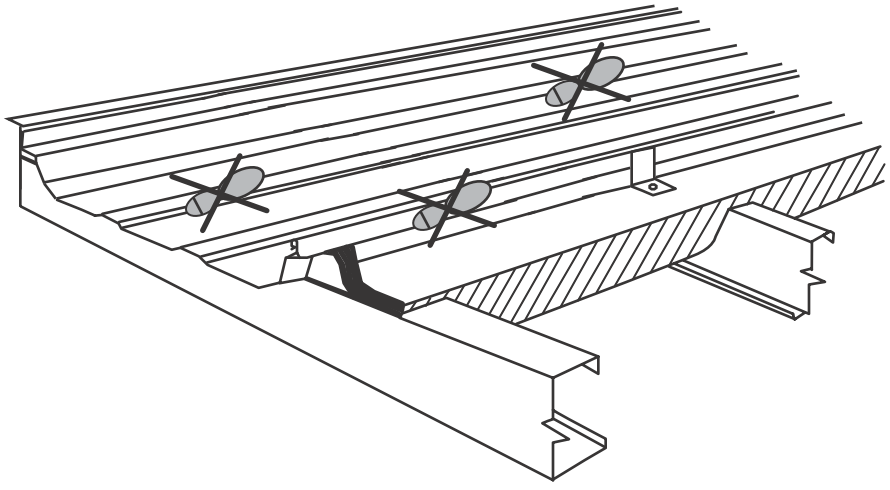


EAVE SECTION

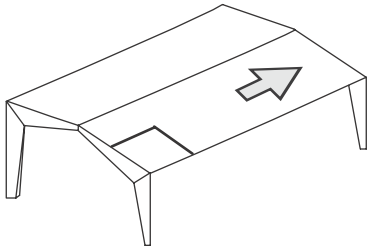


Fastener Sequence - Eave

NOTE: EXCESSIVE PRESSURE WITHOUT SUPPORT BETWEEN EAVE STRUT AND FIRST PURLIN, WILL CAUSE PONDING, (DO NOT STAND IN PANEL TO ERECT!!). USE BOARD OR OTHER MEANS TO KEEP WEIGHT OUT OF PANEL. ALSO SPECIAL CARE SHOULD BE TAKEN DURING GUTTER INSTALLATION FOR BUILDING SLOPE LESS THAN ½:12.



STEP 4 (CONTINUED)



FIRST PANEL

IT IS IMPORTANT that the panel module be held to width of 24". Use a tape measure when installing clips on each purlin on the first panel run.

Unless the installed panel width is held to 24", difficulty will be encountered installing the outside closure and backup plate.

Attach the panel flat to the eave strut and metal inside closure with eight (8) members screws.

Place the tape measure over the seams of the panel, approximately 8" from the end of the panel.

CAUTION
Do not, under any circumstance, step on the panel at the seam or at the panel ends until the panel is fully attached. The roof panel may not support the weight of a man at these locations and could affect panel module.

CAUTION
Check your module spacing often. Module MUST be 2'-0" on center for finish panel to fit properly.

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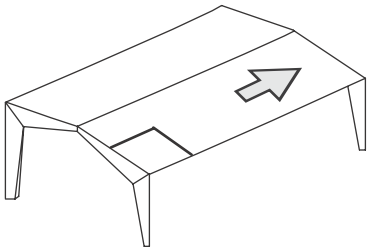
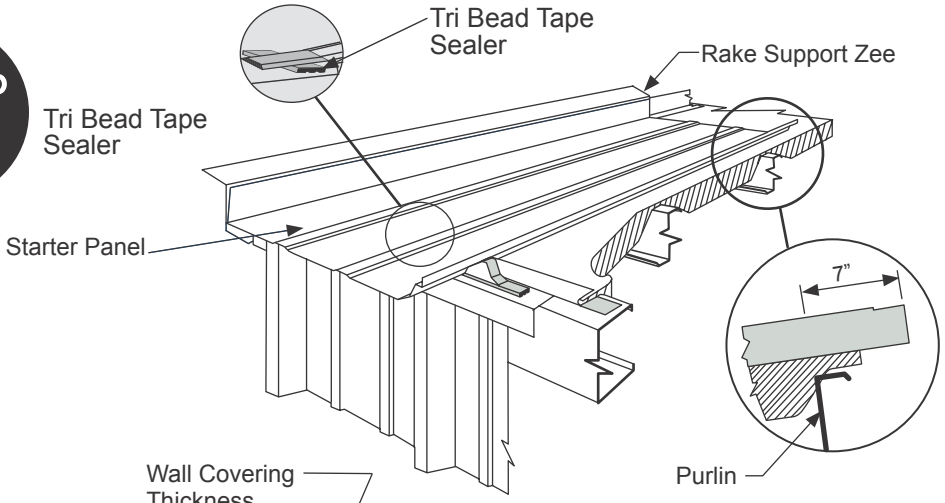


STEP 4 (CONTINUED)

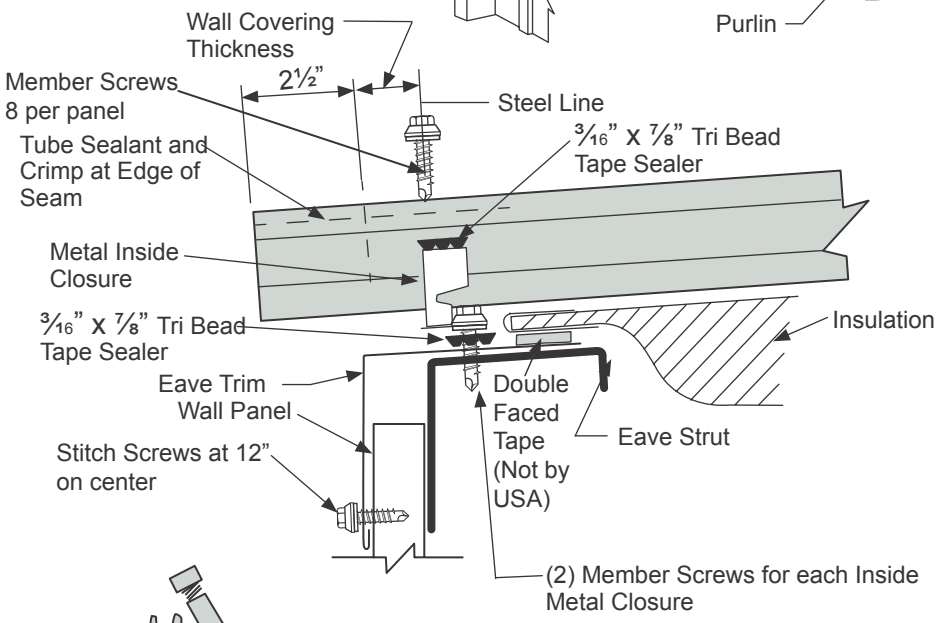
Tri Bead Tape Sealer



FOR ODD WIDTH STARTING PANEL (OFF MODULE)

FIRST PANEL

Apply tri-bead tape sealer to the underside of the minor ribs of the panel. Position so that this tape sealer will cross the Tri-bead tape sealer on the eave trim (for low systems) or on the high eave plate (for high systems) when the panel is installed. Position the panel so that it overhangs the eave strut by the thickness of the wall covering plus 2½". The upper end of the panel must be 7" beyond the web of the purlin.

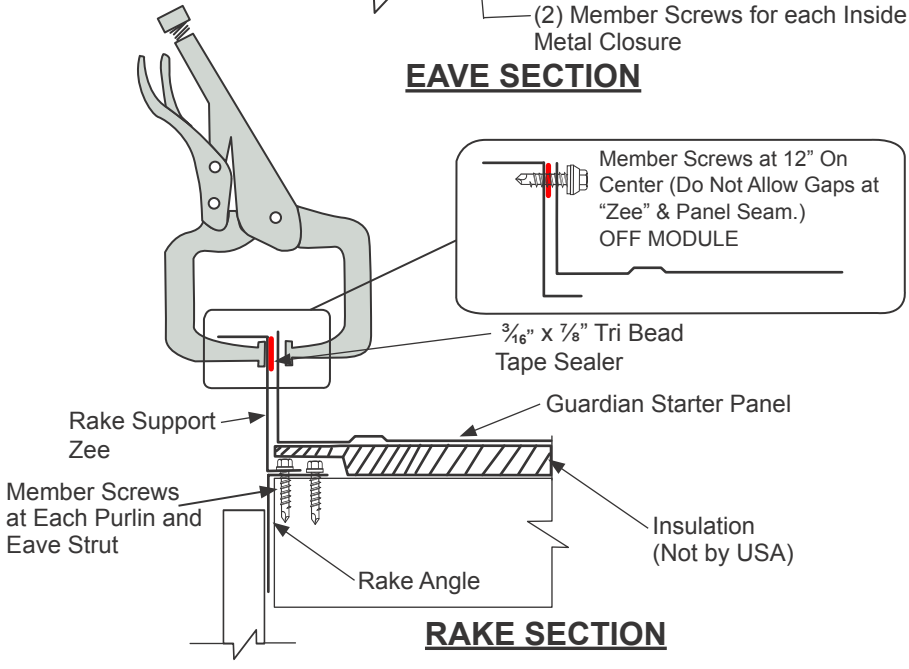


EAVE SECTION

Apply 3/16" x 7/8" Tri Bead tape sealer along the extreme outside edge of the starting panel high rib. Position the panel against the rake support and clamp with "C" clamps. Fasten panel high rib to rake support with member screws at 12" on center.

IMPORTANT!!

CAUTION
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.



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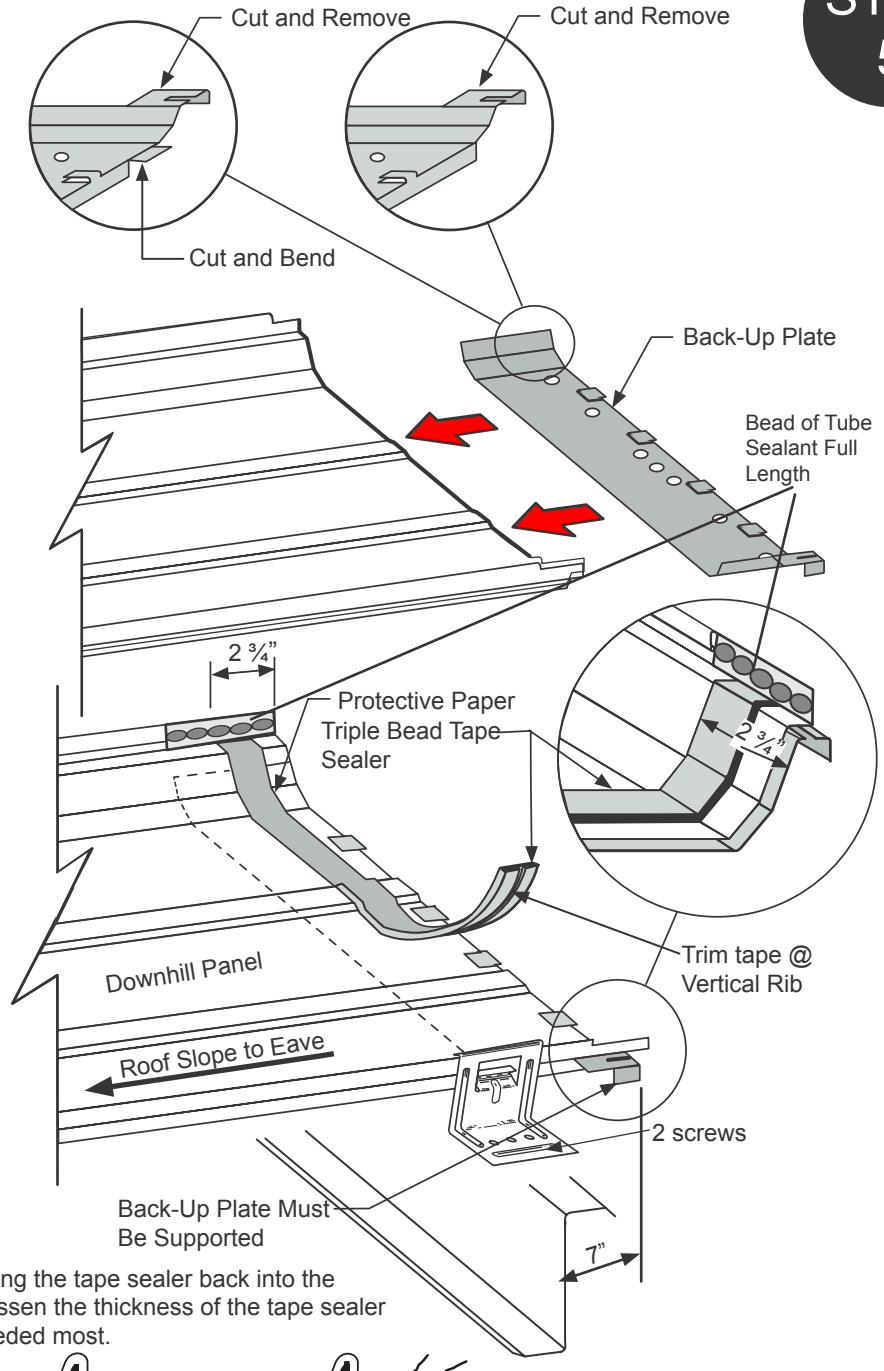
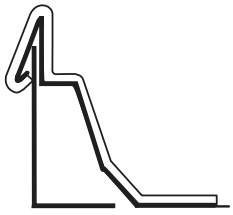
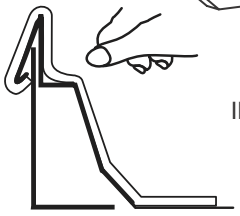
ERECTION Guardian I & II

FIELD MODIFY
(FIRST RUN ONLY)



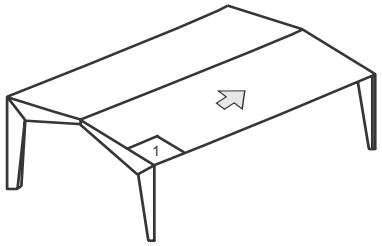
Caution: Forcing the tape sealer back into the corners will lessen the thickness of the tape sealer where it is needed most.


RIGHT WAY


WRONG WAY

IMPORTANT
READ
INSTRUCTIONS

STEP 5



ENDLAP-BACKUP PLATE

Note: All back-up plates on first panel run will require field modification to avoid fouling the rake support.

Note: All back-up plates on first panel run will require field modification to avoid fouling rake support.

Steps 6-8 apply only where more than one sheet is used in a single slope.

Slide one end of the backup plate **over the purlin**, fully engaging the teeth of the other end with the end of the panel. This ensures that the backup plate will be held in place for fastening.

If the backup plate is not held firmly at both ends, the fasteners to be used in completing the splice will force it away and the splice will not seal. With the backup plate in place, install the final panel clip.

Place triple bead tape sealer exactly 2 ¾" from the end of the panel. Trim at the vertical rib. Do not lap over the vertical rib of the panel. Use a bead of tube sealant the full length of the lap. Press in place and peel off the protective paper, leaving the tape sealer exactly 2 ¾" from the end of the panel.

Apply the triple bead tape sealer from the bottom of one panel lip to the bottom of the other lip. Do not put the triple bead tape sealer over the rib. Use tube sealant around and across the notched locking leg.

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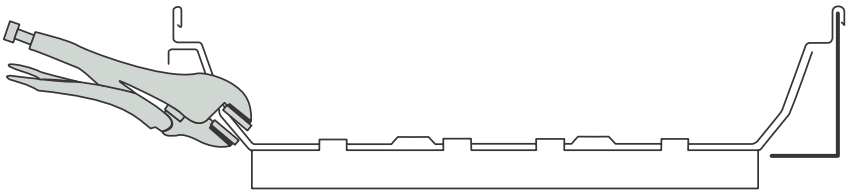
STEP 6

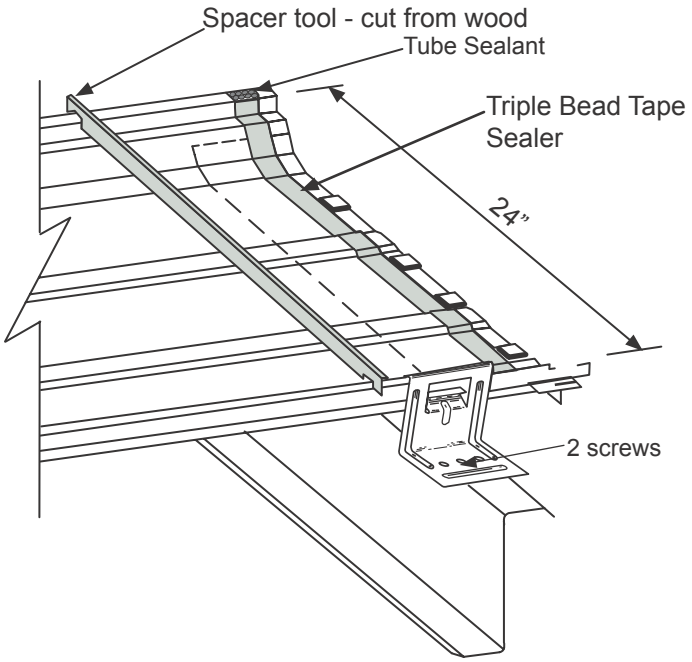
FIXED ROOF CLIP INSTALLATION



Install a clip at each purlin.

Rotate the clip on the male lip until vertical. It is very important that the clip is rotated until the clip's projecting ledge fits snugly under the panel's horizontal ledge.

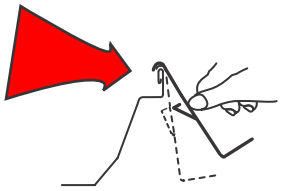
Install the member screw in the clip base through the insulation and into the purlin (2 screws per clip for all conditions).



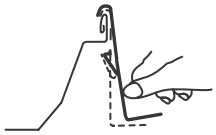
CAUTION
Check your module spacing often. Module MUST be 2'-0" on center for finish panel to fit properly.

CAUTION
The panel clip has a factory applied mastic in the upper lip. This mastic is compressed when the clip is rotated in place. If, for some reason, a clip must be removed, a new clip must be used or gun grade mastic installed in the upper lip.

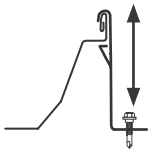
CAUTION



Position the clip over the male leg of the panel as shown, and rotate clip downward.



With the upper clip firmly seated, position the base firmly against the purlin flange.



When properly positioned, the vertical legs of the upper and lower sections of the clip will be pointed upward, as shown.

NOTE: DO NOT ATTEMPT TO CHANGE PANEL MODULE BY PULLING CLIP BASE AWAY FROM PANEL.

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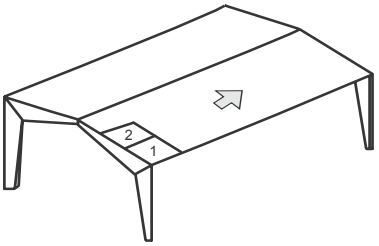


STEP 7

ENDLAP-PANEL

Steps 6-8 apply only where more than one sheet is used in a single slope.

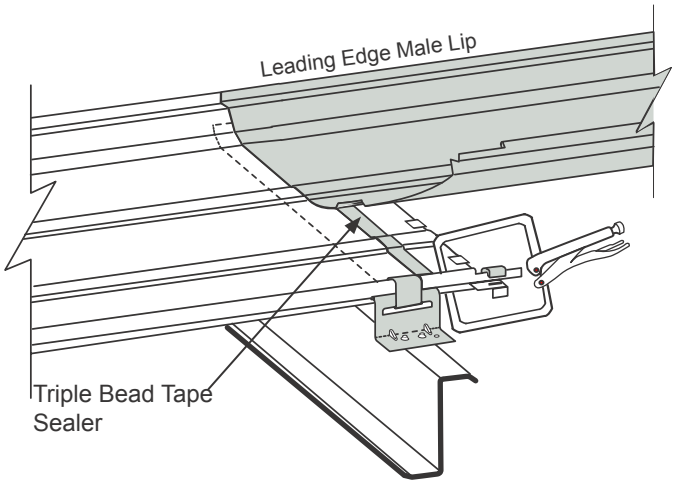
Position the upper panel, lapping 3" over the lower panel. Care should be taken to bow the panel as it is lowered into place. Bowing the panel helps prevent the tape sealer from being dislodged and forced down onto the horizontal ledge of the seam, causing the panel to misalign.

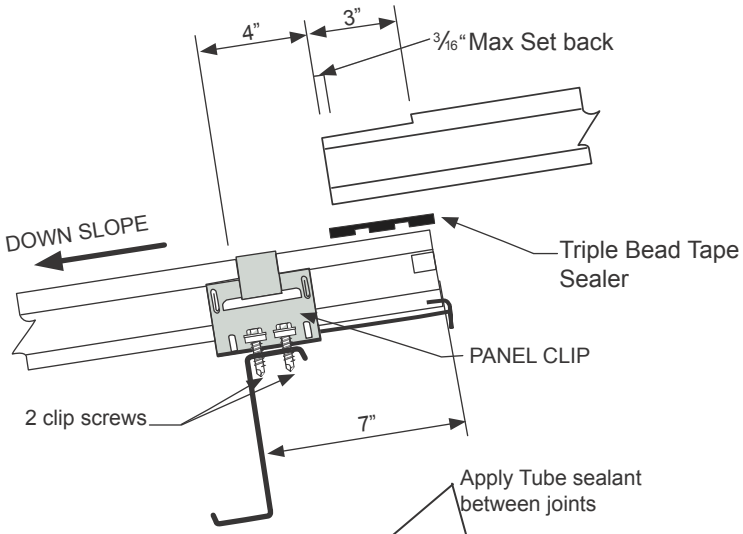
Just before the male side of the panel is laid in place, apply a 3" long bead of tube sealant on the outside edge of the high rib.

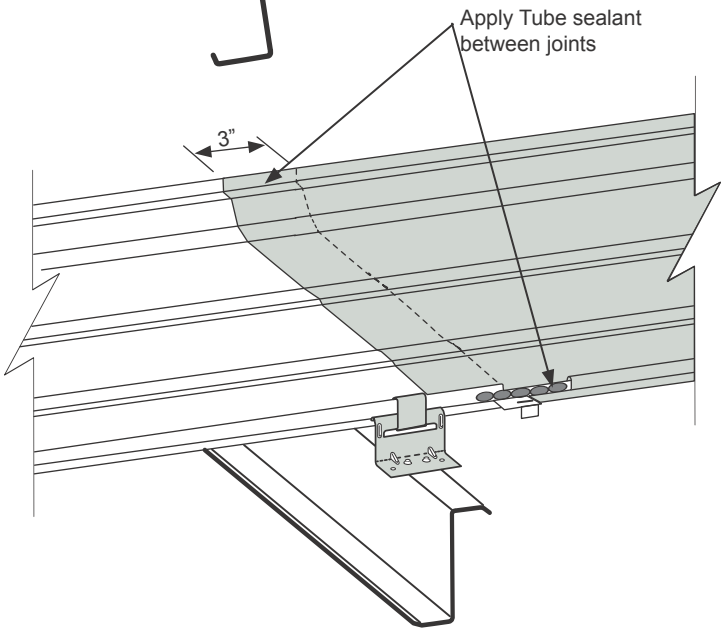
On the male lip side, use a vise clamp to hold the horizontal edges of the upper and lower panels tightly together so they are not forced apart while fastening. Install the clips at the purlins.

CAUTION
Check your module spacing often. Module MUST be 2'-0" on center for finish panel to fit properly.

CAUTION
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.







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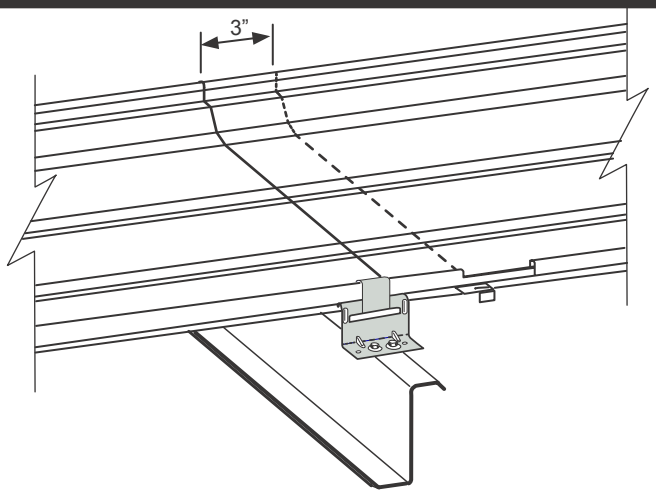
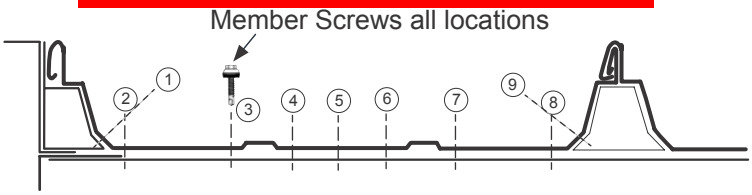
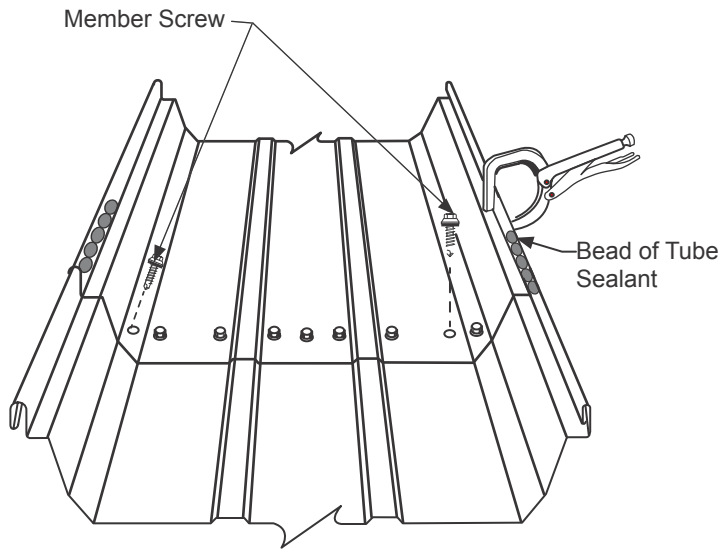


NOTE: INSURE PANELS SQUEEZE MASTIC IN ALL LOCATIONS ACROSS PANEL OR BACKUP PLATE MAY NOT BE TIGHT.

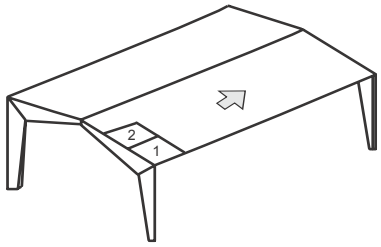


END LAP FASTENER SEQUENCE

Endlap



STEP 8



ENDLAPS

Steps 6-8 apply only where more than one sheet is used in a single slope.

Ensure triple bead tape sealer strip is installed correctly. (Step #6 & Step #7). NOTE: Panel should nest properly on backup plate to maintain panel module at lap(s). Install member screws in the recommended sequence, 1” from panel edge. This will compress the tape sealer between the panel surfaces. The fasteners should pass through the upper panel, lower panel, tape sealer and backup plate.

Repeat the procedures as required for each panel until the ridge is reached.

To ensure that the male legs do not separate at the panel endlap, clamp the horizontal ledge with a vise grip C-clamp until the endlap is fastened together. Apply tube sealant the full length of the notched portion of these male legs.

Repeat the endlap procedures as required for each panel until the ridge or high eave is reached.

CAUTION
Check your module spacing often. Module MUST be 2’-0” on center for finish panel to fit properly.

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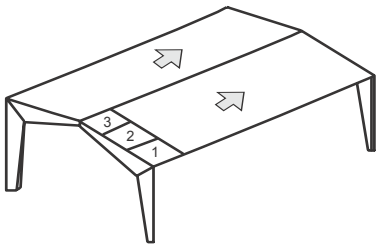


STEP 9

RIDGE BACKUP PLATE

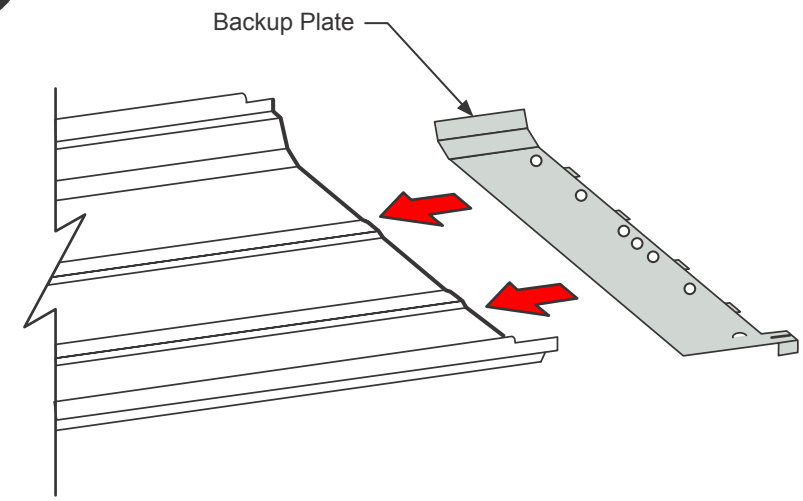
Before installing the clip at the ridge purlin, slide one end of the backup plate over the purlin, fully engaging the teeth of the other end with the end of the panel. This ensures that the backup plate will be held in place for fastening.

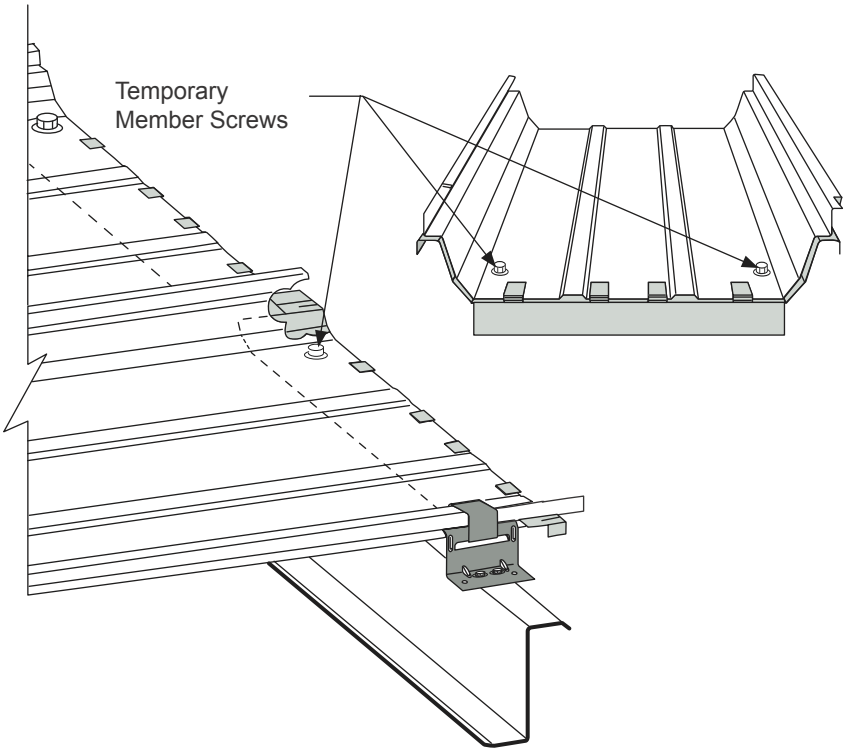
Attach the backup plate to the panel with two temporary member screws 1 ½" from the end of the panel to insure the panel maintains its 2'-0" configuration. Proceed with the installation of the panel clip.

NOTE: TO HOLD MODULE MORE ACCURATELY, INSTALL CLOSURE AT EAVE AS YOU INSTALL PANEL.

CAUTION
Check your module spacing often. Module MUST be 2'-0" on center for finish panel to fit properly.

CAUTION
If panel configuration should shrink to less than 24", it will be difficult to install the metal outside closure at the ridge.





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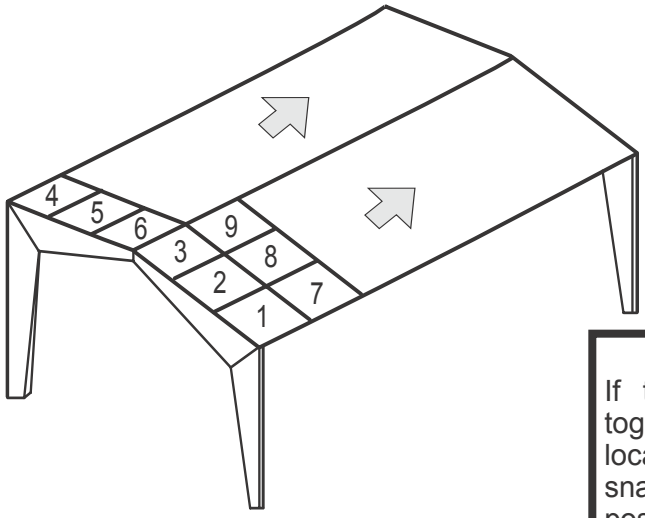
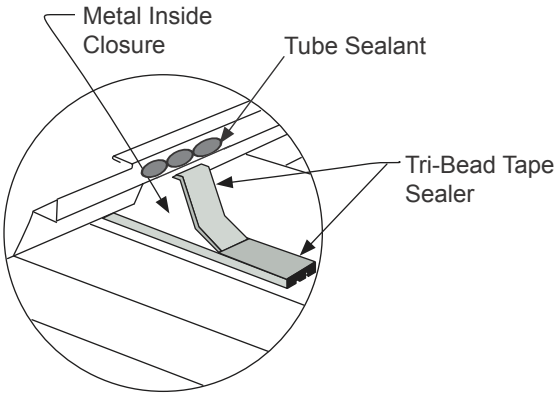
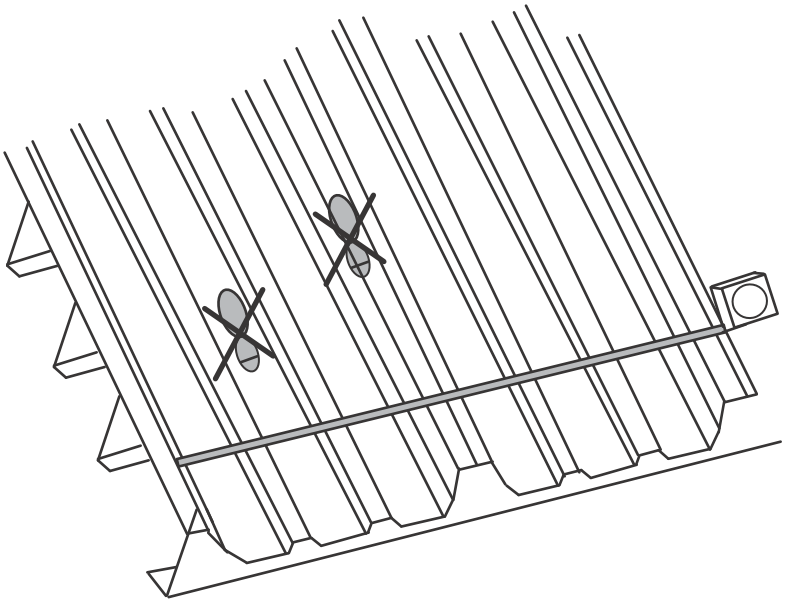




ERECTOR NOTE
If the panels are snapped together lightly at the clip locations before they are snapped into the "LOCKED" position, they will snap more easily. **ONCE THE PANELS ARE SNAPPED TOGETHER, THEY WILL NOT COME APART.**



CAUTION
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.

SIDELAP PANEL

STEP 10

With insulation in place, start the next run of roof panels at the eave. Apply tube sealant to the male vertical leg at the eave (2"). Tri-Bead tape sealer should already be in place on top of the panel and the inside closure. This will prevent water infiltration through the end of the seam. Position the panel with the female lip of the eave panel resting on top of the male lip. Make sure the panels are aligned flush at the ends.. Press down on the seam, snapping the two panels together. It is important to begin at one end of the panel and work to the other, applying pressure continuously all the way along the seam so as to avoid a bubble in the seam. Make certain the seams are fully locked together, particularly at the clips where greater resistance will be encountered.

CAUTION
Do not walk on the minor ribs.

During the course of erection, you may inadvertently push or pull the panel out of module. To avoid this, periodically measure from the rake support zee to the outside panel seam. Measure at the eave, ridge, and at 20'-0 intervals.

CAUTION
Check your module spacing often. Module MUST be held 2'-0" on center for finish panel to fit properly.

Proceed installing the remaining panels on both sides of the roof in the recommended sequence until all but the last panel run has been installed.

NOTE: STANDING IN PANEL WHILE MEASURING WILL RESULT IN INCORRECT DIMENSION.

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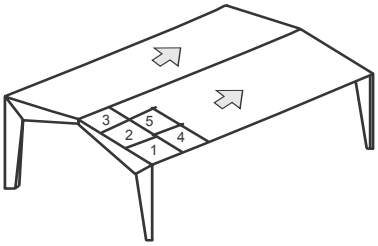


STEP 11

LAST PANEL

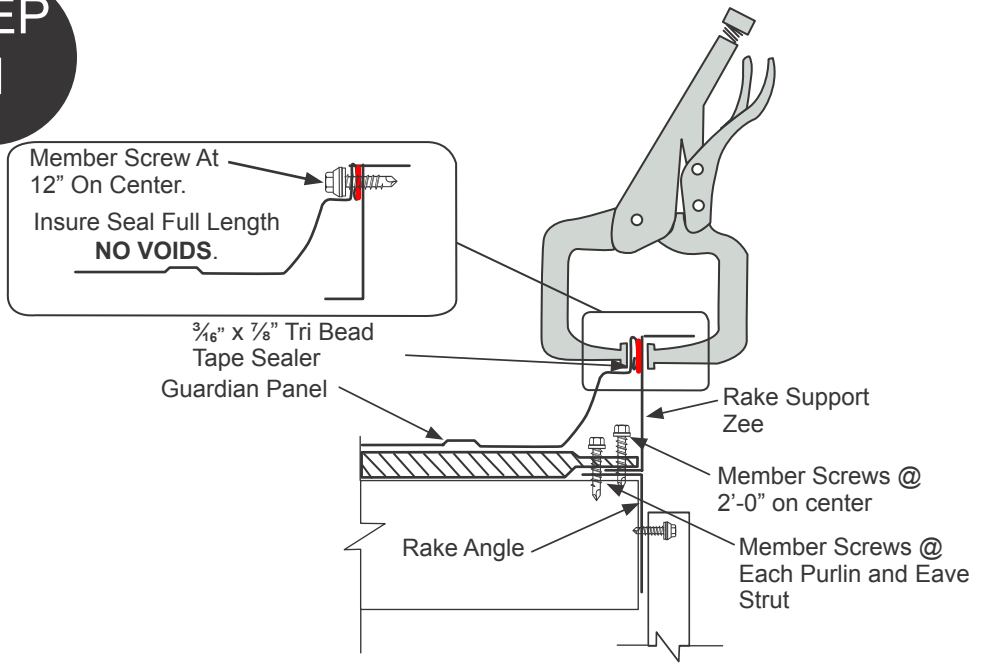
This roof system is designed to finish the exact same way it started. If it starts on module, even 2'-0" length buildings, it must finish on module. If it starts off module (odd length buildings), it must finish off module.

NOTE!
If module spacing has not been checked frequently, it may not fit properly.

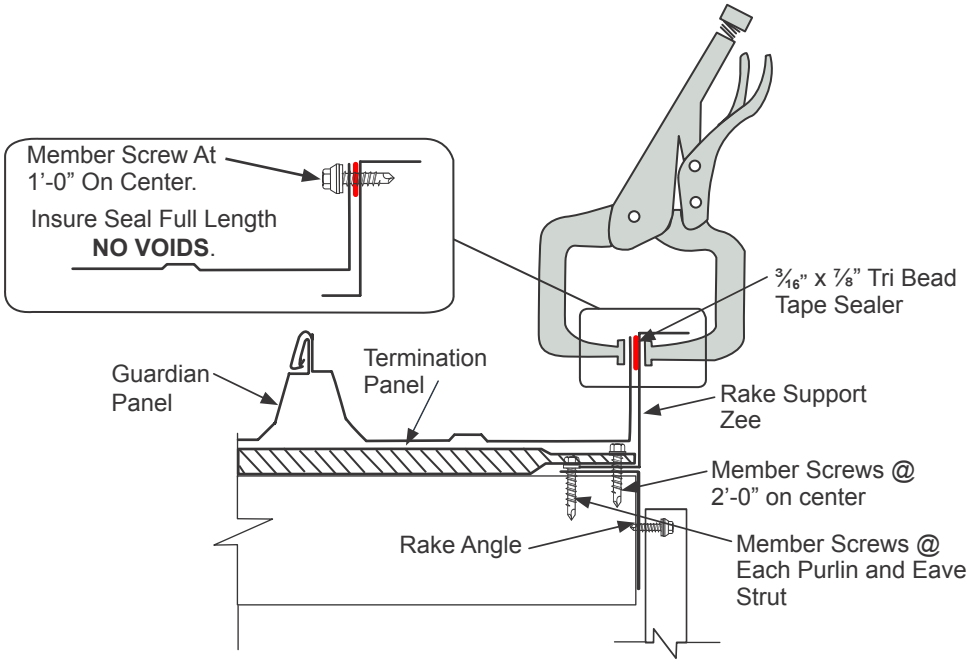
The last panel high rib should be 2'-0" (on even length buildings) or the width of the finish panel (on odd length buildings), from the endwall steel line. Lay the last insulation run and install the rake support zee over the insulation along the endwall steel line. Apply tri-bead tape sealer along the extreme outside edge of the finish panel. Lay the finish panel run and snap into place. Position the panel against the rake support and clamp with "C" clamps. Fasten the panel to the rake support zee with member screws at 1'-0" on center. Fasteners must go through rake support.

CAUTION
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.

CAUTION
Check your module spacing often. Module MUST be held 2'-0" on center for finish panel to fit properly.



RAKE SECTION
(FOR FULL WIDTH ENDING PANEL)



RAKE SECTION
(FOR ODD WIDTH ENDING PANEL)

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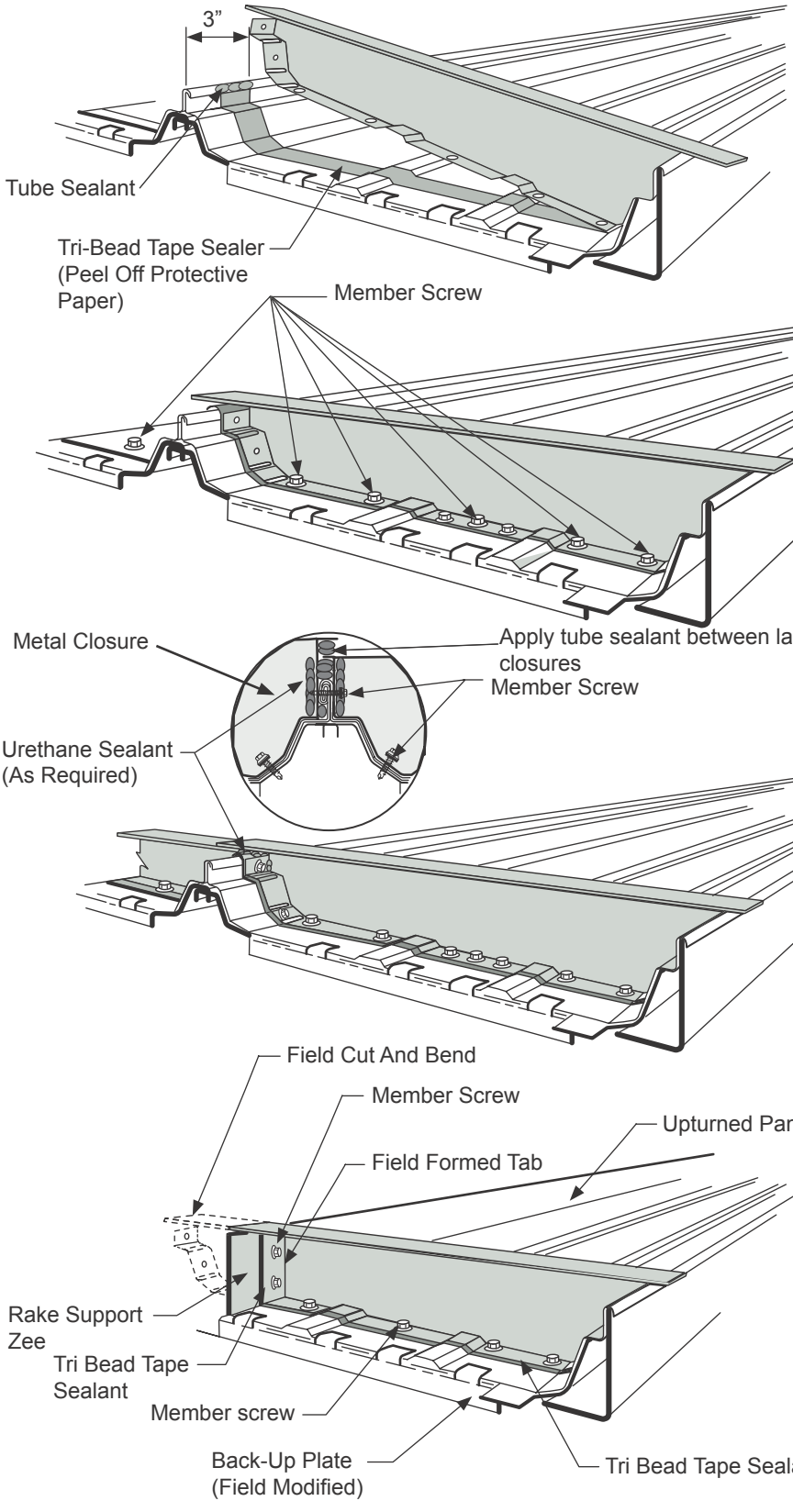
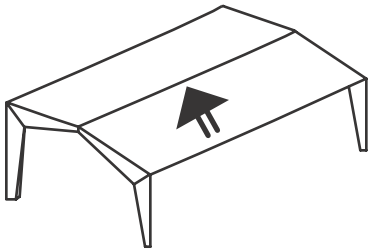


STEP 12



OUTSIDE CLOSURE

After all panel runs are installed, return to first panel run at the ridge. Remove temporary fasteners from panel and install Tri Bead tape sealer across full width of panel. Locate outside closure 3” from edge of panel.

Rotate outside closure into position contacting the female side of the panel first. Push the other end of the outside closure into position. Install a Member Screw with Washer in all pre-punched holes except for the hole at the panel seam. Do not install the panel seam fastener at this time. Install all outside closures on both sides of the ridge.

If the last panel run was field modified, the final outside closure on the last panel will require field modification as well. A tab should be formed on the end of the outside closure for attachment to the upturned leg of the roof panel (field formed). This tab should be attached to the panel with a Member Screw with Washer, two required.

Install a Member Screw with Washer in remaining hole at the panel seam of all outside closures. The fastener installed in the top hole must go through the panel seam and the corresponding hole of the adjacent outside closure.

Use urethane sealant to fill any voids around panel seam on upslope side of outside closure.

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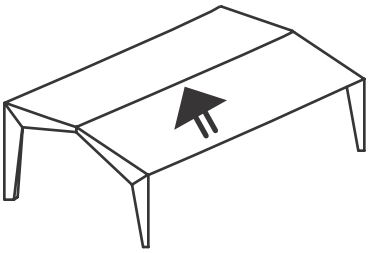


STEP 12 (CONTINUED)

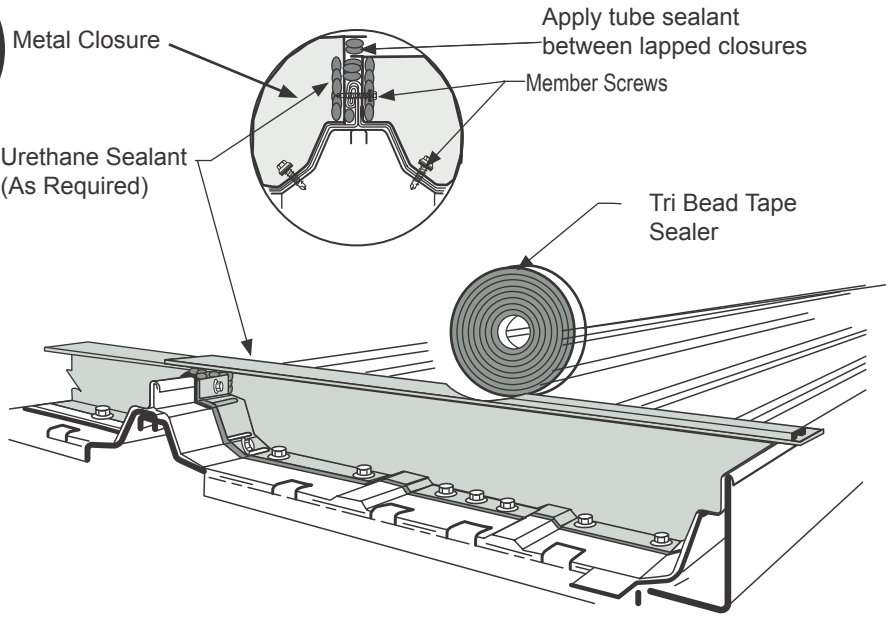
RIDGE-OUTSIDE CLOSURE/FLASHING

Apply Tri Bead tape sealer to the top of the outside closure.

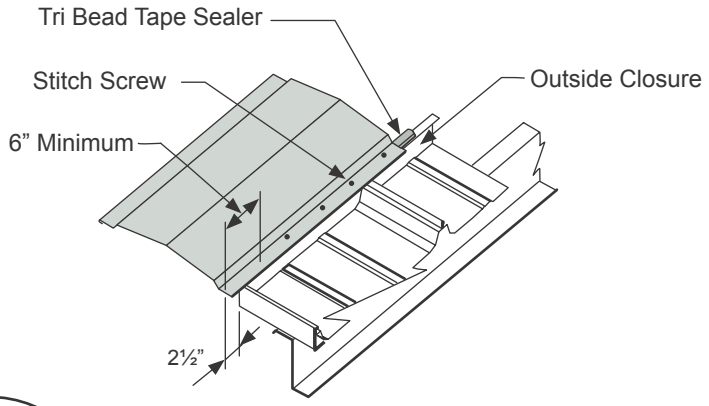
Install the ridge flashing starting and ending 2½" outside the steel line. Fasten the ridge flashing to the outside closures with a Stitch Screw with Washer. Install a fastener 1½" from panel seam on both sides of panel. Install additional fasteners directly above minor ribs of panel. Four fasteners are required at each panel. Leave 6" unfastened on each end to allow for the rake trim to be installed later.

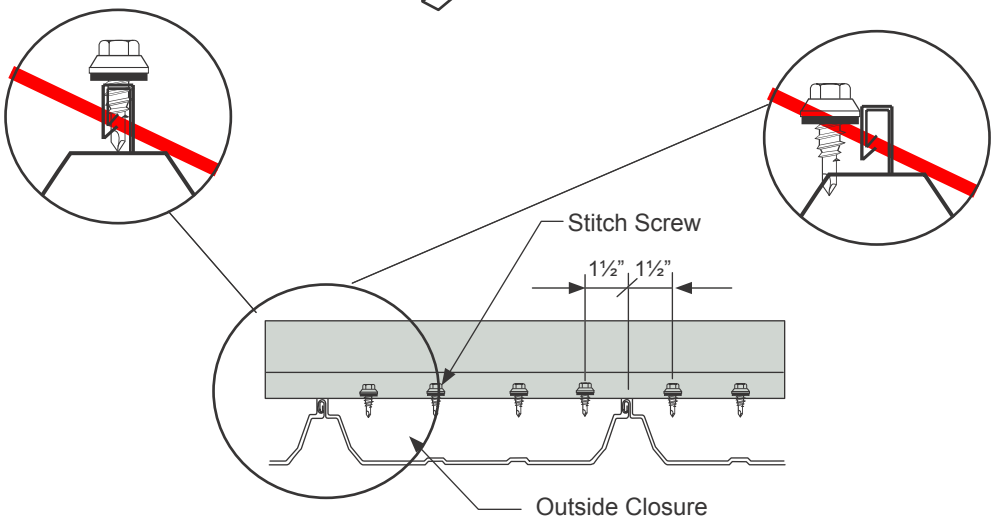
DO NOT FASTEN THROUGH THE LOCK OF THE STANDING SEAM.

NOTE
Do not adjust panel width more than ¼" on any panel area.



USE TRIPLE BEAD TAPE AT RIDGE CAP AND VENT END LAPS





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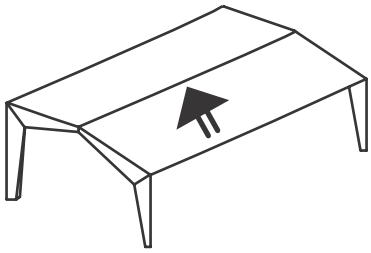


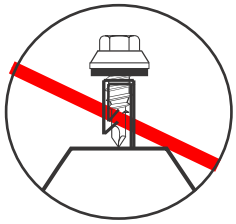
STEP 13

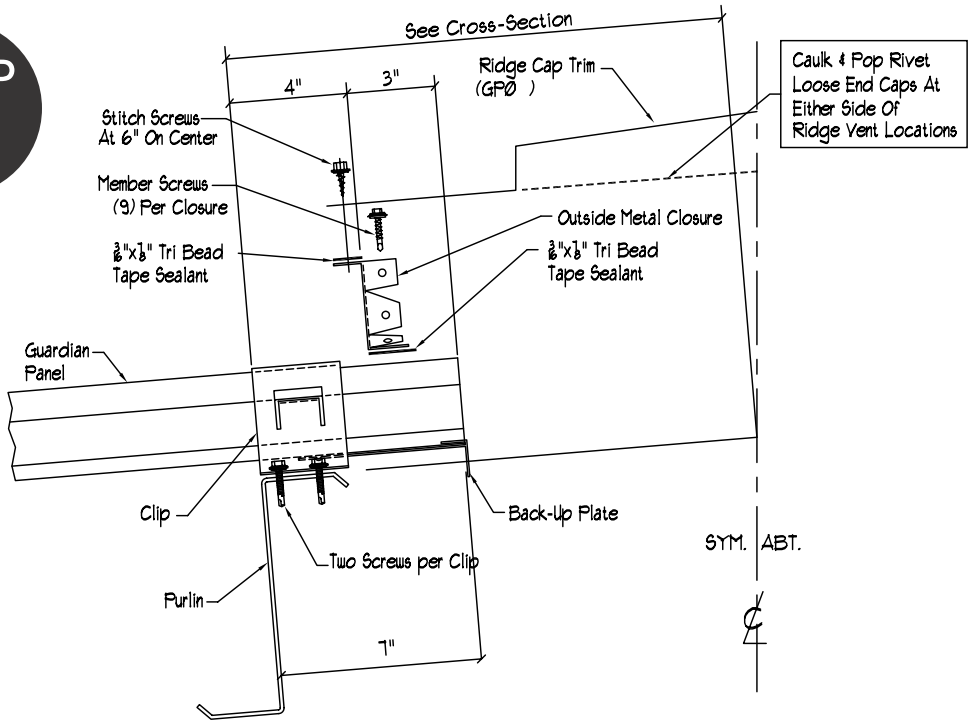
RIDGE FLASHING

SEE JOB DRAWINGS FOR EXACT DETAILS

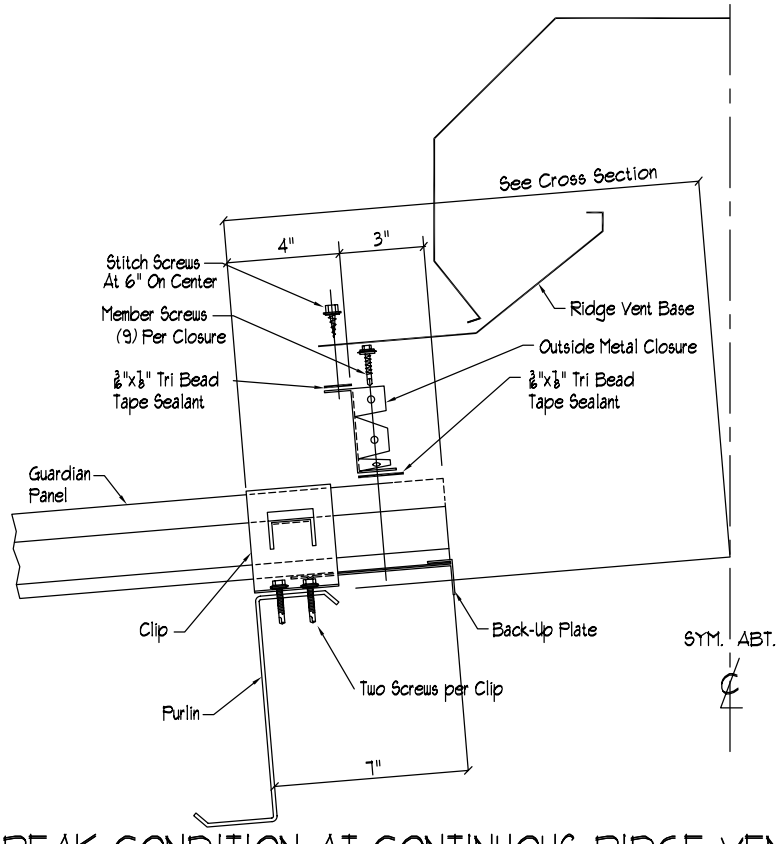
Attach the rake trim and peak boxes before installing the ridge flashing to the outside closure with stitch screws at 6" on center.

DO NOT FASTEN THROUGH THE LOCK OF THE STANDING SEAM.





PEAK CONDITION AT RIDGE CAP



PEAK CONDITION AT CONTINUOUS RIDGE VENT

*NOTE:
ALL PANEL CLIPS TO BE ATTACHED TO PURLINS WITH 2 CLIP SCREWS PER CLIP.

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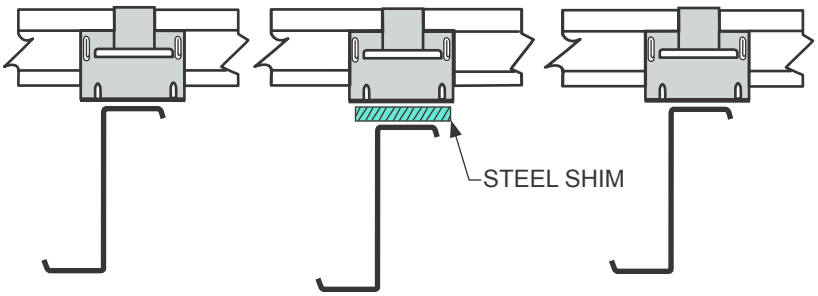
ERECTION Guardian I & II

RECOMMENDED ERECTION PRACTICES

CORRECTING OUT-OF-PLANE SUBSTRUCTURE

Occasionally a purlin may be encountered that is lower (out-of-plane) than those adjacent to it. When a clip is attached to this purlin, it will go down further than those adjacent to it, distorting the seam. This can cause the next panel sidelap to be difficult to lap together in this area. To compensate for this lower purlin, a steel shim may be placed under the clip to bring it up to the proper height (in plane). This shim should be no thicker than ¼". If ¼" is not enough, then structural modification will be necessary. Avoid "stair-stepping" of the panels at the eave. This will cause problems engaging back-up plates at the endlap and ridge. Any "stripped out" fasteners at the endlaps or outside closures should be immediately replaced with 17x1" Type AB with washer. Place a 1" long piece of tri-bead tape sealer over the "stripped out" hole before installing 17x1" Type AB with washer. This will allow the fastener threads to be coated with tape sealer and provide a good seal.

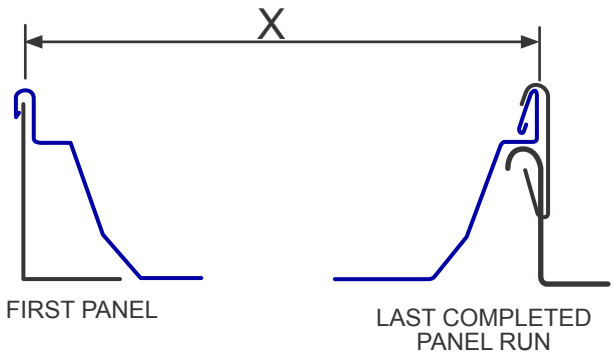
NEVER ALLOW PANELS TO COME INTO CONTACT WITH LEAD, COPPER, GRAPHITE, GASOLINE OR OTHER HARSH CHEMICALS AS THIS WILL VOID THE GALVALUME ® WARRANTY.

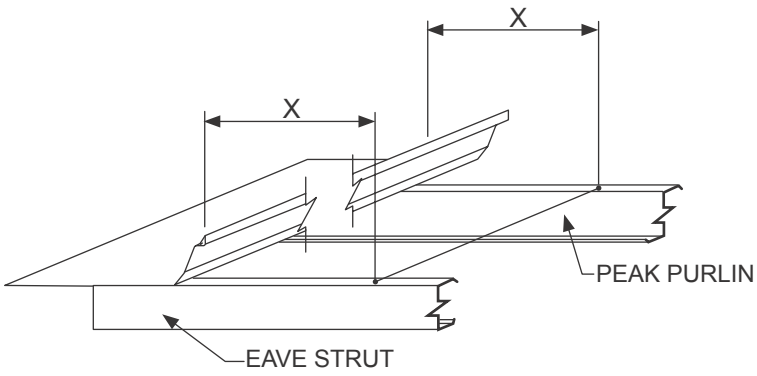


CHECK ROOF FOR PANEL ALIGNMENT

Check the roof every three or four runs for panel alignment as it is being erected. This can be accomplished by two different means.

1. Measure from the rake support to the seam of the last completed panel run. Take measurements at the ridge, eave, and all endlaps.
2. Attach a stringline to the eave plate and ridge purlin, running parallel to the rake support. The stringline should stay ahead of the work and can be moved across the roof as construction progresses. Measure from the stringline back to the last completed panel run. Take measurements at the ridge, eave, and all endlaps.





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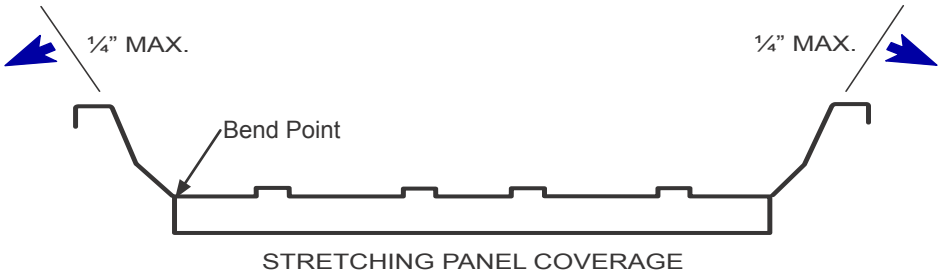
ERECTION Guardian I & II

NOTE! Do not adjust panel width more than ½" on any panel area.

RECOMMENDED ERECTION PRACTICES
(CONTINUED)
ADJUSTING PANEL WIDTH

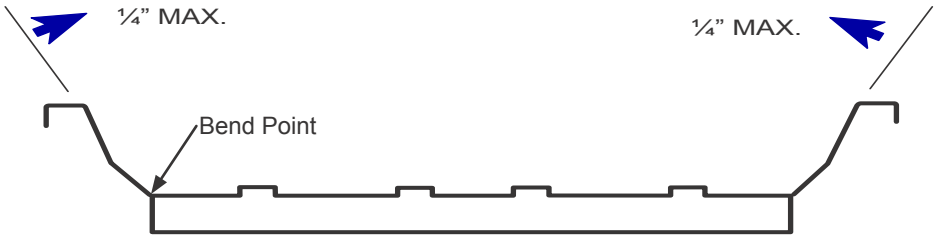


STRETCHING PANEL COVERAGE

FIXED AND FLOATING CLIPS

STRETCHING PANEL COVERAGE

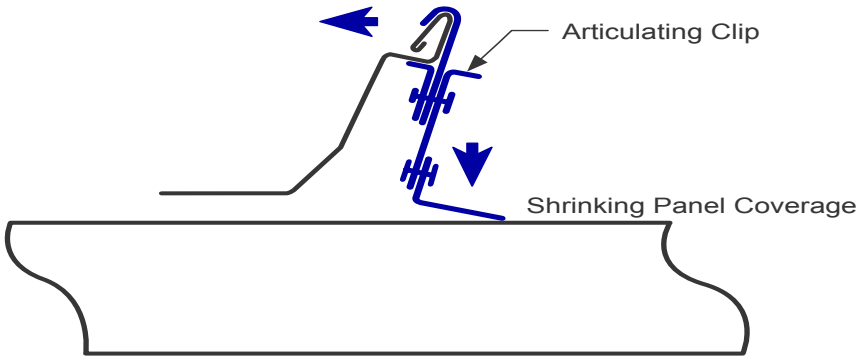
To stretch panel coverage, bend the sides of the back-up plate out and install at endlap or ridge. Do not bend either side more than ¼". Install clips as usual.



SHRINKING PANEL COVERAGE

SHRINKING PANEL COVERAGE

To shrink panel coverage, bend the sides of the back-up plate in and install at endlap or ridge. Do not bend either side more than ¼". Install clips as usual.



ARTICULATING CLIP ONLY

To shrink panel coverage, install the clip at the panel endlap or ridge with the base angled toward the panel. As the fastener is installed through the base of the clip and into the purlin, the clip base will rotate down to the purlin causing the top of the clip to move inward, shrinking panel coverage. Install the remainder of the clips as usual.

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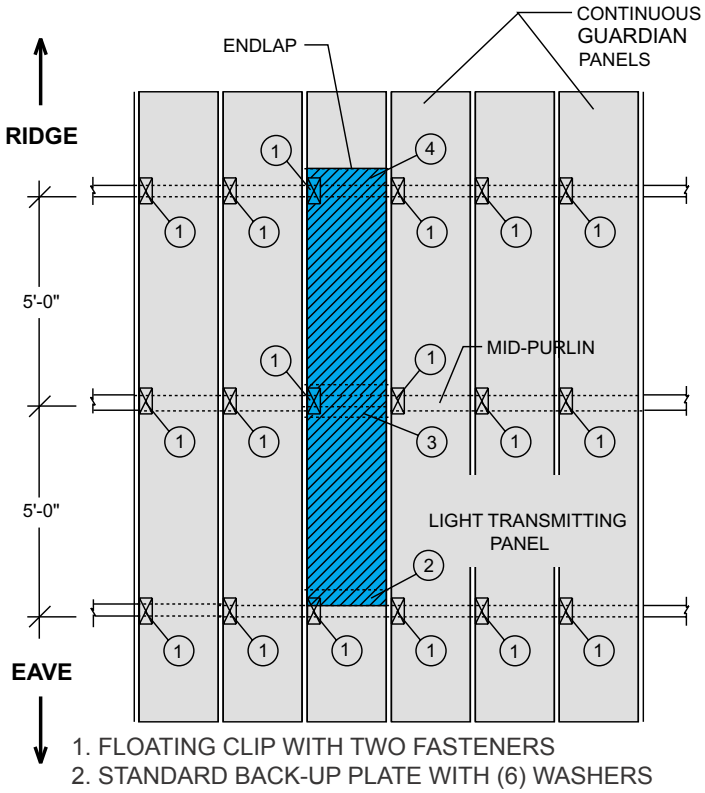
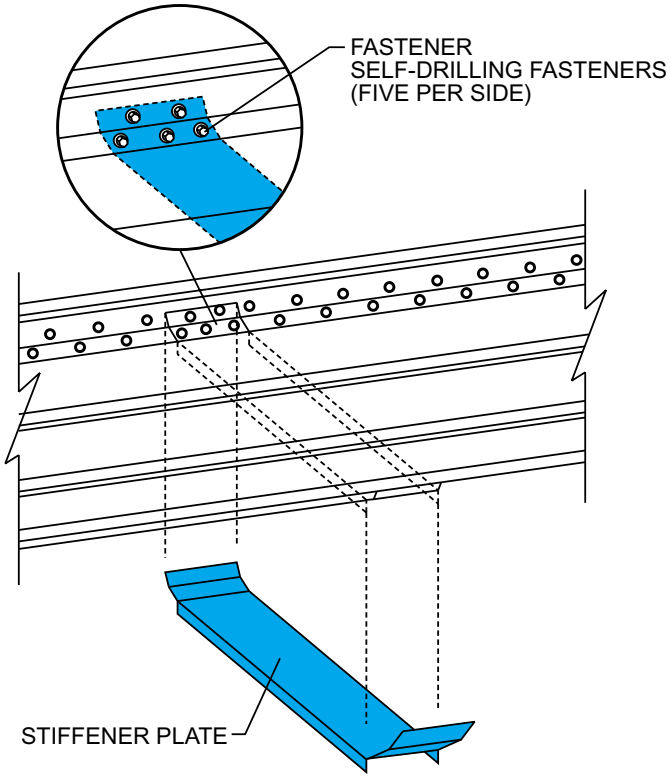
ERECTION Guardian I & II

UL-90 LIGHT TRANSMITTING PANEL INSTALLATION



1. FLOATING CLIP WITH TWO FASTENERS
2. STANDARD BACK-UP PLATE WITH (6) WASHERS
3. STIFFENER PLATE ONLY.
4. STANDARD BACK-UP PLATE



The light transmitting panel is designed to be installed in a manner similar to a panel endlap application, utilizing the same panel lap (3") and fastener layout.

The standard light transmitting panel is 10'-3" long, designed for applications with purlin spacing no greater than 5'-0 3/16" (1:12 slope). Maximum width of purlin flange to be 3½".

UL-90 light transmitting panels are shipped with a stiffener plate and twelve member screws for each light transmitting panel.

The stiffener plate is to be field installed on the bottom side of the light transmitting panel over the mid-purlin.

The light transmitting panel rivets that obstruct the stiffener plate must be drilled out and replaced in five places with a member screw on each side. THIS STIFFENER PLATE MUST BE EXACTLY CENTERED OVER THE MID-PURLIN SO THAT THE THERMAL MOVEMENT OF THE SYSTEM IS NOT RESTRAINED BY THE PURLIN. Note: The washers required at the downslope end of the light transmitting panel are #14 x 1⅛ bonded. IMPORTANT NOTE: Floating clip must be used on UL-90 rated light transmitting panels.

WARNING: These light transmitting panels are not designed or intended to bear the weight of any person walking, stepping, standing or resting on them. THE MANUFACTURER DISCLAIMS ANY WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, that any person can safely walk, step, stand or rest on or near these light transmitting panels or that they comply with any OSHA regulation.

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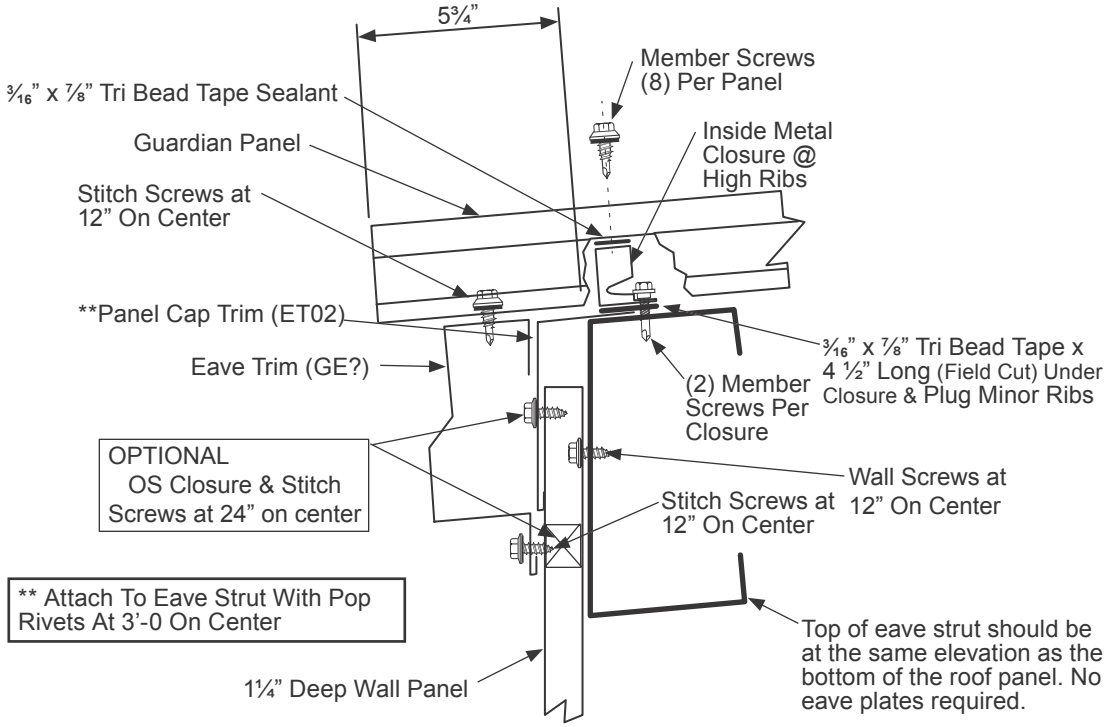
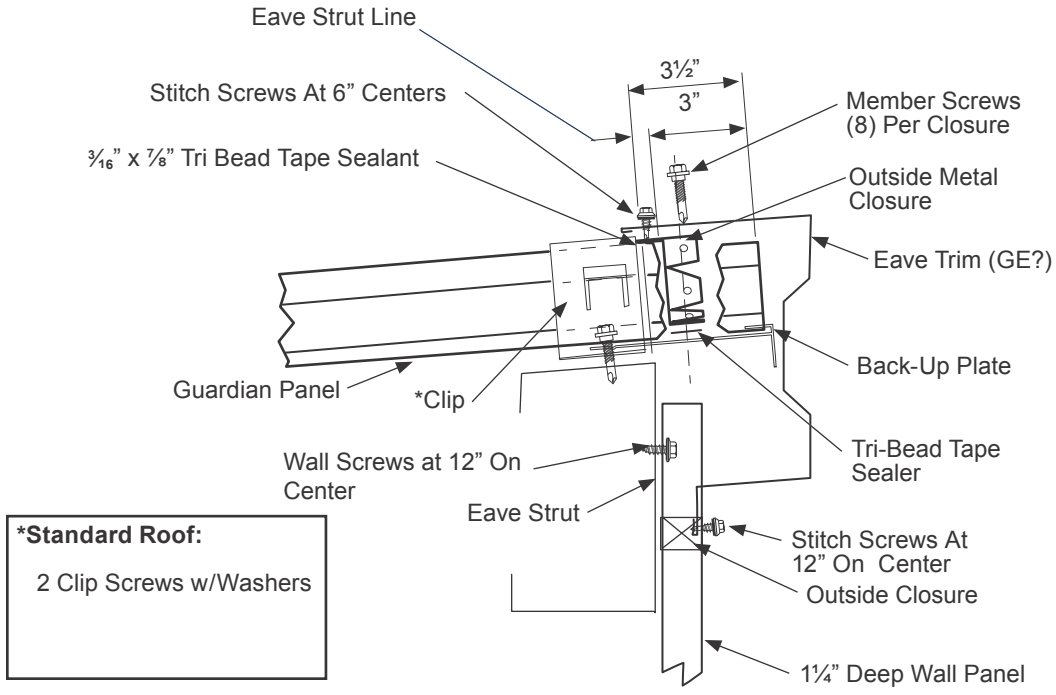
ERECTION Guardian I & II

TRIM DETAILS
EAVE CONDITIONS

See Job Drawings for Exact Details



LOW EAVE CONDITION WITH EAVE TRIM



HIGH EAVE CONDITION

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TRIM DETAILS
EAVE CONDITIONS

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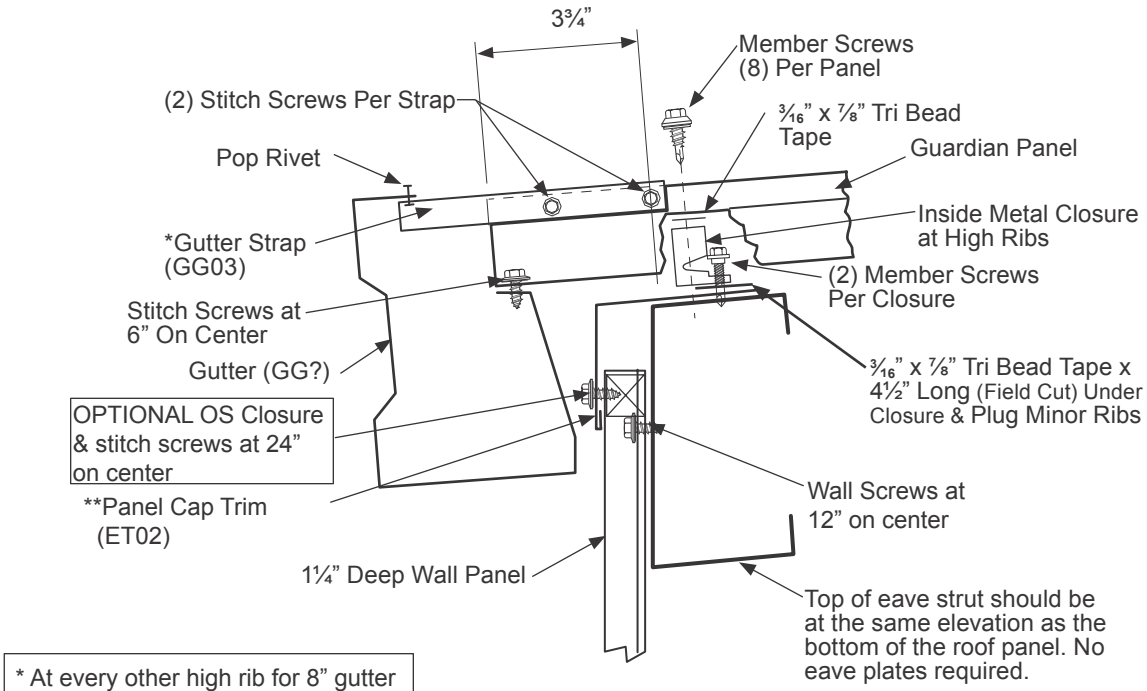
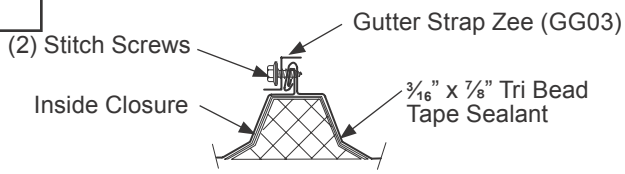


* At every other high rib for 8" gutter
At every high rib for 10" gutter
See Section at Gutter Strap

** Attach To Eave Strut With Pop Rivets At 3'-0 On Center

LOW EAVE CONDITION WITH EAVE GUTTER



SECTION AT GUTTER STRAP

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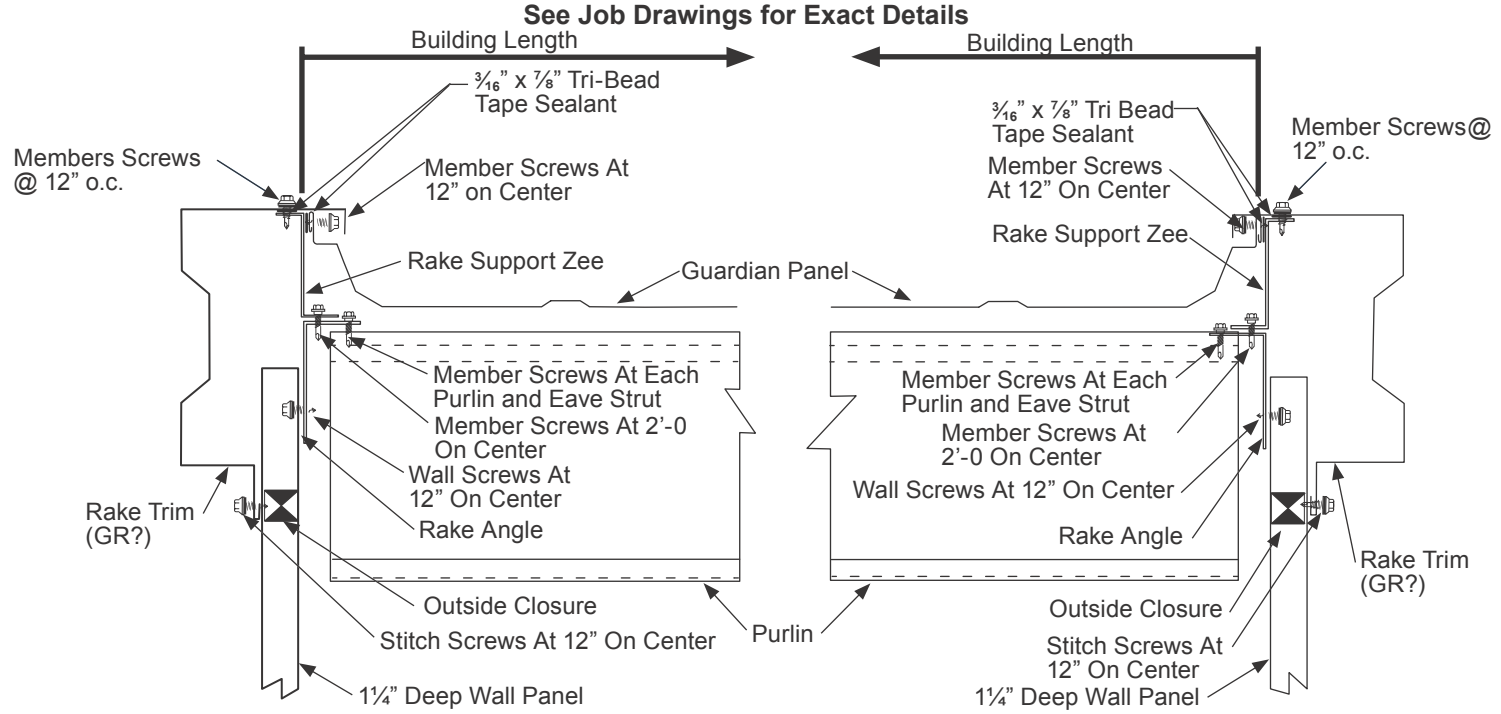
ERECTION Guardian I & II

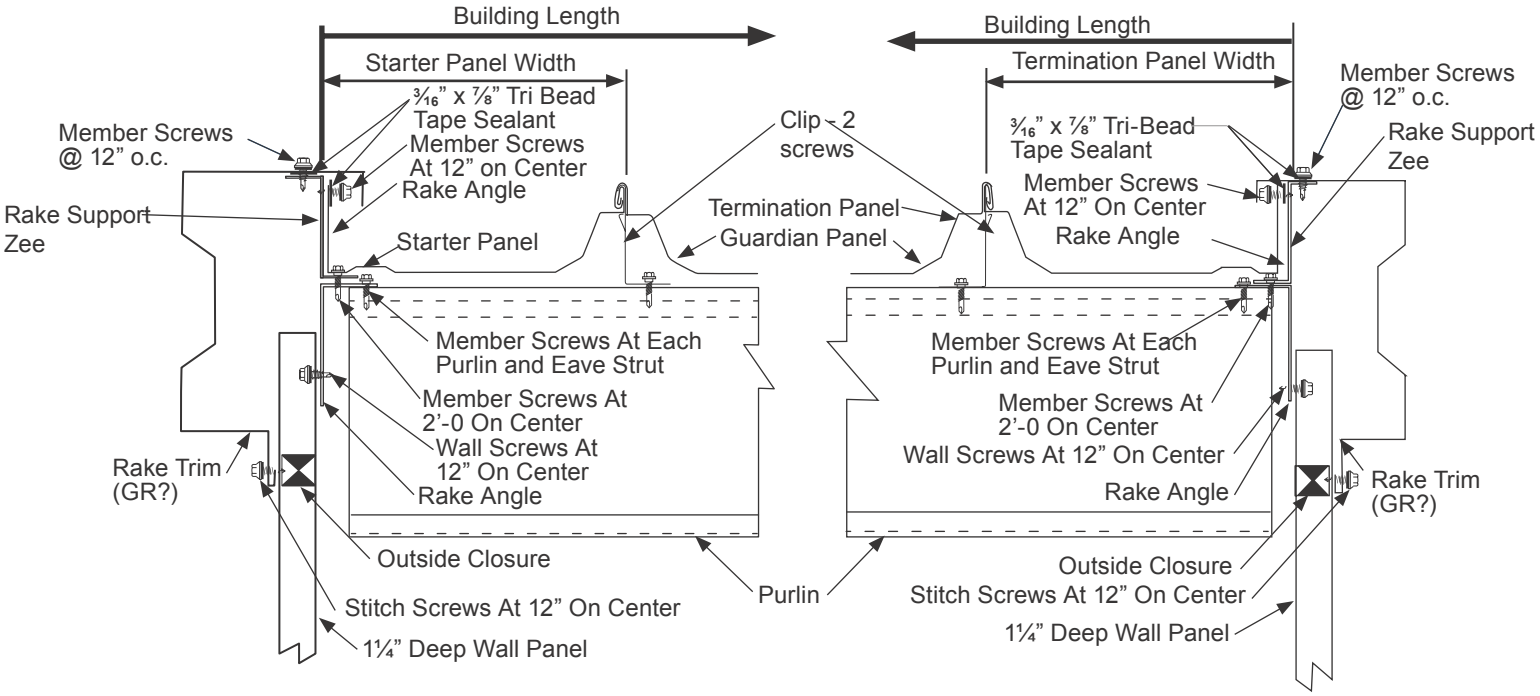
TRIM DETAILS
RAKE CONDITIONS

See Job Drawings for Exact Details



BEGINNING RAKE CONDITION ON MODULE

TERMINATION RAKE CONDITION ON MODULE



BEGINNING RAKE CONDITION OFF MODULE

TERMINATION RAKE CONDITION OFF MODULE

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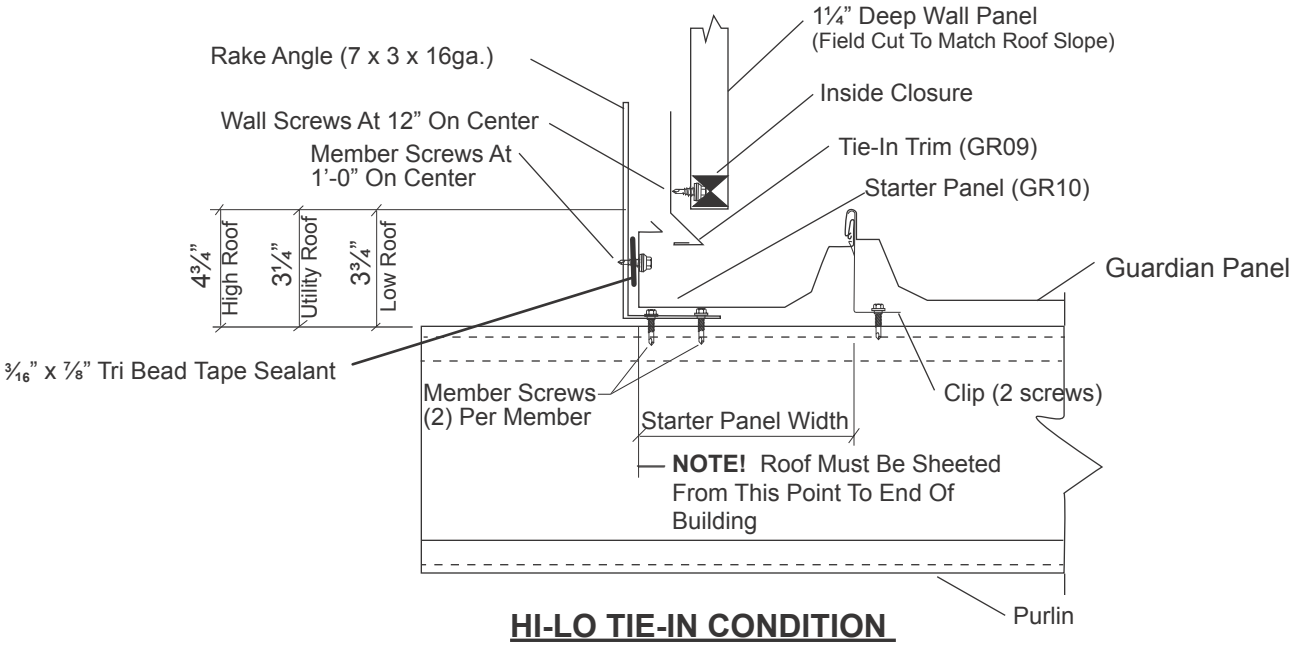
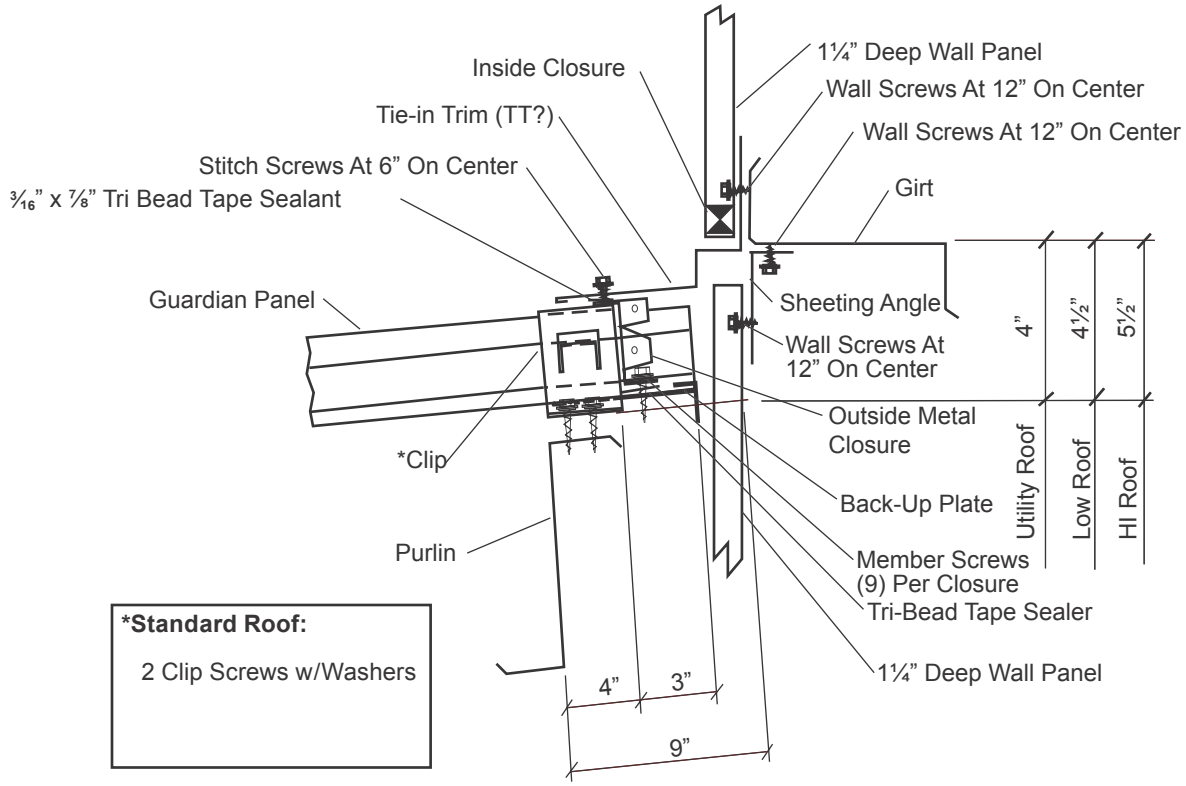
ERECTION Guardian I & II

TRIM DETAILS
TIE-IN CONDITIONS

See Job Drawings for Exact Details



HI-LO TIE-IN CONDITION



***Standard Roof:**
2 Clip Screws w/Washers

LEAN-TO TIE-IN TO MAIN BUILDING

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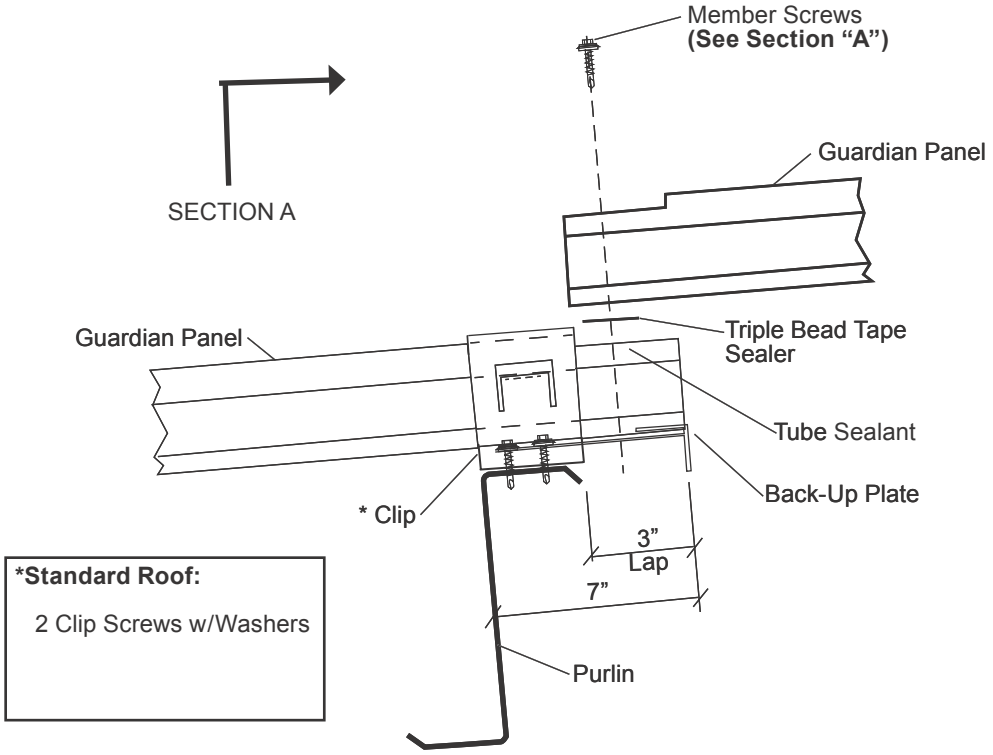
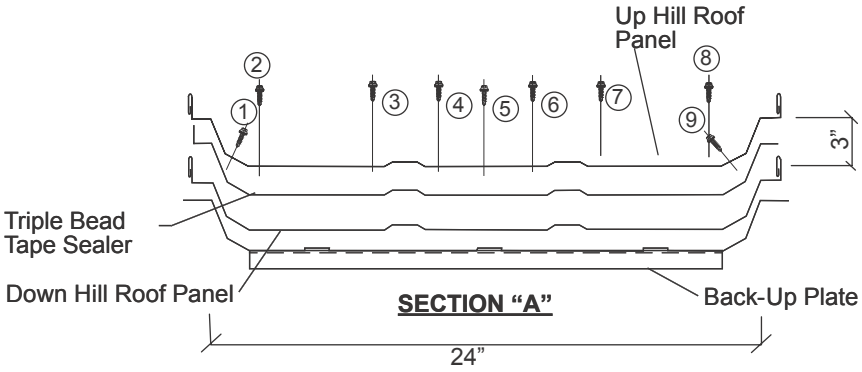
TRIM DETAILS
END LAP CONDITION

See Job Drawings for Exact Details



END LAP CONDITION



FASTENER SEQUENCE - ENDLAP