

Product Page No.

Panel Information

Seam-Loc 24 Panel Profile.....PSL-2
 Panel OverviewPSL-2

Flashing Profiles

Seam-Loc 24 Sculptured Eave.....PSL-3
 Seam-Loc 24 Sculptured Gutter.....PSL-3
 Seam-Loc 24 Sculptured Gutter End.....PSL-3
 6" x 4" DownspoutPSL-3
 6" x 4" 95° ElbowPSL-3
 Downspout BracketPSL-3
 Gutter DripPSL-3
 ValleyPSL-3
 SSR 4.5" Drop Valley.....PSL-3
 SSR 7" Drop Valley.....PSL-3
 SSR Sculptured Rake (On Module).....PSL-3
 SSR Sculptured Rake (Off Module).....PSL-3
 SSR Sculptured Rake EndPSL-3
 SSR Rake CleatPSL-3
 SSR Rake Slide.....PSL-3
 SSR Rakewall.....PSL-4
 Counter FlashingPSL-4
 Reglet Flashing.....PSL-4
 Expansion Joint Flashing.....PSL-4
 SSR Ridge.....PSL-4
 Vented Ridge CoverPSL-4
 Vent Drip.....PSL-4
 SSR Sculptured High Side EavePSL-4
 SSR High Side Pitch BreakPSL-4
 SSR Sculptured Corner Box.....PSL-4
 SSR Sculptured Peak Box.....PSL-4
 Seam-Loc 24 Z-ClosurePSL-4
 SSR Gutter Support.....PSL-4

Accessory Profiles

Seam-Loc 24 Clip (Floating).....PSL-5
 Floating Rake AnglePSL-5
 Endlap Pad.....PSL-5
 Eave PlatePSL-5
 Thermal Block.....PSL-5
 Bearing Plate.....PSL-5
 Compression PlatePSL-5
 Metal Inside Closure.....PSL-5
 Metal Outside ClosurePSL-5
 Cinch Strap.....PSL-5
 Seam-Loc 24 Light Transmitting Panel.....PSL-5
 Vent Material.....PSL-5
 Rubber Roof Jack.....PSL-5
 Retro Roof Jack.....PSL-5
 Rubber Roof Flashing KitPSL-5
 Deck Cap.....PSL-6
 Tube SealantPSL-6
 Tape Sealant.....PSL-6
 Touch-Up Paint.....PSL-6
 Adjustable Spacer Bar.....PSL-6
 Seam-Loc 24 Hand Crimper.....PSL-6
 Mechanical Seamer.....PSL-6

Testing Information

UL 580 Wind Uplift Information..... PSL-7-8
 UL Fire Resistance Ratings.....PSL-9
 Section Properties and Load Tables.....PSL-10

Product Page No.

Design/Installation Considerations

Fastener Installation Technique.....PSL-11
 Condition of Substructure.....PSL-11
 VentilationPSL-12
 InsulationPSL-12
 System Expansion/ContractionPSL-13
 Selection of System ComponentsPSL-13
 Panel EndlappingPSL-14
 Seaming Panels PSL-15-16

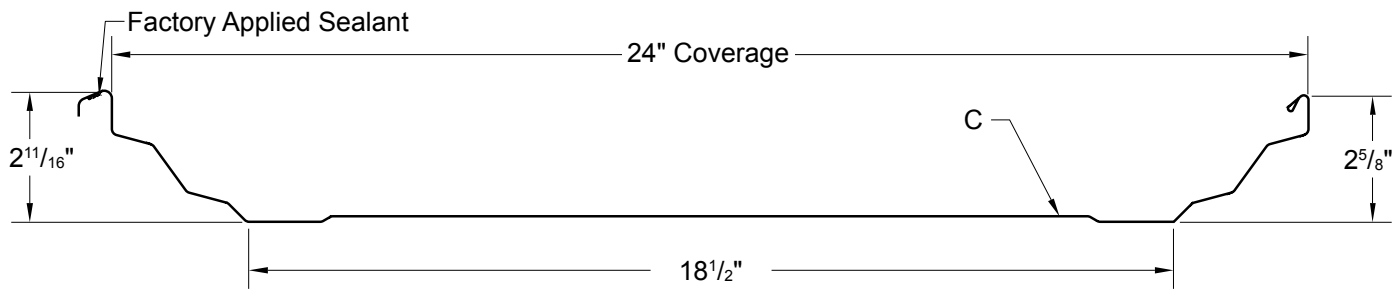
Detail Conditions

Sculptured Eave DetailPSL-17
 Sculptured Gutter DetailPSL-18
 Endlap DetailPSL-18
 SSR Drop Valley Detail.....PSL-19
 SSR Sculptured Rake (Off Module) DetailPSL-20
 SSR Sculptured Rake (On Module) DetailPSL-21
 SSR Rakewall with Counter DetailPSL-21
 SSR Rakewall with Reglet Detail.....PSL-22
 Expansion Detail.....PSL-22
 High Side Parapet with Counter DetailPSL-23
 High Side Parapet with Reglet DetailPSL-23
 SSR Sculptured High Side Eave DetailPSL-24
 Vented Ridge Detail.....PSL-24
 SSR Ridge Detail.....PSL-25

Notes

NotesPSL-26

PANEL PROFILE



SLOPE

The minimum recommended slope for any Seam-Loc 24 roofing panel is $\frac{1}{4}$:12.

SUBSTRATE

Seam-Loc 24 is designed to be utilized over open structural framing, but can easily be used with a solid substrate. The recommended solid substrate is $\frac{5}{8}$ " plywood with a 30 pound felt moisture barrier. To avoid panel distortion, use a properly aligned and uniform substructure.

COVERAGE

Seam-Loc 24 panels are available in a 24" width with a $2\frac{1}{16}$ " rib height.

LENGTH

Lengths under 5'-0" are available with some cutting restrictions. Maximum recommended panel length is 45'-0". Longer panels require additional consideration in packaging, shipping, and erection. Please consult your Metal Sales branch for recommendations (see PGI-2 and PGI-3 for locations).

AVAILABILITY

Seam-Loc 24 panels are available in 24 and 22 gauge. Minimum quantity may apply.

APPLICATION

Commercial and Industrial panel.

PERFORMANCE TEST

UL 580, ASTM E-1592, ASTM E-331, ASTM E-283, UL 2218, UL 790, UL 263, Texas Department of Insurance.

FASTENING SYSTEM

Concealed Clip System.

FASTENERS

The fastener selection guide should be consulted for choosing proper fasteners for specific applications. Quantity and type of fastener must meet necessary loading and code requirements (see PGI-12-14).

MATERIALS

Steel grade 50, per ASTM A-792

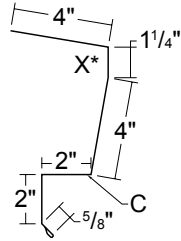
FINISH

- ▶ *Acrylic Coated Galvalume® (ACG) / ASTM A-792 - AZ55
- ▶ Prepainted Galvalume / ASTM A-792 - AZ50
- ▶ **Fluorocarbon (PVDF)

* Differential appearance of Acrylic Coated Galvalume roofing materials is not a cause for rejection.

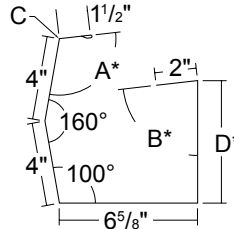
** Meets both Kynar 500 and Hylar 5000 specifications.

**SEAM-LOC 24
SCULPTURED EAVE**



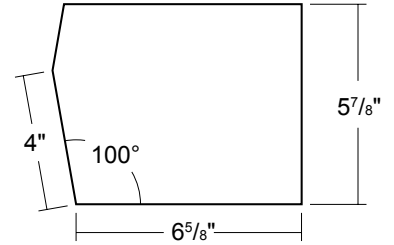
Length 10'-2", 20'-3" - *Specify Slope Angle

**SEAM-LOC 24
SCULPTURED GUTTER**

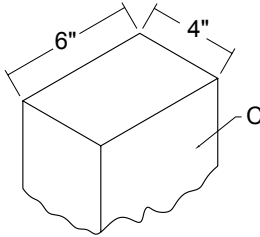


Length 10'-2", 20'-3"
*Specify Slope Angle For A and B, and Length for D.

**SEAM-LOC 24
SCULPTURED GUTTER END**

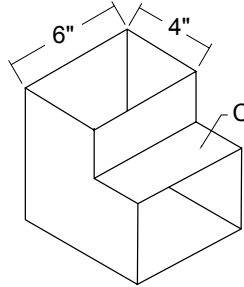


DOWNSPOUT 6" x 4"



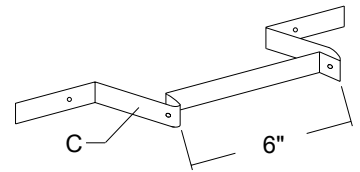
Length 10'-2", 20'-3"
(Also available 4" x 3 1/2")

95° ELBOW 6" x 4"



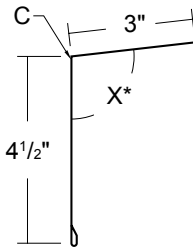
(Also available 4" x 3 1/2")

DOWNSPOUT BRACKET



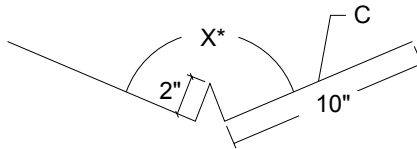
(Also available 4")

GUTTER DRIP



Length 10'-2" - *Specify Slope Angle

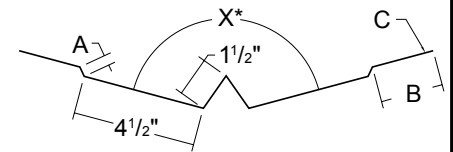
VALLEY



Length 10'-2", 20'-3" - *Specify Slope Angle

SSR 4.5" DROP VALLEY

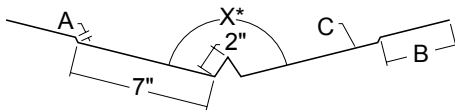
SYSTEM	A	B
LOW	3/8"	4 1/2"
HIGH	1 3/8"	3 1/2"



Length 10'-2", 20'-3" - *Specify Slope Angle

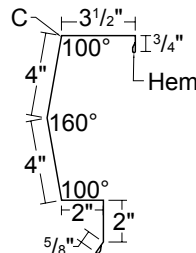
SSR 7" DROP VALLEY

SYSTEM	A	B
LOW	3/8"	5"
HIGH	1 3/8"	4"



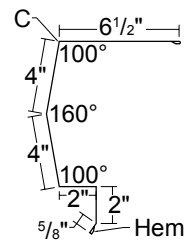
Length 10'-2", 20'-3" - *Specify Slope Angle

**SSR SCULPTURED RAKE
(ON MODULE)**



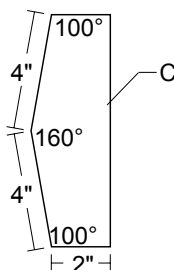
Length 10'-2", 20'-3"

**SSR SCULPTURED RAKE
(OFF MODULE)**

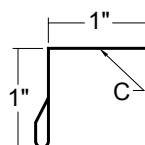


Length 10'-2", 20'-3"

**SSR SCULPTURED
RAKE END**

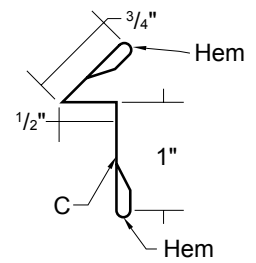


SSR RAKE CLEAT



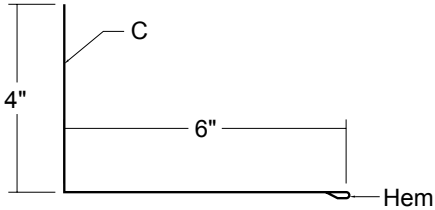
Length 10'-2"

SSR RAKE SLIDE



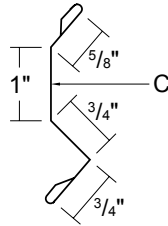
Length 10'-2"

SSR RAKEWALL



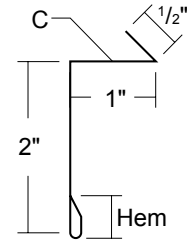
Length 10'-2"

COUNTER FLASHING



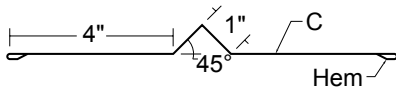
Length 10'-2"

REGLET FLASHING



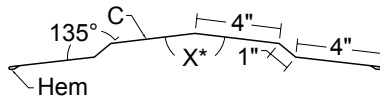
Length 10'-2"

EXPANSION JOINT FLASHING



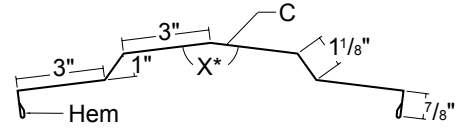
Length 10'-2"

SSR RIDGE



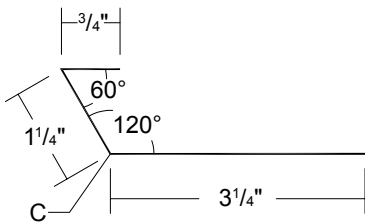
Length 10'-2", 20'-3" - *Specify Slope Angle

VENTED RIDGE COVER



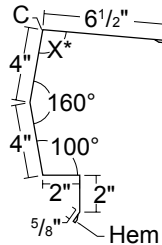
Length 10'-2", 20'-3" - *Specify Slope Angle

VENT DRIP



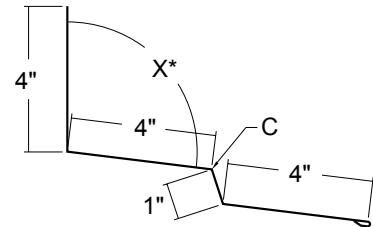
Length 10'-2"

SSR SCULPTURED HIGH SIDE EAVE



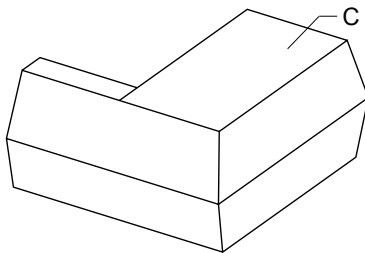
Length 10'-2", 20'-3" - *Specify Slope Angle

SSR HIGH SIDE PITCH BREAK

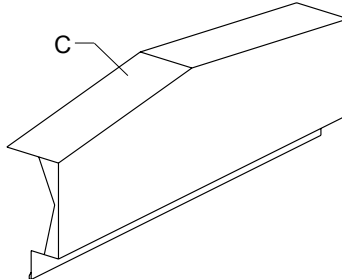


Length 10'-2", 20'-3" - *Specify Slope Angle

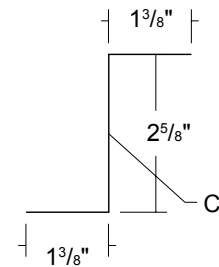
SSR SCULPTURED CORNER BOX



SSR SCULPTURED PEAK BOX

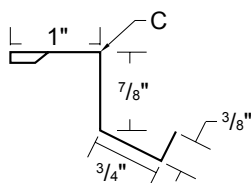


SEAM-LOC 24 Z-CLOSURE



Length 10'-2"

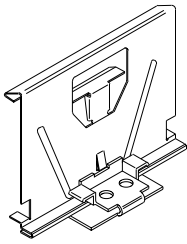
SSR GUTTER SUPPORT



Length 0'-10"

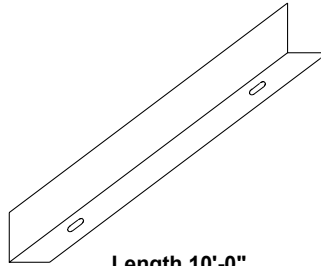
C- Indicates color side of flashing.

SEAM-LOC 24 CLIP



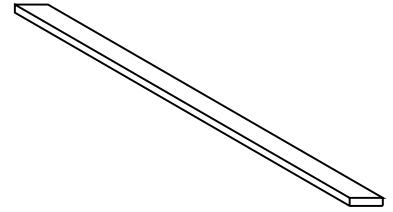
Height 2⁵/₈" , 3¹/₈" , 3⁵/₈" , 4¹/₈"
Galvanized

FLOATING RAKE ANGLE



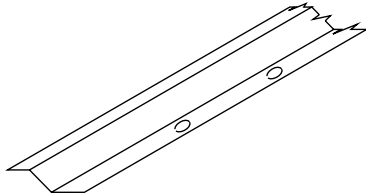
Length 10'-0"
Height 2⁵/₈" , 3¹/₈" , 3⁵/₈" , 4¹/₈"
Galvanized

ENDLAP PAD



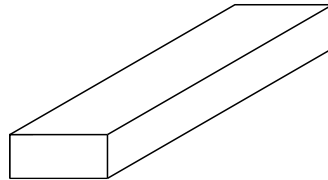
1¹/₂" x 3³/₃₂" x 26¹/₄"
Butyl - Gray

EAVE PLATE



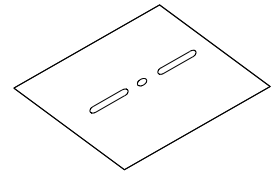
Length 10'-0"
Height 3³/₈" , 1" , 1³/₈"
Galvanized

THERMAL BLOCK



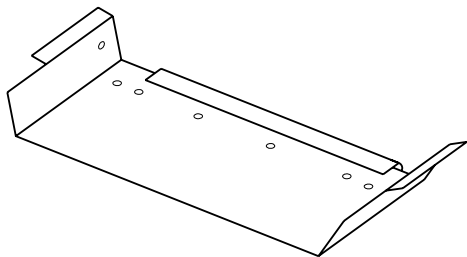
1" x 3" x 24"
Polystyrene Foam

BEARING PLATE

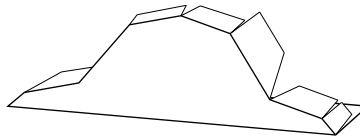


4" X 5"

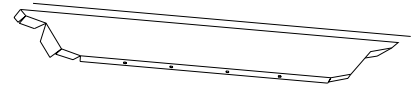
COMPRESSION PLATE



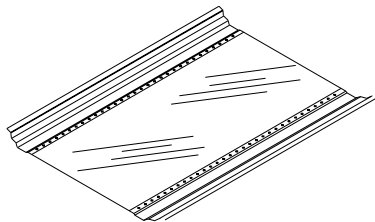
METAL INSIDE CLOSURE



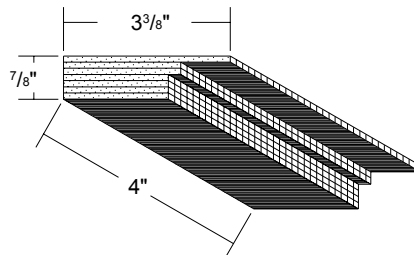
METAL OUTSIDE CLOSURE



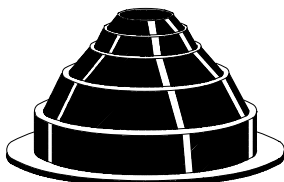
SEAM-LOC 24 LIGHT TRANSMITTING PANEL



VENT MATERIAL

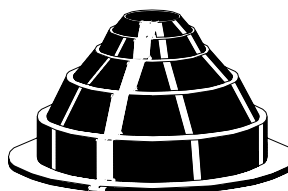


RUBBER ROOF JACK



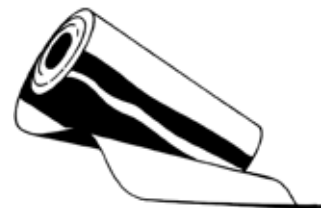
MINI (1¹/₄" to 1¹/₈" O.D. Pipe)
#2 (1³/₄" to 3" O.D. Pipe)
#4 (3" to 6" O.D. Pipe)
#6 (6" to 9" O.D. Pipe)
#8 (7" to 13" O.D. Pipe)

RETRO ROOF JACK



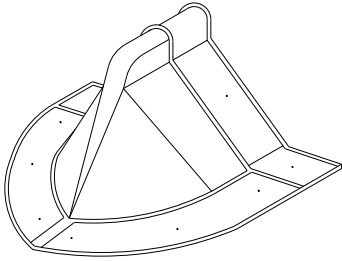
#801_{RETRO} (3³/₄" to 2³/₄" O.D. Pipe)
#802_{RETRO} (2" to 7¹/₄" O.D. Pipe)
#803_{RETRO} (3¹/₄" to 10" O.D. Pipe)

RUBBER ROOF FLASH KIT

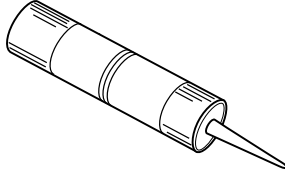


12" x 50'-0" Flash Kit
18" x 50'-0" Flash Kit

DECK CAP



TUBE SEALANT



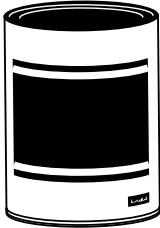
10.3 oz. Cartridge
Urethane

TAPE SEALANT



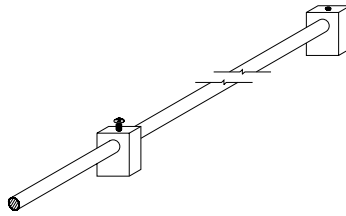
7/8" X 3/16" X 25'
Double Bead
Butyl - Gray

TOUCH-UP PAINT

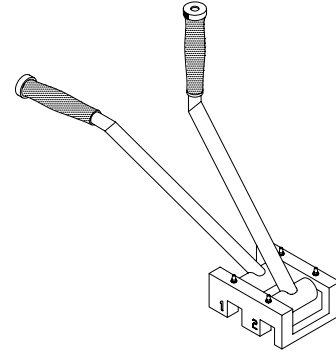


Available in Pints
PVDF / MS Colorfast45®

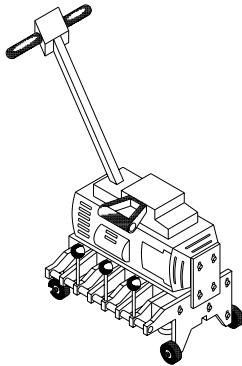
ADJUSTABLE SPACER BAR

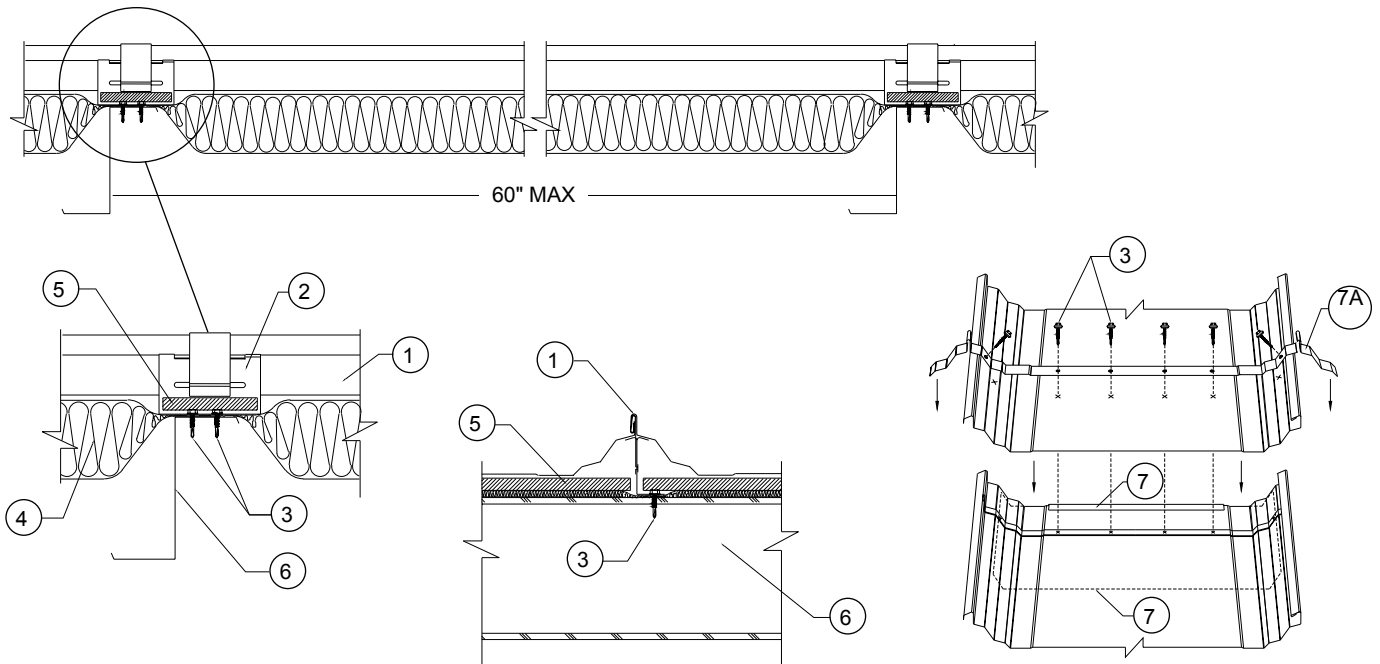


SEAM-LOC HAND CRIMPER



MECHANICAL SEAMER





SEAM-LOC 24

Construction No. 197
February 14, 2001
Wind Uplift - Class 90
Fire Not Investigated

1. Metal Roof Deck Panels* No. 24 MSG min thickness coated steel. Panels continuous over two or more spans. End laps to occur over purlins with panels overlapped 3 in. Adjacent panels to be continuously seamed with an electric seamer with seaming operation to include roof deck fasteners (Item 2). A line of sealant may be used at panel end-laps and side joints.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24"

2. Roof Deck Fasteners* (Panel clips) Two part assembly consisting of a base and a tab. Base 5 in. wide, fabricated from No. 14 MSG thick coated steel. Tab fabricated from min No. 22 MSG thick coated steel. Height of clip to vary depending on insulation thickness or type and use of thermal spacer. Clips located at sides of roof deck panels.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24 Panel Clip"

3. Fasteners (Screws) Fasteners used for panel clip to purlin attachment to be No. 14 by 1-1/2 in. long self-drilling, self-tapping, hex-washer-head plated steel screws with a separate washer. Two screws per panel clip to be used. Fasteners used at the end lap section to be No. 12-14 by 1-1/4 in. long self-drilling, self-tapping, hex-head, plated steel screws with a separate 5/8 in. OD steel washer and a neoprene sealing washer. One screw located in each 1-1/2 in. flat area adjacent to panel ribs driven through panels to end lap back up plate. Four screws used in panel flat area spaced 4 in. OC driven through cinch strap and panels into back up plate. One screw driven through cinch strap at side of panel ribs into back up plate. A total of eight screws to be used.

4. Insulation Any compressible blanket type, 4 in. max thickness before compression.

5. Thermal Spacer (Optional) Used over purlins between panel clips; 1 in. thick, 3 in. wide, cut to fit between panel clips. Fabricated from beaded plastic.

5A. Foamed Plastic (Rigid Insulation) Not Shown - Optional - Not used when thermal spacer (Item 5) is used. Maximum 1 in. thick. Supplied in 4 ft. wide sheets. Butt joints to occur over purlins.

6. Purlins No. 16 MSG min thickness. (50,000 psi minimum yield strength). Spacing 60 in. OC.

7. End-Lap Back-Up Plate *(Optional) Length 20 in., with ends formed to the general profile of the panel side ribs. Width to be 9-1/4 in. A 14 in. long by 1 in. long by 1 in. wide return formed along on edge of the plate. Fabricated from 0.047 in. thick coated steel.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24 Compression Plate"

7A. Cinch Strap *(Optional) Used over the panels, to be 1 in. wide, formed of 0.089 in. thick aluminum to the general profile of the panel, with both ends formed to fit over the panel ribs.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc Cinch Strap"

8. Lateral Bracing (Not Shown) - As required.

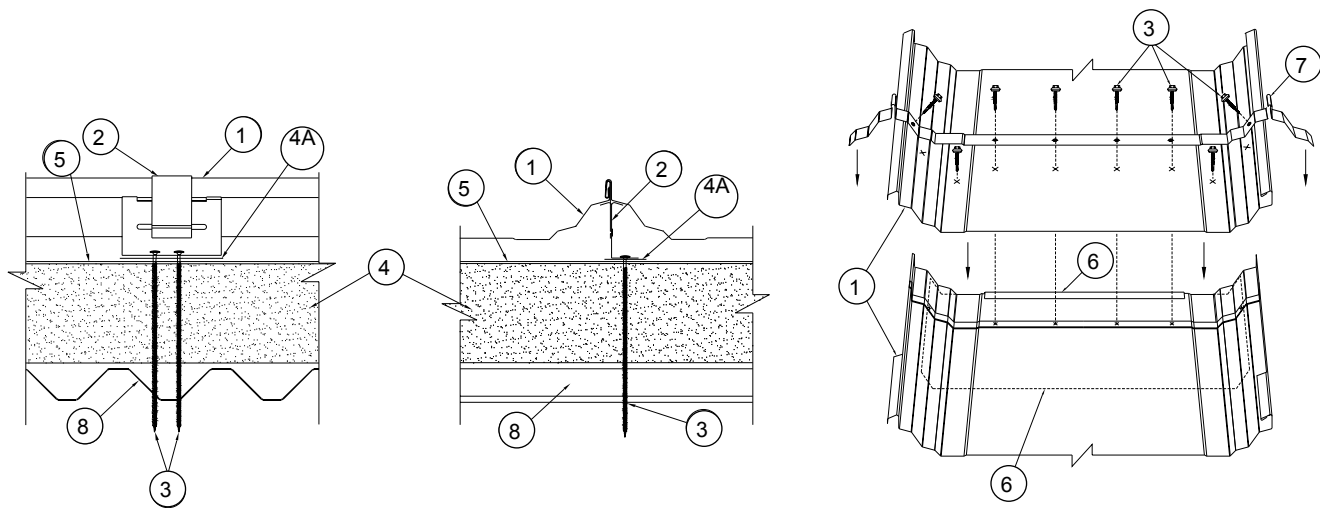
Refer to General Information, Roof Deck Construction for items not evaluated.

*Bearing the UL Classification Mark



Underwriters Laboratories Inc. ®

LISTED



SEAM-LOC 24

Construction No. 197A

February 14, 2001

Uplift - Class 90

Fire Not Investigated

1. Metal Roof Deck Panels* No. 24 MSG min thickness coated steel; 24 in. wide, 2-11/16 in. high at female rib. End laps 3 in. min. Adjacent panels to be continuously seamed with an electric seamer with seaming operation to include upper tab of roof deck fasteners (Item 2). A line of sealant may be used at panel end laps and side joints.
METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24"

2. Roof Deck Fasteners* (Panel Clip) Two part assembly consisting of a base and tab. Base 5 in. long, 1-1/4 in. wide, of various heights, fabricated from No. 14 MSG coated steel. Tab 2 in. wide, approximately 2 in. high fabricated from min No. 22 MSG thick coated steel. Clip spaced 4 ft on center along panel length.
METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24 Panel Clips"

3. Fasteners (Screws) Fasteners used to attach panel clip and bearing plates (Item 2 and 4a) through rigid insulation (or optional plywood when bearing plate not used) and into metal deck (Item 8) to be No. 14-13, No. 3 Phillips drive, truss head, coated steel screws. Two screws per clip. Fastener length to be min 1/2 in. longer than total thickness of optional plywood substructure, insulation and metal deck (Item 8). Fastener used at the end lap to be No. 12-14 x 1-1/4 in. long self-drilling, self-tapping, HWH, plated steel screws with a separate 5/8 in. OD steel washer and a neoprene sealing washer. One screw located in each 1-1/2 in. flat area adjacent to panel ribs driven through panel to end lap back up plate. Four screws used in panel flat area spaced 4 in. OC driven through cinch strap (Item 8) and panel into back up plate. One screw driven through cinch strap at side of panel ribs into back up plate. A total of eight screws to be used.

4. Rigid Insulation Foamed plastic, min thickness 1 in., max thickness 4 in. Density to be min 1.8 lbs/ft³.

4A. Bearing Plate Flat plate, 4 by 4 in., No. 22 MSG min thick coated steel (33 ksi min yield strength).

5. Felt Paper (Optional)-(Not Shown)-Two ply 30 lb/100ft².

6. End-Lap Back Up Plate* Length 24 in. with ends formed to the general profile of the panel side ribs. Width to be 9 in. A 14 in. long by 1 in. long by 1 in. wide return formed along one edge of the plate. Fabricated from No. 18 MSG thick coated steel.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc Compression Plate"

7. Cinch Strap* (Optional) Used over panels at end lap; 1 in. wide, formed to general profile of panel with both ends formed to fit over panel ribs. Fabricated from min 0.094 in. thick aluminum.

METAL SALES MANUFACTURING CORPORATION - "Seam-Loc 24 Cinch Strap"

8. Liner Panel (Steel Deck) No. 22 MSG min thickness coated steel. Fabricated to various profiles (33 ksi min yield strength). Steel deck depth, profile, support spacing (max 6 ft), method of positioning (end and side laps), and fastening of deck to supports (Item 9) to be per deck manufacturer's and local code requirement for uplift loading.

9. Liner Panel Supports (Not Shown).

Purlins-No. 16 MSG min thick steel (50 ksi min yield strength). Spacing to depend on design considerations to uplift loading; max 6 ft, 0 in. OC.

Joists-(Optional)-(Not Shown)-Open web steel joist having a min No. 16 MSG upper flange (50 ksi min yield strength) or a min 1/8 in. min thick upper flange (33 ksi min yield strength). Max spacing 6 ft, 0 in. OC.

Refer to general information, Roof Deck Construction, for Items not evaluated.

*Bearing the UL Classification Mark



Underwriters Laboratories Inc. ®

LISTED

Metal Roof Deck Panels

Metal Sales Manufacturing Corporation has obtained fire resistance ratings for various products conducted according to test criteria set forth by 'Underwriters Laboratories' "Standard Fire Tests of Building Construction and Material" (ANSI/UL 263). This test procedure is identical to ASTM E-119 and NFPA 251.

The fire resistance rating is for the total assembly and not just the external metal panel. Ratings are expressed in hours and vary depending upon the assemblies. In general, the test criteria is to evaluate the assembly's ability to continue to support the superimposed loads and resist the passage of flame, high temperatures, or hot gases which will ignite combustible materials. The test assemblies are identified by an alpha-numeric design number.

For detail information on specific assemblies and hourly ratings see **UL Fire Resistance Directory**.

METAL SALES MANUFACTURING CORPORATION

R9697

Mechanically attached metal roof panels - Type "Seam-Loc 24" secured by steel anchor clips. Anchor clips are attached to a hat shaped member* (minimum depth 1 in.) or a bearing plate**.

For use in Design Nos. P224 , P225 , P227 , P230 , P237 , P508 , P510 , P512 , P701 , P711 , P712 , P713 , P715 , P717 , P720 , P722 , P723 , P724 , P726 , P731 , P734 , P736 , P803 , P814 , P815 , P818 , P819 , P821 , P823 , P824 .

*Hat shaped member to be a minimum of 16 gauge. The member will be fastened through the roof insulation to the steel roof deck with min. No. 14 self-drilling and/or self-tapping fasteners. Spacing to be determined by the structural loading requirements. In addition any compressible UL Classified glass fiber blanket insulation with or without a vapor retarder facing may be used between the specified roof insulation and the metal roof panels.

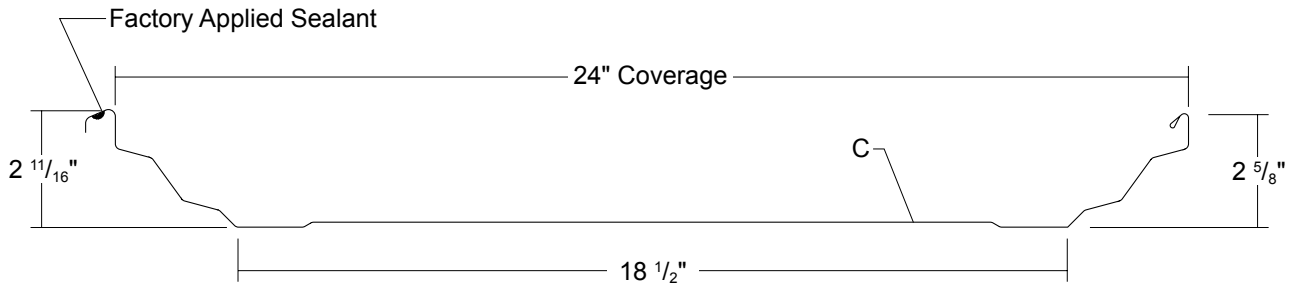
**Bearing plate to be a minimum of 16 gauge. Member will be fastened through the roof insulation to the steel deck with min. No. 14 self-drilling and/or self-tapping fasteners.

See the **UL Fire Resistance Directory** for explanation of each design number listed above.



Underwriters Laboratories Inc. ®

LISTED

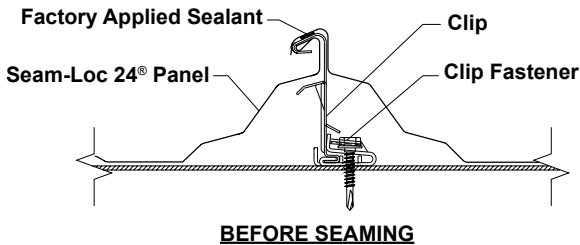


SECTION PROPERTIES				ALLOWABLE UNIFORM LIVE LOADS PSF (3 or More Equal Spans)															
Ga.	Width (in.)	Yield KSI	Weight PSF	Top in Compression		Bottom in Compression		Inward (Gravity / Deflection) Load						Outward Uplift (Stress) Load					
				Ixx In ⁴ /ft	Sxx In ³ /ft	Ixx In ⁴ /ft	Sxx In ³ /ft	2'	3'	3.5'	4'	4.5'	5'	2'	3'	3.5'	4'	4.5'	5'
24	24"	50	1.09	0.2055	0.0952	0.0920	0.0653	342	161	120	93	74	60	70	59	54	49	43	38
24*	24"	50	1.09	0.2055	0.0952	0.0920	0.0653	342	161	120	93	74	60	131	105	92	79	66	54
24	18"	50	1.15	0.2480	0.1221	0.1220	0.0869	455	214	160	123	98	80	93	78	70	62	54	46
24*	18"	50	1.15	0.2480	0.1221	0.1220	0.0869	455	214	160	123	98	80	169	134	117	100	83	66
22	24"	50	1.43	0.2725	0.1263	0.1280	0.0882	458	217	161	125	99	81	74	64	59	54	49	44

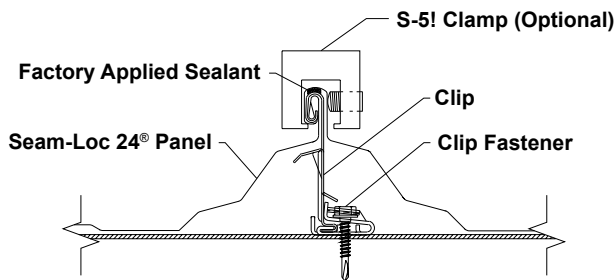
- Theoretical section properties have been calculated per AISI 2007 "Specification for the Design of Cold-formed Steel Structural Members." Ixx and Sxx are effective section properties for deflection and bending.
- Allowable load is calculated in accordance with AISI 2007 specifications considering bending, shear, combined bending and shear, deflection, and ASTM E-1592 testing and fastener pullout from 16 ga. supports. Allowable load considers the worst case of 3 and 4 equal span conditions. Allowable load does not address web crippling. Panel weight is not considered.
- Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
- Allowable loads do not include a 1/3 stress increase in uplift.

* Loads determined using the S-5! Clamp at each panel clip.

ATTACHMENT DETAILS

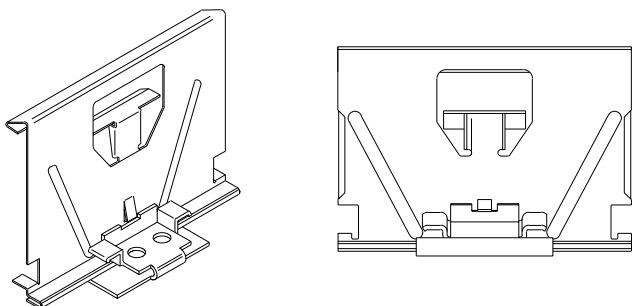


BEFORE SEAMING



AFTER SEAMING

PANEL CLIP




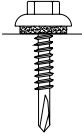
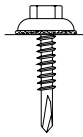
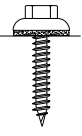
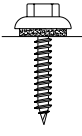
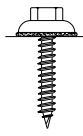
GENERAL INFORMATION

- Slope**
The minimum recommended slope for the Seam-Loc 24® roof panel is 1/4:12.
- Substructure**
Seam-Loc 24® is designed to be utilized over open structural framing or a solid substrate.
- Clips**
Clip spacing is based upon the spacing of structural framing members and loading requirements.
- Coverage**
Seam-Loc 24® panels are available in a 2 11/16" seam height with a 24" or 18" width coverage.
- Length**
Minimum factory cut length is 5'-0". Maximum recommended panel length is 45'-0". Longer panels require additional consideration in packaging, shipping, and erection. Please consult Metal Sales for recommendations.
- Fasteners**
The fastener selection guide should be consulted for choosing the proper fastener for specific applications. Quantity and type of fastener must meet necessary loading and code requirements.
NOTE: All panels are subject to surface distortion due to improperly applied fasteners. Overdriven fasteners will cause stress and induce oil canning across the face of the panel at or near the point of attachment.
- Availability**
Finishes: Acrylic Coated Galvalume® and PVDF (Kynar 500).
Gauges: 24ga and 22ga

FASTENER INSTALLATION TECHNIQUE

Recommended Tool Type - Use depth locating nose or adjustable clutch on screw gun to prevent overdrilling and strip out. **Do not use impact tools or runners.**

Seating the washer - Apply sufficient torque to seat the washer - do not overdrive the fastener.

	CORRECT Sealing material slightly visible at edge of metal washer. Assembly is watertight.	TOO LOOSE Sealing material is not visible; not enough compression to seal properly.	TOO TIGHT Metal washer deformed; sealing material pressed beyond washer edge.
SELF DRILLER			
WOODSCREW			

To prevent wobbling - Make sure fastener head is completely engaged in the socket. If the head does not go all the way in the socket - tap the magnet deeper into the socket to allow full head engagement. Metal chips will build up from drilling and should be removed from time to time.

Protect drill point - Push only hard enough on the screw gun to engage clutch. This prevents excess friction and burn out of the drill point. Correct pressure will allow screw to drill and tap without binding.

Drilling through sheet and insulation - Ease up on pressure when drilling through insulation to avoid striking the purlin or girt with the point - apply more pressure after drill point contacts purlin or girt.

Drilling through purlin overlaps - Drilling through lapped purlins requires extra care. Excessive voids between purlins sometimes damages drill points and two self-drillers might be necessary to complete the operation. It is sometimes advantageous to predrill.

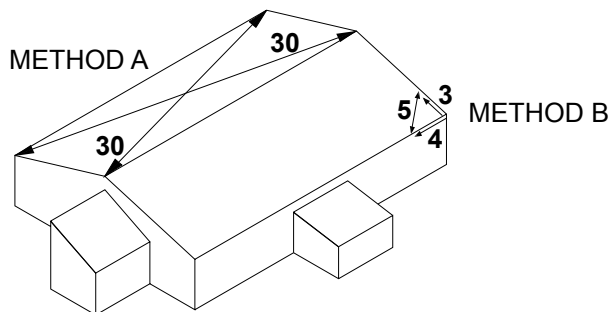
CONDITION OF SUBSTRUCTURE

Whether over solid substrate or open structural framing, panel distortion may occur if not applied over properly aligned and uniform substructure.

The installer should check the roof deck for squareness before installing Magna-Loc panels. Several methods can be used to verify squareness of the structure for proper installation of the panels.

METHOD "A" - One method for checking the roof for squareness is to measure diagonally across one slope of the roof from similar points at the ridge and eave and obtain the same dimension.

METHOD "B" - The 3-4-5 triangle system may also be used. To use this system measure a point from the corner along the edge of the roof at a module of three (3). Measure a point from the same corner along another edge at a module of four (4). Then by measuring diagonally between the two points established, the dimension should be exactly a module of five (5) to have a square corner. Multiple uses of this system may be required to determine building squareness. If the endwall cannot be made square, the roof system cannot be installed as shown in these instructions.



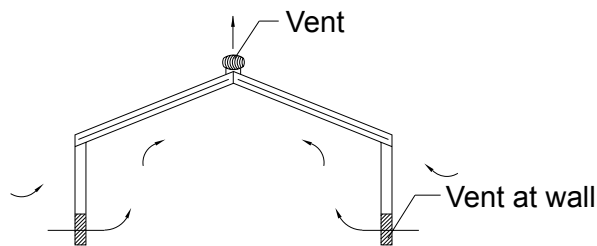
VENTILATION

Proper design and installation of vapor barriers and ventilation systems are important to prevent condensation and the resulting problems of moisture damage and loss of insulation efficiency.

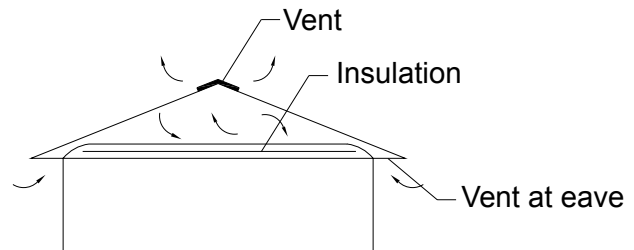
Condensation occurs when moisture laden air comes in contact with a surface temperature equal to or below the dew point of the air. This phenomenon creates problems that are not unique with metal buildings; these problems are common to all types of construction.

The underside of the metal roof on a typical metal building (no attic) should be protected from condensation by insulating with a faced insulation. This should reduce the potential of condensation forming on the underside of the panels.

On buildings that have an attic space or are being retrofitted with a metal roofing system, vents should be placed at both the eave and peak of the roof in order to prevent a buildup of moisture (humidity) in the attic space.



Typical metal building (no attic)



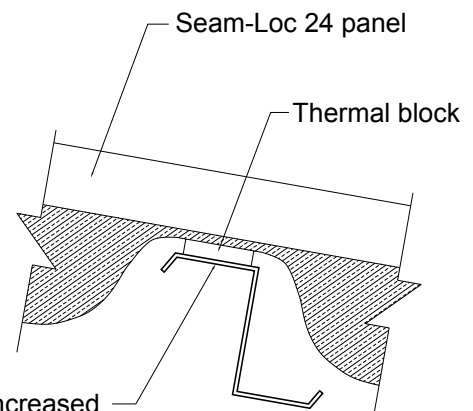
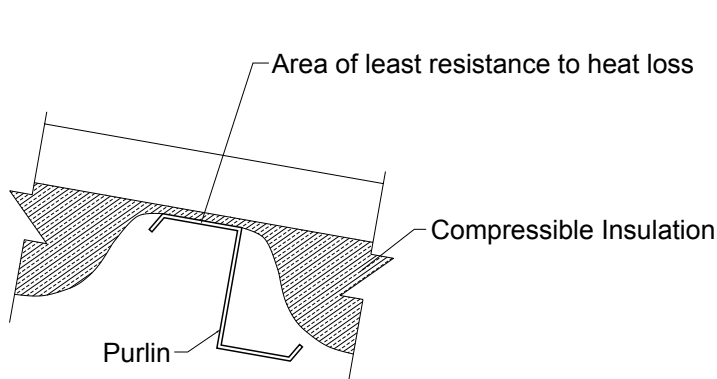
Building with attic or retrofitted

INSULATION

In most cases insulation is installed directly under roof panels. Insulation is recommended on all applications to act as a sound barrier, prevent condensation, and increase insulating value of a roof system.

Many different types of insulation can be used with the metal roof panels. Blanket, batt, rigid, and reflective insulation are just to name a few. Please contact your insulation supplier for specific recommendations on installation of insulation and vapor barriers.

When applying a compressible type of insulation over open framing members. Rigid thermal blocks can be used to help eliminate heat lost at purlin locations.



Resistance to heat loss is increased

CAUTION

Use extreme care when working next to insulation. The insulation will provide a false sense of security by hiding the view of the ground below the insulation.

SYSTEM EXPANSION / CONTRACTION

Steel roofing panels are subject to dimensional changes after installation due to exposure to varying temperatures. The greatest influence is solar energy. Steel roofing absorbs various amounts of heat depending upon color, finish, angle of exposure, and time of exposure.

The relationship of ambient temperature to building structural temperature must be considered when designing a Seam-Loc 24 roof system. The clips for the Seam-Loc 24 panels are designed for expansion and contraction of the panels in the longitudinal direction. Lateral expansion and contraction is accommodated by the configuration of the panel cross section and causes negligible panel movement.

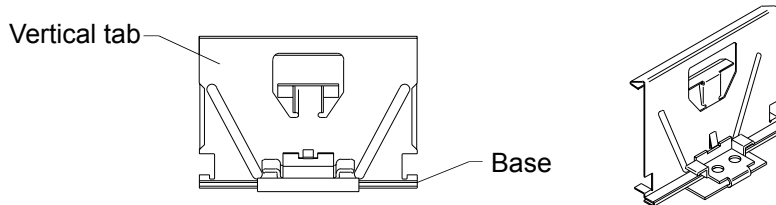
When the total length of panel run exceeds the capability of the clips to accommodate the thermal movement, expansion joints must be designed into the structure.

SELECTION OF SYSTEM COMPONENTS

The following information should be used to determine system components needed once installation size has been selected. Refer to pages PGI-12-14 for appropriate fastener selections.

SYSTEM COMPONENTS					
SYSTEM	CLIP	EAVE PLATE	RAKE ANGLE	THERMAL BLOCK	INSULATION
UTILITY	2 ⁵ / ₈ " UTILITY	NONE REQUIRED	2 ⁵ / ₈ " UTILITY	NONE REQUIRED	1/2" TO 4" BLANKET
LOW	3 ¹ / ₈ " LOW	3/8" LOW	3 ¹ / ₈ " LOW	NONE REQUIRED	4" TO 6" BLANKET
HIGH	4 ¹ / ₈ " HIGH	1 ³ / ₈ " HIGH	4 ¹ / ₈ " HIGH	1"	4" TO 6" BLANKET

Seam-Loc 24 Panel Clips- The floating clips allow the roof surface (panels) to move independently of the roof substructure to allow for thermal expansion and contraction. These clips are designed with a vertical tab that slides along the base section of the clip. Clips are placed along the male leg of each panel prior to installing adjacent panels. Design wind uplift requirements must be considered for proper clip spacing.



SEAM-LOC 24 PANEL CLIP

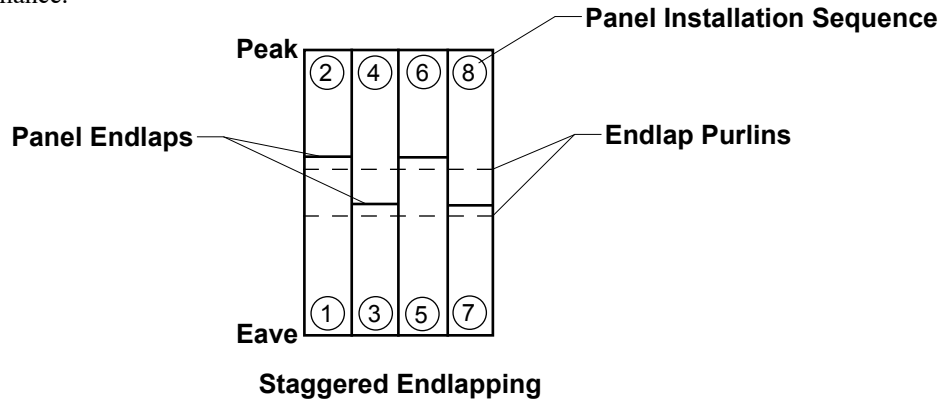
The following chart should be used to determine proper fasteners required for clip installation on the selected applications. (See Product General Information page PGI-12 for other fasteners available.)

APPLICATION	INSTALLATION REQUIREMENTS		**CLIP SPACING	TYPE OF FASTENER	NUMBER REQUIRED
CLIPS OVER PURLINS (16 GA. MIN)	STANDARD	24 GAUGE	5'-0" O.C.	1/4-14 x 1 1/2" SELF DRILLER NW	2 FASTENERS
	STANDARD	22 GAUGE	5'-0" O.C.	1/4-14 x 1 1/2" SELF DRILLER NW	2 FASTENERS
CLIPS OVER 5/8" WOOD DECK	STANDARD	24 GAUGE	BY DESIGN	#10 X 1" PANCAKE HEAD WOOD	2 FASTENERS
	STANDARD	22 GAUGE	BY DESIGN	#10 X 1" PANCAKE HEAD WOOD	2 FASTENERS
CLIP OVER RIGID INSULATION / METAL DECK	STANDARD	24 GAUGE	4'-0" O.C.	DECK SCREW #14*	2 FASTENERS
	STANDARD	22 GAUGE	4'-0" O.C.	DECK SCREW #14*	2 FASTENERS

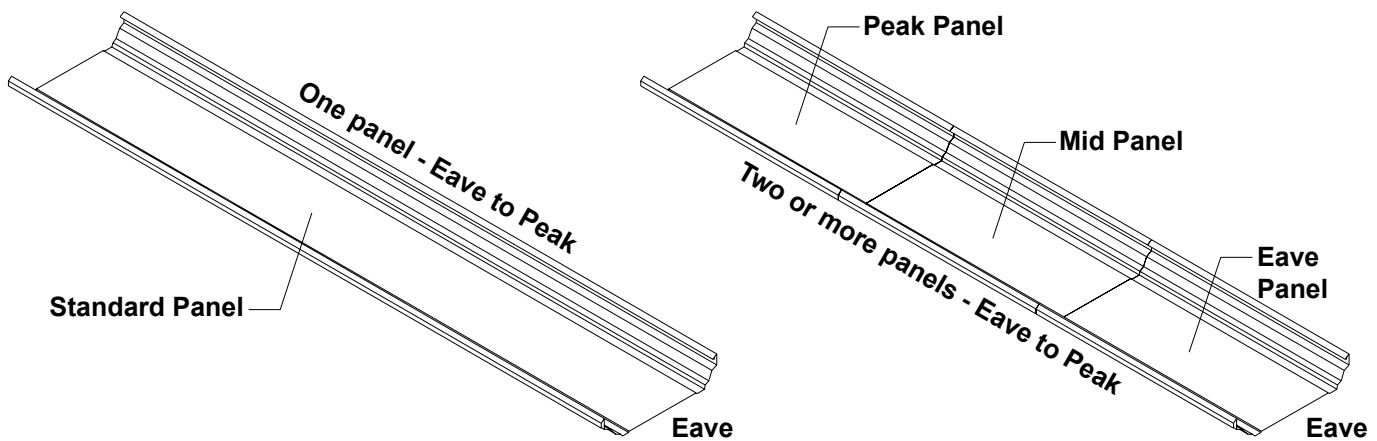
* Length of Deck Screw will vary depending on the total thickness of the rigid insulation and metal (see page PGI-12).

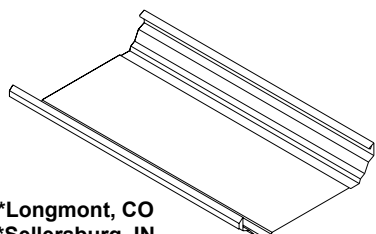
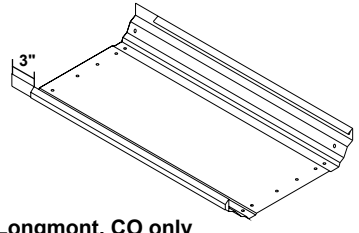
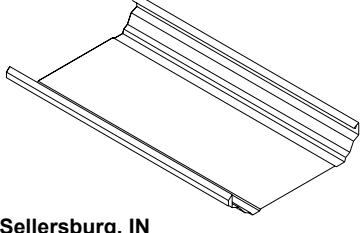
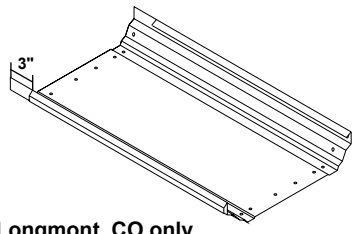
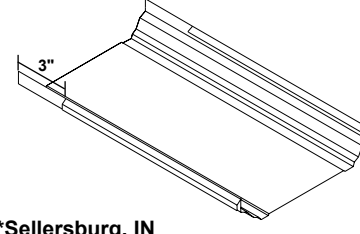
** Based on UL580. Subject to project loading requirements, closer clip spacing may be required. Contact your local Metal Sales branch representative for more information (see pages PGI-2 and 3).

Panel Endlapping - If panel endlapping is required, endlaps must be staggered. This prevents material build-up and aids in overall structural performance.



Factory Notched Panels - Metal Sales can provide factory notched panel ends to eliminate reliance on field notching for weathertight seams at panel endlaps.



<p>STANDARD PANEL:</p> <ul style="list-style-type: none"> ▶ Used when endlapping of panels is not required ▶ One panel from eave to peak of roof ▶ No notching or punching 		 <p>*Longmont, CO **Sellersburg, IN</p>
<p>PEAK PANEL:</p> <ul style="list-style-type: none"> ▶ Used when endlapping of panels is required ▶ Used as upper panel of endlapping run ▶ Notching and punching* ▶ No notching or punching** 	 <p>*Longmont, CO only</p>	 <p>**Sellersburg, IN</p>
<p>EAVE PANEL OR MID PANEL:</p> <ul style="list-style-type: none"> ▶ Used when endlapping of panels is required ▶ Used as lower or middle panel of endlapping run ▶ Notching and punching* ▶ Notched for panel endlapping** 	 <p>*Longmont, CO only</p>	 <p>**Sellersburg, IN</p>

SEAMING PANELS

Note: The Seam-Loc 24 panel system requires the use of a mechanical seamer for proper installation. The mechanical seamer runs from ridge to eave with Seam-Loc 24 panels laid from left to right. This necessary seamer is designed to seam the panel clips and the vertical legs of the panel together for weathertightness and resistance to wind uplift loads.

■ Rental or purchase of the Seam-Loc 24 mechanical seamer and hand crimpers for field seaming are the responsibility of the installer. Mechanical seamers and hand crimpers can be acquired from Seamer Tools, Inc.

Phone No. (662) 895-1222.

■ Read the field manual that is enclosed in the case with the seamer. The operator should adhere to all instructions for proper use of the seamer. Failure to follow the required instructions may result in damage to the panel and/or seamer. Metal Sales Manufacturing Corporation will not be responsible for damage incurred by improper use of the seamer.

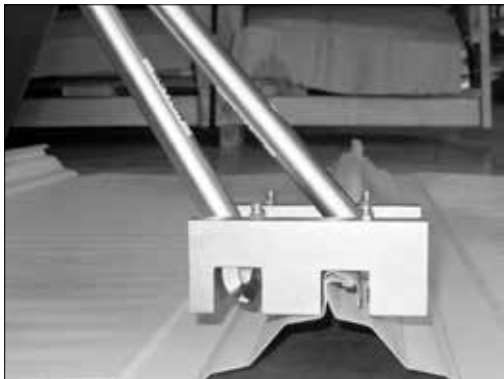
Preparation Notes:

1. Check to insure all components are in the shipping container: Electric Seamer, Handle Assembly, and Hand Crimper.
2. Run sufficient power to the roof to operate the seamer. Follow OSHA and local electrical codes.
3. Clean and remove all construction debris to avoid damage.
4. Panels MUST be hand crimped 6-8 inches per Step 1 at the start end of each panel row and endlaps. Metal Sales recommends panels be seamed as soon as possible to prevent wind damage.
5. If panels are installed from left to right (looking from eave to ridge), electric seamer will run down slope from ridge to eave.
6. Read instructions completely and then check roof system for proper installation. Prior to seaming panels check all seams making sure they are properly engaged. All dirt, debris, and excess sealant should be removed from flat part of panel and seams.

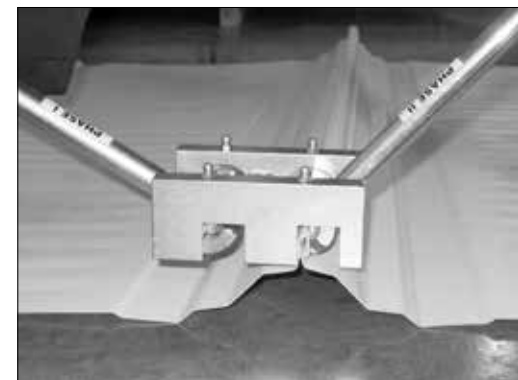
STEP 1 - Required Hand Crimping Before Seaming:

Begin at the seaming start end of the panel. Place the "Phase 1" slot of the hand crimper over the panel rib with the "Phase 1" handle on the open side of the panel rib. Engage the tool to a fully closed position. Hand crimp the first 6-8 inches. In high wind situations, Step 1 can be done at clip locations to hold panels in place until electric seamer is used. Make sure hand crimper does not flatten rib of panel. Step 1 should also be applied at all endlap conditions.

NOTE: Step 1 should be applied at each panel clip location if you are NOT going to run the mechanical seamer after you apply each panel. Metal Sales recommends that panel ribs be mechanically seamed before the end of each working day.

**STEP 2 - Required hand Crimping only at the START END of the panel to be seamed:**

Place the "Phase 2" slot onto the open side of the panel rib at the very end of the panel to be seamed, and engage the handle to a fully closed condition as shown. Hand crimp only the first 3-4 inches. Do not use "Phase 2" slot at a clip condition prior to using the Electric Seamer.



SEAMING PANELS (CONT.)

STEP 3 - Electric Seaming:

A. Place the electric seamer in position at the start end of the panel and engage the three handles to the fully locked position. Pull the handles in order of #1, #2, and #3 (See Photo 3A). Make sure the forming rolls are on the open side of the panel rib. Start the electric seamer and let run for 2 feet. Stop electric seamer and check seam. Continue if seam is correct.

B. Stop electric seamer before endlap screws in panel at endlap condition (See Photo 3B). Failure to stop before these screws will cause electric seamer wheels to hit screws and disengage electric seamer. Disengage the electric seamer from the panel and hand crimp endlap condition and 8-10 inches past endlap per Step 1 and Step 2. Move electric seamer to other side of endlap and continue seaming.

C. Disengage the electric seamer from the panel and move it to the start of the next panel rib.

NOTE: The Seam-Loc 24 electric seamer is a single direction machine. If panels are installed from left to right (looking from eave to ridge), electric seamer will run down slope from ridge to eave. If panels where installed on a gable building from one side of the building to the other, the seamer will start at the ridge on one side of the building and start at the eave on the other side of the building.

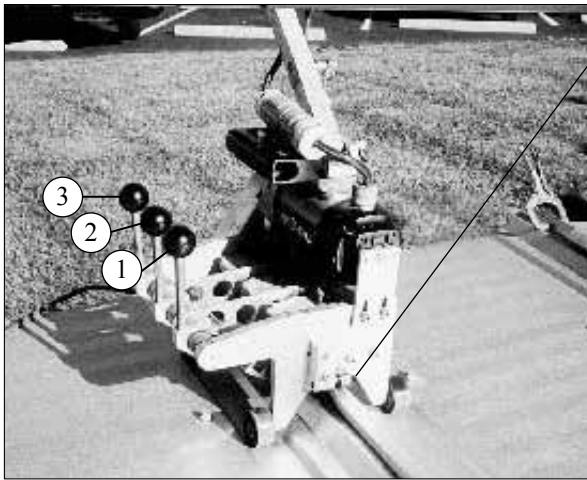


Photo 3A Electric Seaming



Photo 3B Electric Seaming at Endlap

Panel ends, panel endlap conditions or any other areas, that the electric seamer did not seam will need to be hand crimped to complete seam as outlined in Step 1 and 2.

NOTE: Do NOT hand crimp per Step 2 at any panel clips.

NOTE: Keep the forming rolls on the seamer CLEAN

At completion of seaming, repack tool and return to:

Seamer Tools, Inc.

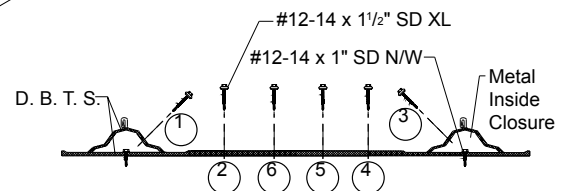
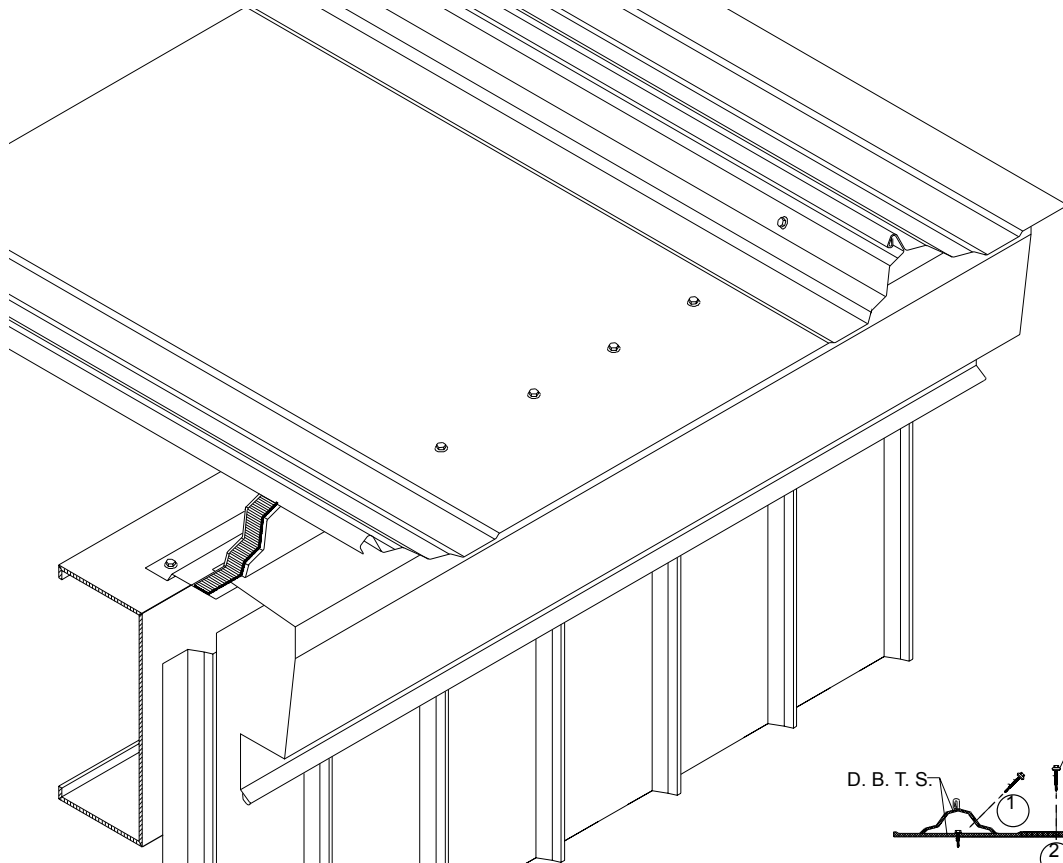
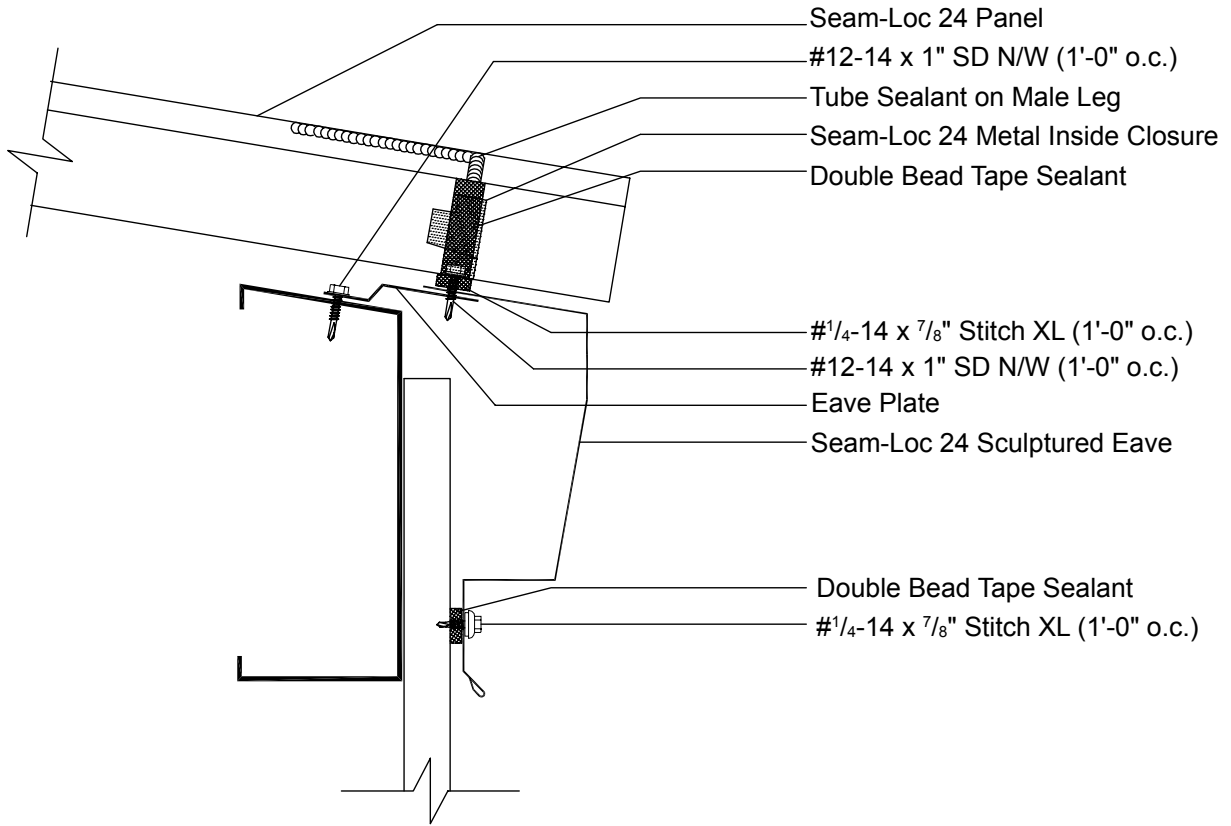
8265 Highway 178 Olive Branch, MS 38654.

Phone No. (662) 895-1222, Fax No. (662) 890-4775.

CAUTION

Do not run the seamer off the end of the panel. If the seamer is run off the end of the roof it could cause injury to personnel and damage the roof or the seamer (see seamer instructions enclosed in the case for additional information about the proper handling of the seamer).

**1/4:12 SLOPE
MINIMUM**

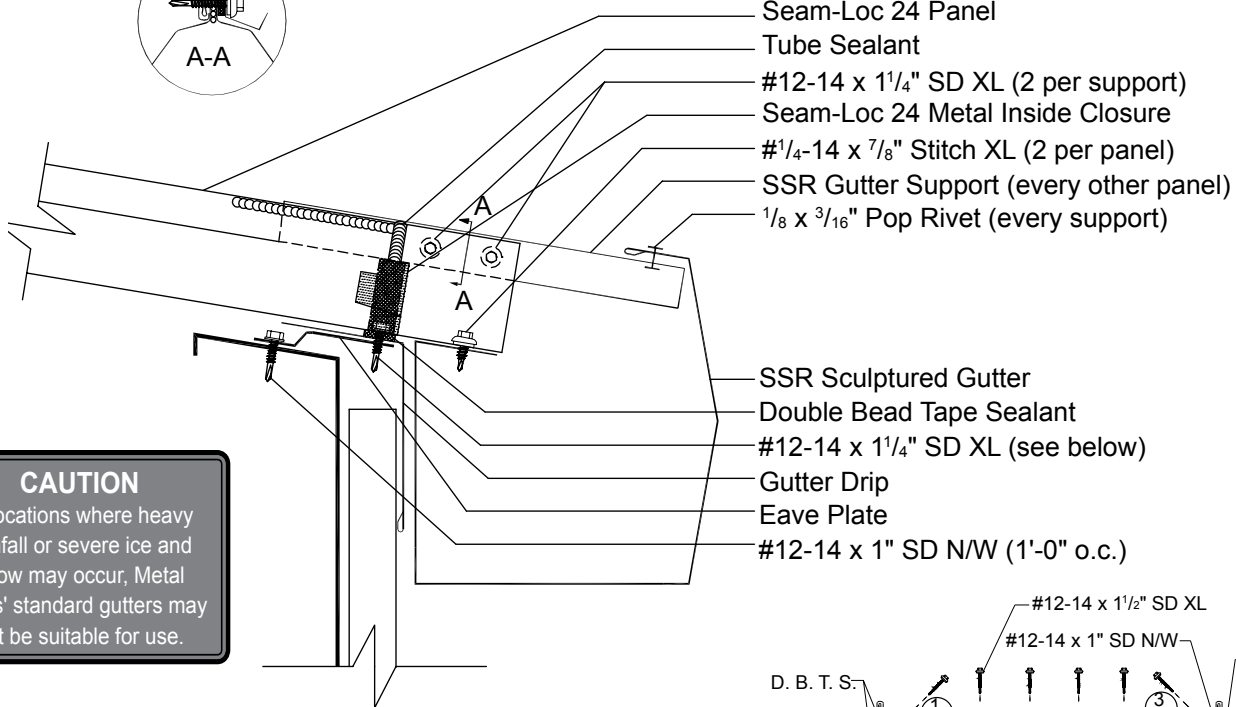
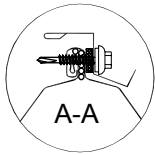


Seam-Loc 24 Fastening Pattern

SEAM-LOC 24®

SCULPTURED GUTTER DETAIL

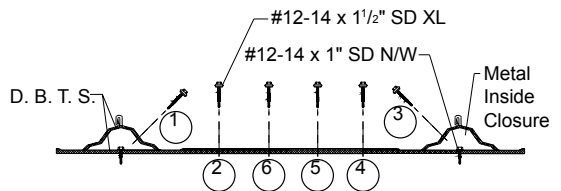
1/4:12 SLOPE
MINIMUM



- Seam-Loc 24 Panel
- Tube Sealant
- #12-14 x 1 1/4" SD XL (2 per support)
- Seam-Loc 24 Metal Inside Closure
- #1/4-14 x 7/8" Stitch XL (2 per panel)
- SSR Gutter Support (every other panel)
- 1/8 x 3/16" Pop Rivet (every support)

- SSR Sculptured Gutter
- Double Bead Tape Sealant
- #12-14 x 1 1/4" SD XL (see below)
- Gutter Drip
- Eave Plate
- #12-14 x 1" SD N/W (1'-0" o.c.)

CAUTION
In locations where heavy rainfall or severe ice and snow may occur, Metal Sales' standard gutters may not be suitable for use.

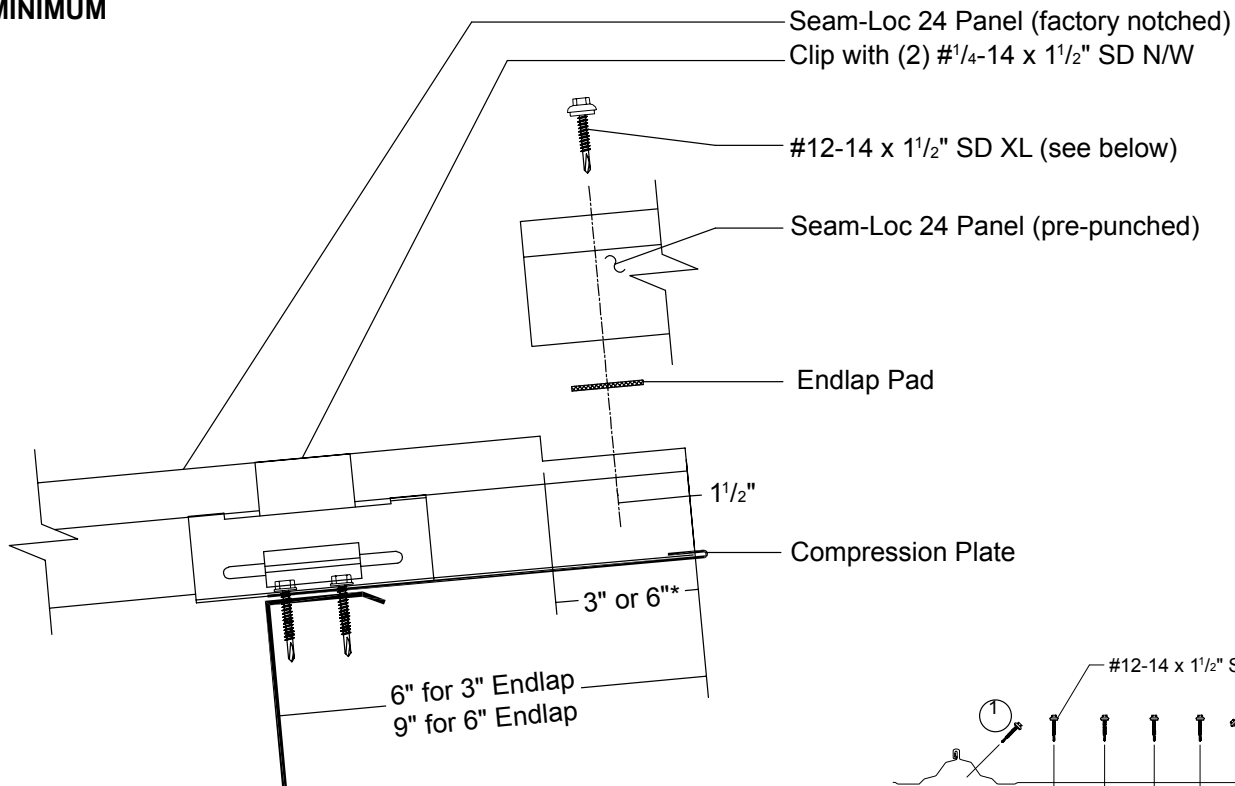


Seam-Loc 24 Fastening Pattern

SEAM-LOC 24®

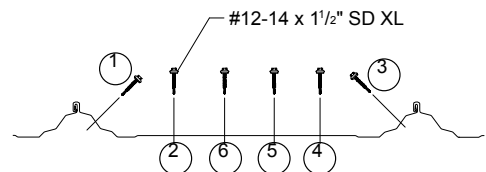
ENDLAP DETAIL

1/4:12 SLOPE
MINIMUM



- Seam-Loc 24 Panel (factory notched)
- Clip with (2) #1/4-14 x 1 1/2" SD N/W
- #12-14 x 1 1/2" SD XL (see below)
- Seam-Loc 24 Panel (pre-punched)
- Endlap Pad

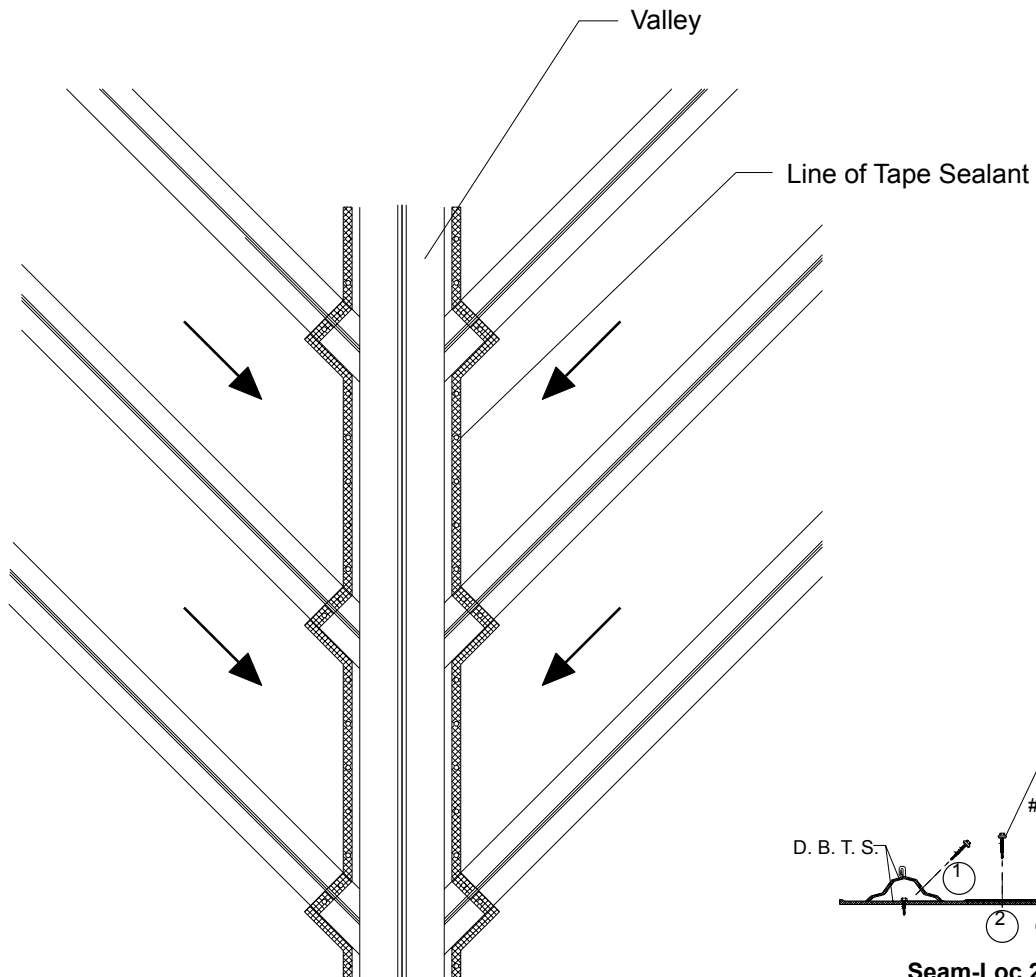
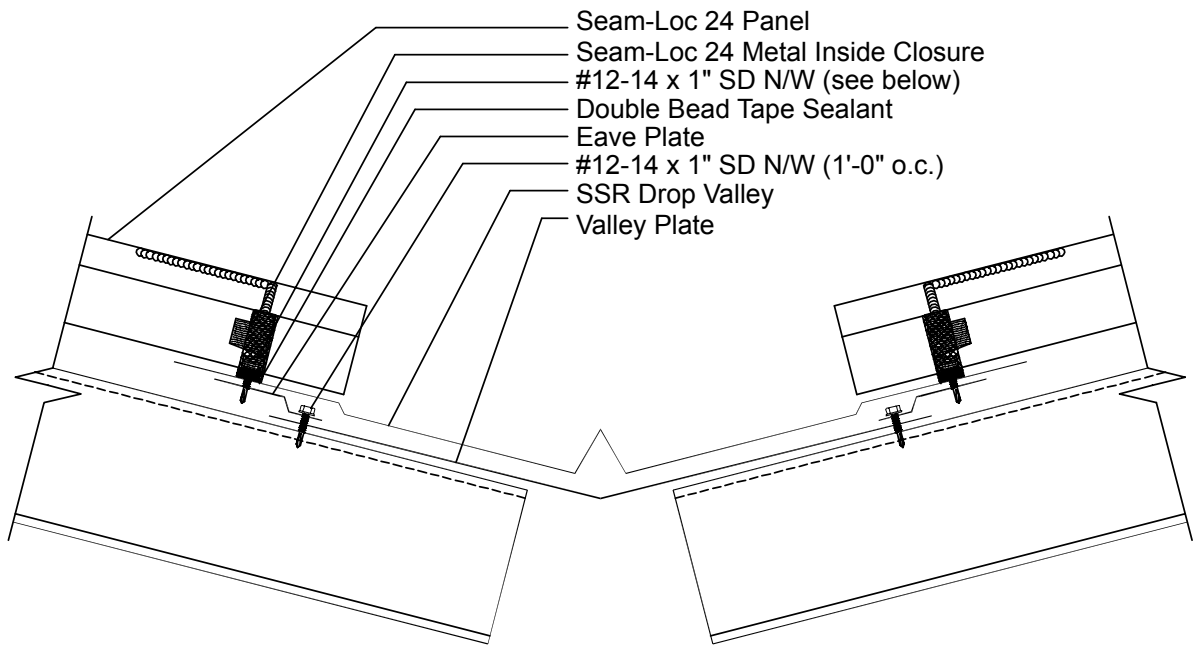
- Compression Plate
- 1 1/2"
- 3" or 6"*
- 6" for 3" Endlap
- 9" for 6" Endlap



Seam-Loc 24 Fastening Pattern

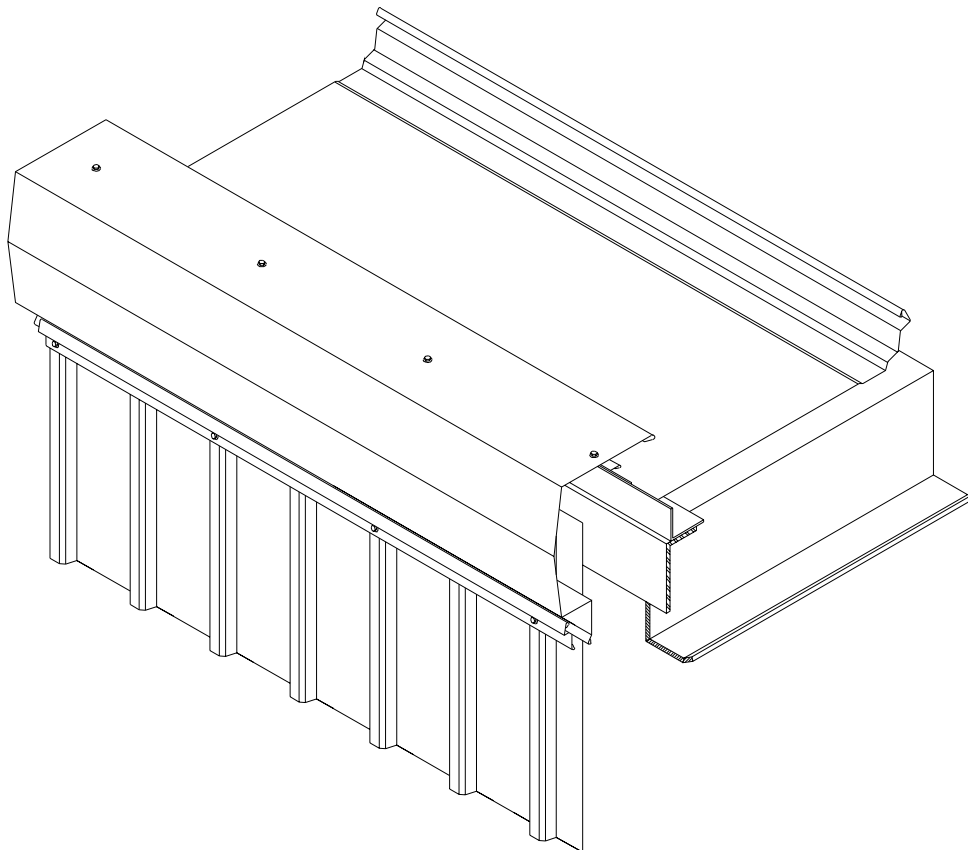
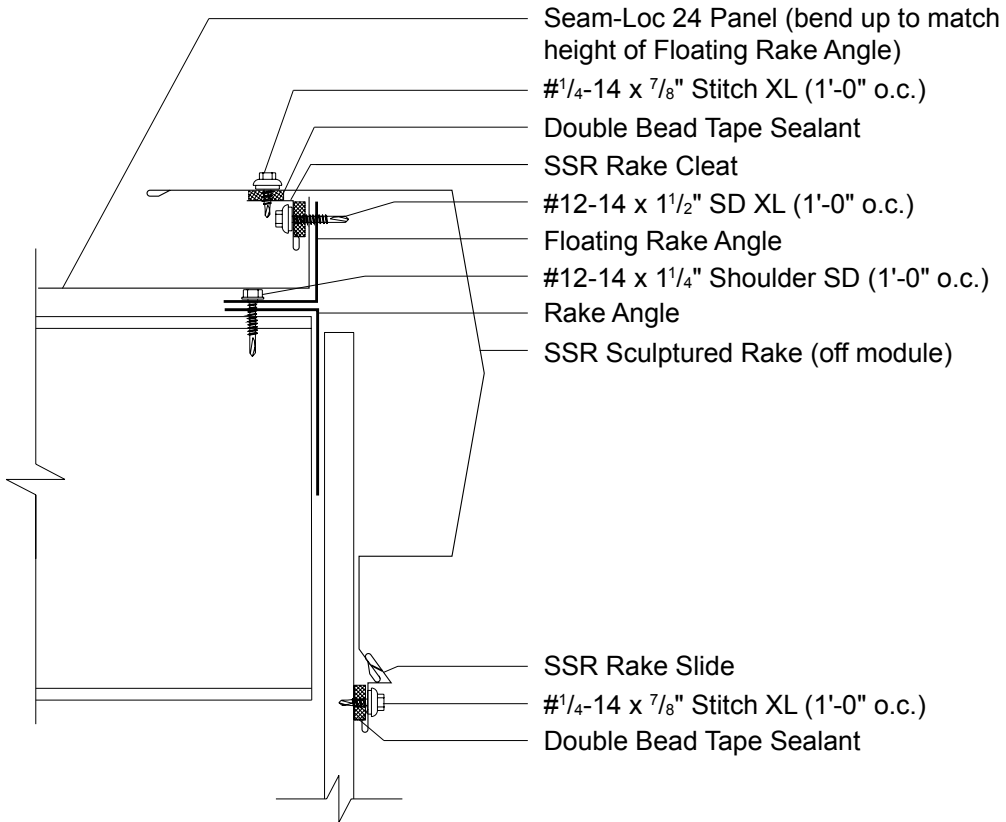
* 3" Endlap Available at Jacksonville Branch Only.

**6:12 SLOPE
MINIMUM**



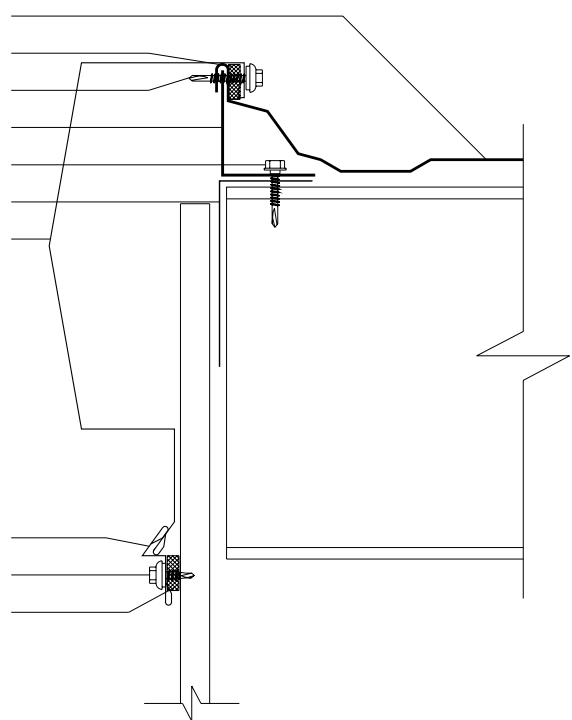
Seam-Loc 24 Fastening Pattern

**1/4:12 SLOPE
MINIMUM**

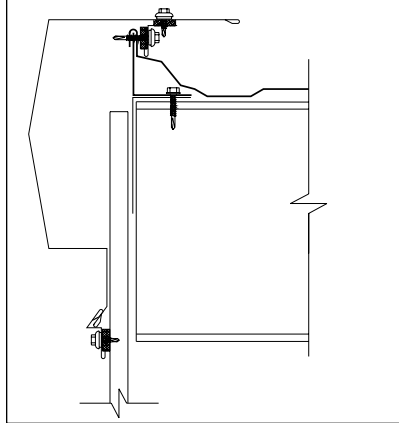


**1/4:12 SLOPE
MINIMUM**

- Seam-Loc 24 Panel
- Double Bead Tape Sealant
- #12-14 x 1 1/2" SD XL (1'-0" o.c.)
- Floating Rake Angle
- #12-14 x 1 1/4" Shoulder SD (1'-0" o.c.)
- Rake Angle
- SSR Sculptured Rake (on module)



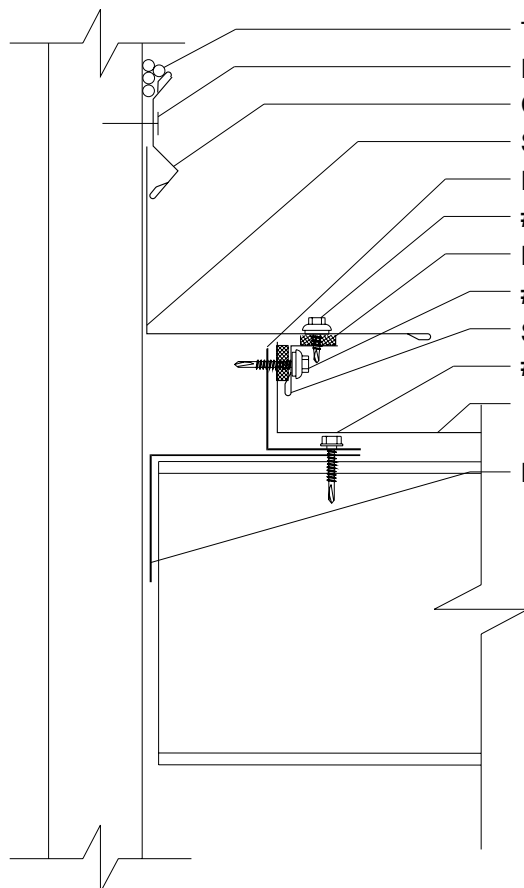
**SSR SCULPTURED RAKE
(ON MODULE OPTIONAL) DETAIL**



- SSR Rake Slide
- #1/4-14 x 7/8" Stitch XL (1'-0" o.c.)
- Double Bead Tape Sealant

**1/4:12 SLOPE
MINIMUM**

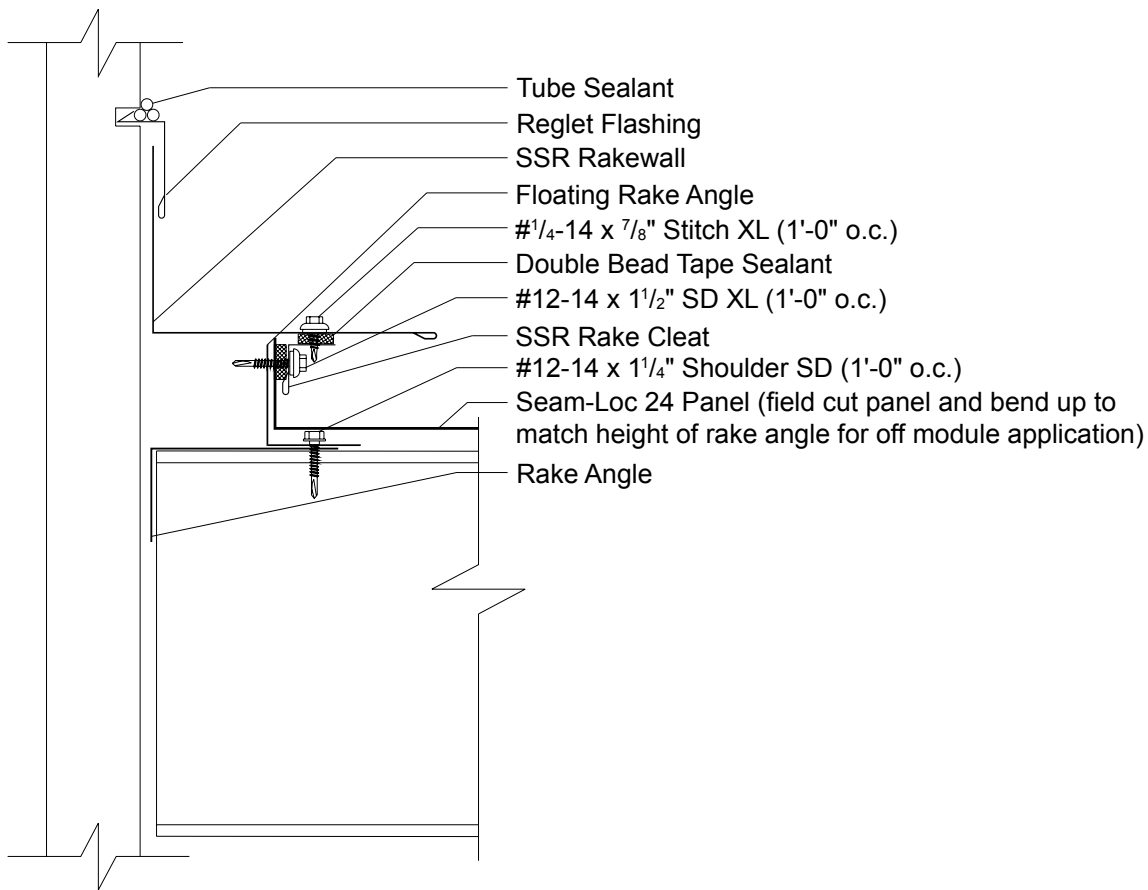
- Tube Sealant
- Fastener (by others)
- Counter Flashing
- SSR Rakewall
- Floating Rake Angle
- #1/4-14 x 7/8" Stitch XL (1'-0" o.c.)
- Double Bead Tape Sealant
- #12-14 x 1 1/2" SD XL (1'-0" o.c.)
- SSR Rake Cleat
- #12-14 x 1 1/4" Shoulder SD (1'-0" o.c.)
- Seam-Loc 24 Panel (field cut panel and bend up to match height of rake angle for off module application)
- Rake Angle



SEAM-LOC 24®

SSR RAKEWALL WITH REGLET FLASHING DETAIL

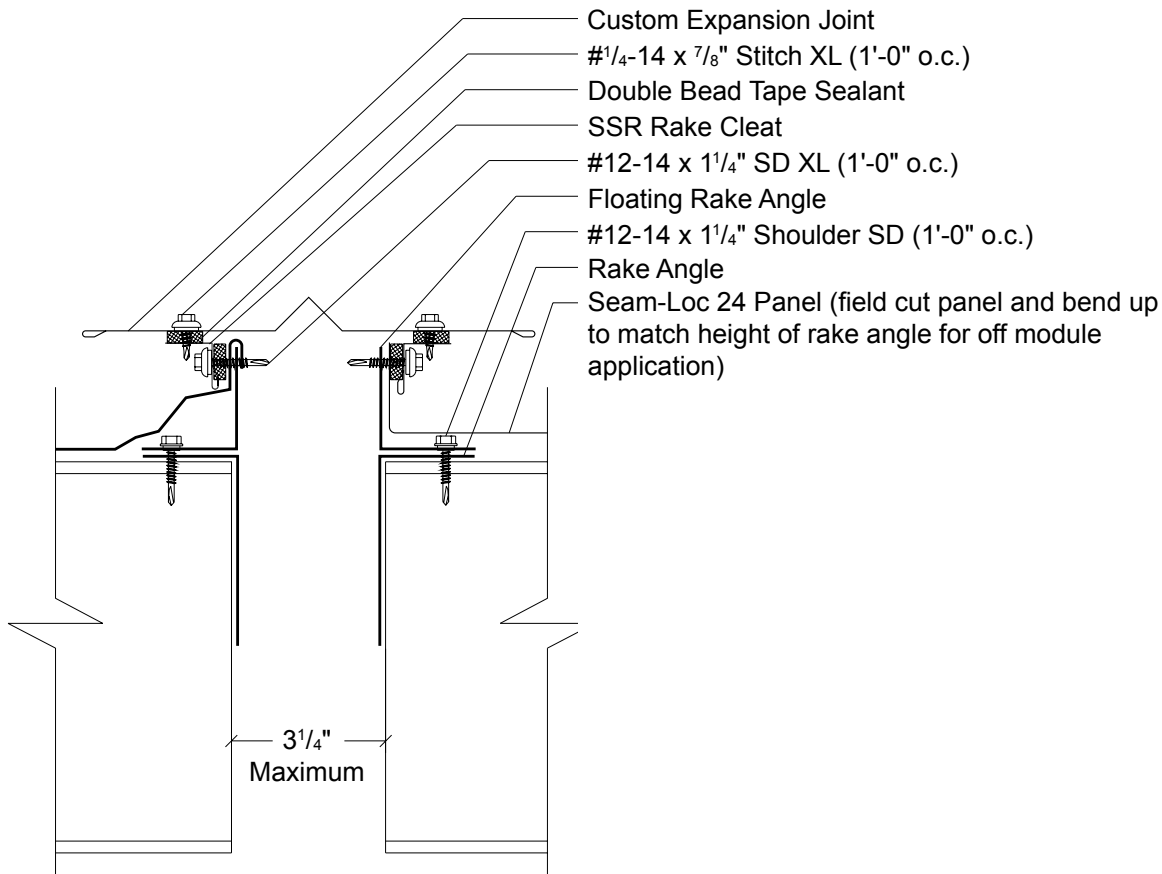
1/4:12 SLOPE
MINIMUM



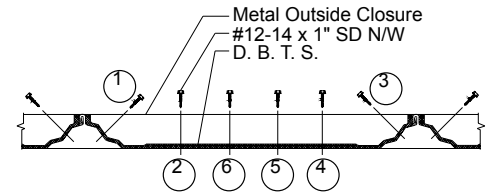
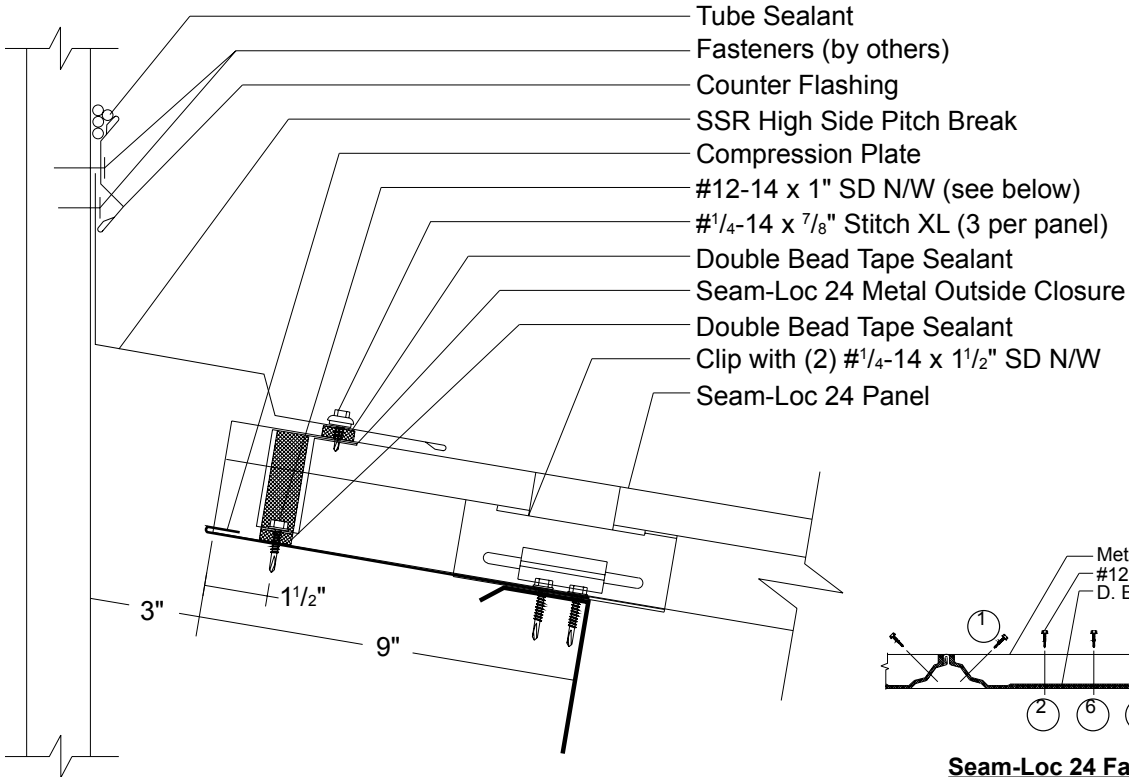
SEAM-LOC 24®

EXPANSION DETAIL

1/4:12 SLOPE
MINIMUM

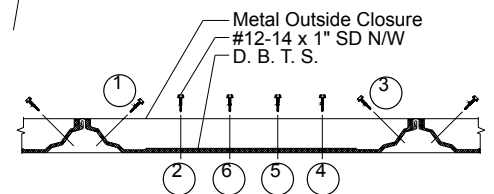
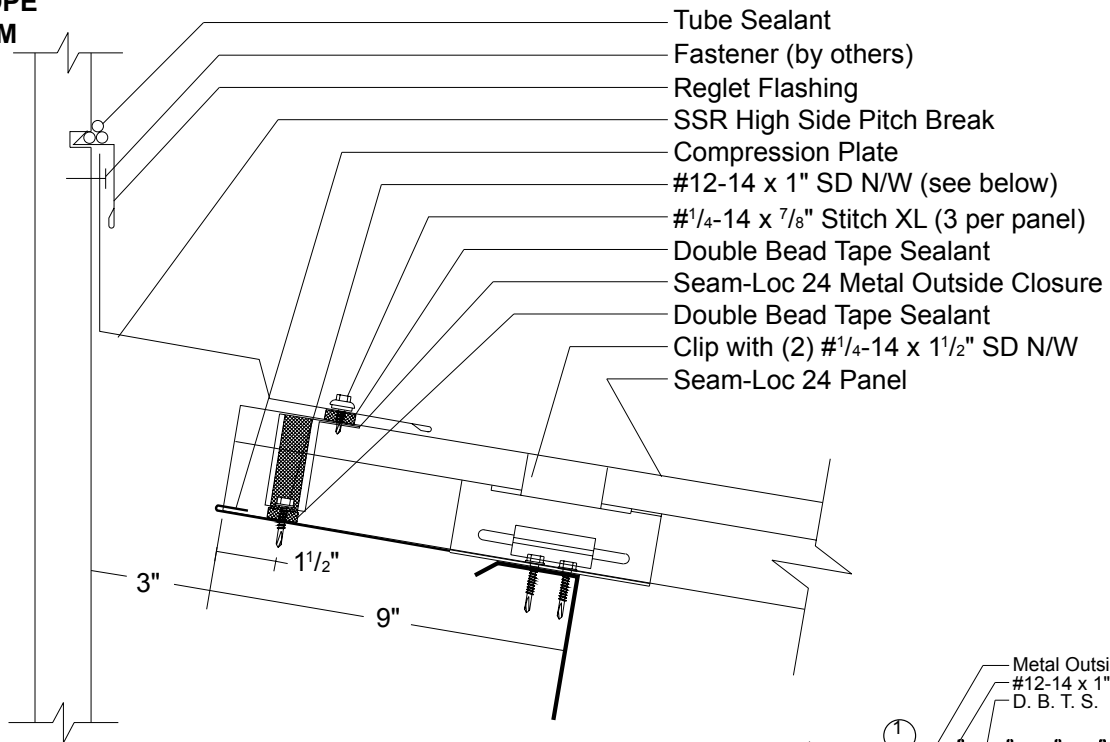


**1/4:12 SLOPE
MINIMUM**



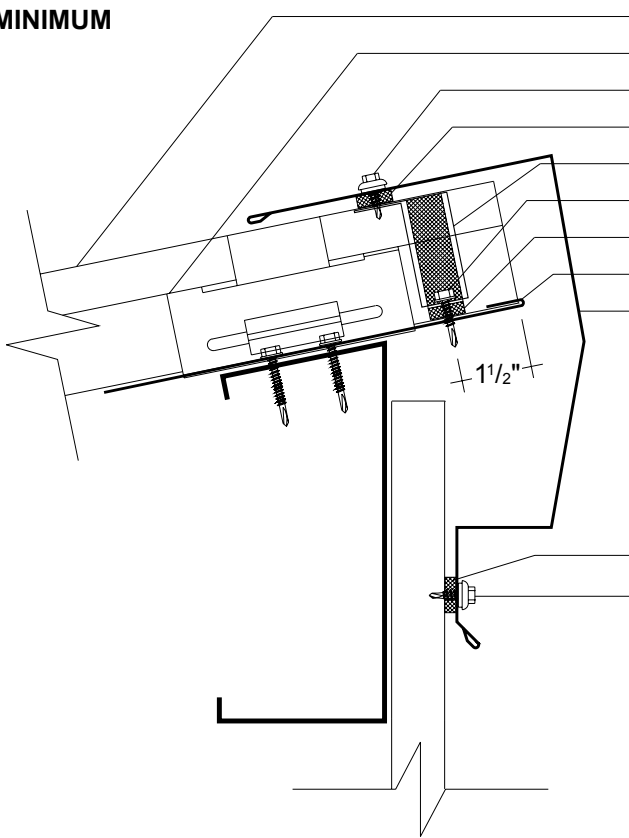
Seam-Loc 24 Fastening Pattern

**1/4:12 SLOPE
MINIMUM**



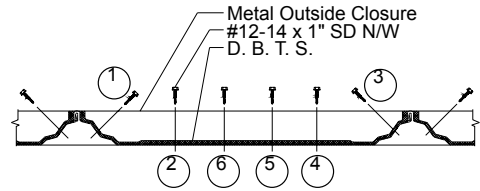
Seam-Loc 24 Fastening Pattern

**1/4:12 SLOPE
MINIMUM**



- Seam-Loc 24 Panel
- Clip with (2) #1/4-14 x 1 1/2" SD N/W
- #1/4-14 x 7/8" Stitch XL (3 per panel)
- Double Bead Tape Sealant
- Seam-Loc 24 Metal Outside Closure
- #12-14 x 1" SD N/W (See Below)
- Double Bead Tape Sealant
- Compression Plate
- SSR Sculptured High Side Eave

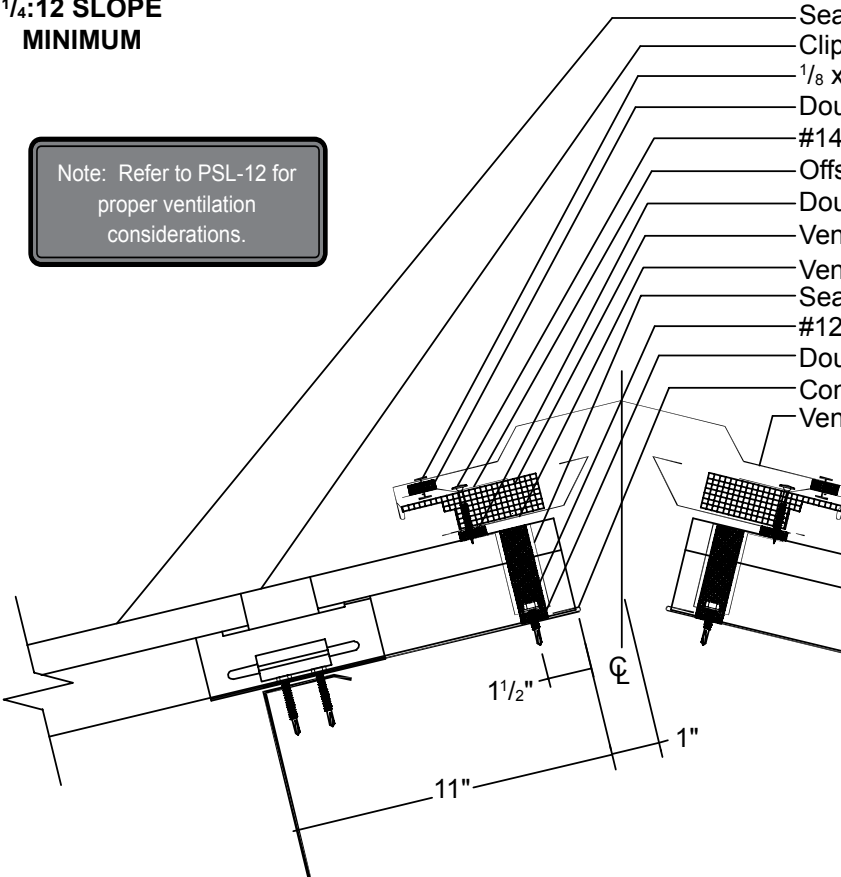
- Double Bead Tape Sealant
- #1/4-14 x 7/8" Stitch XL (1'-0" o.c.)



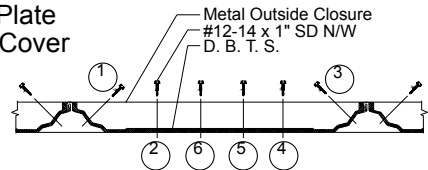
Seam-Loc 24 Fastening Pattern

**1/4:12 SLOPE
MINIMUM**

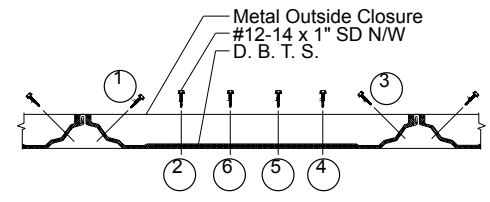
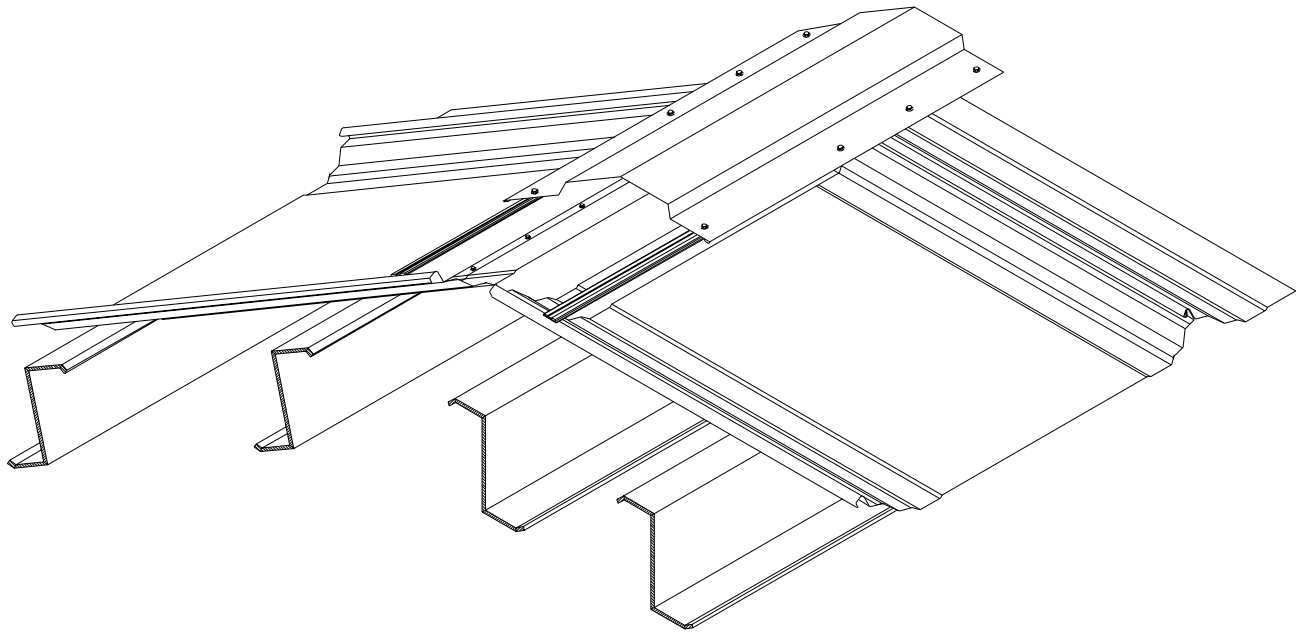
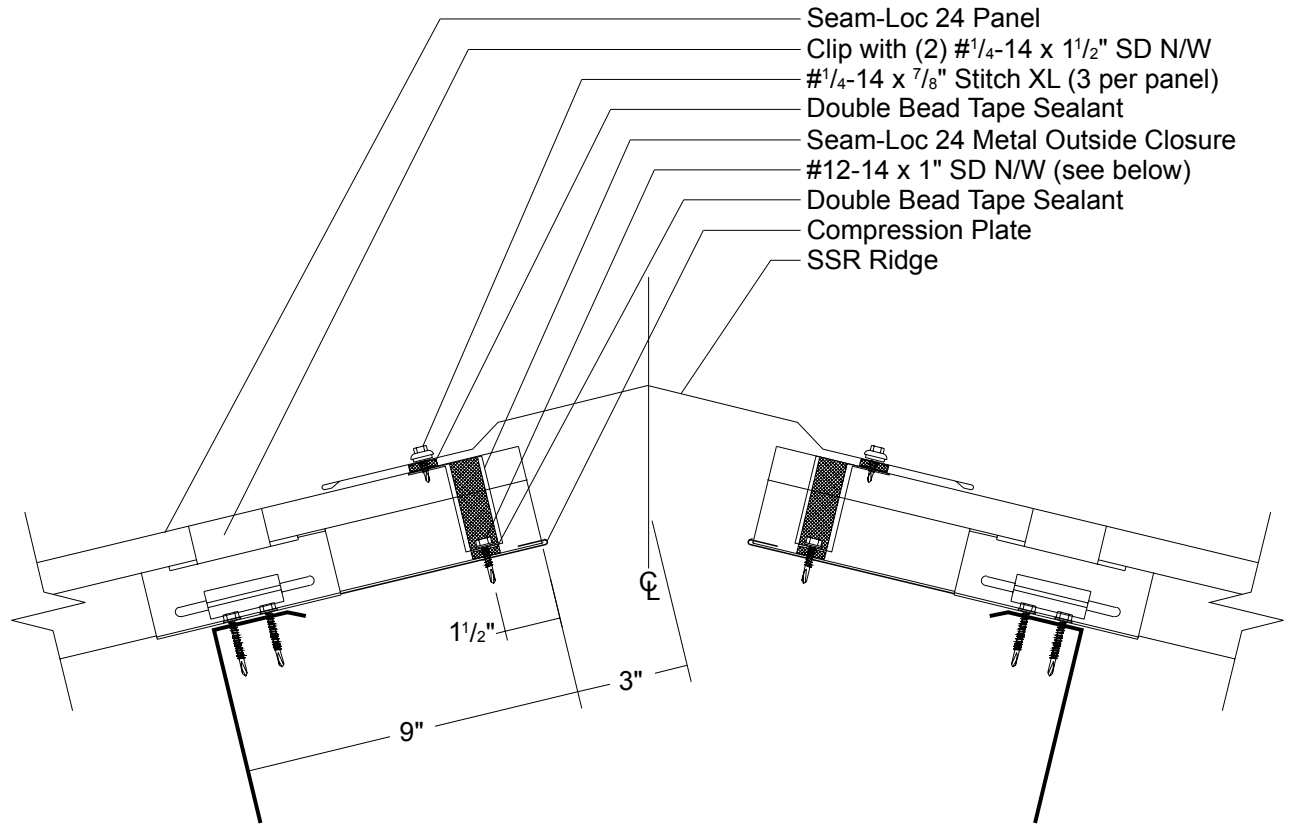
Note: Refer to PSL-12 for proper ventilation considerations.



- Seam-Loc 24 Panel
- Clip with (2) #1/4-14 x 1 1/2" SD N/W
- 1/8 x 13/16" Pop Rivet (1'-0" o.c.)
- Double Bead Tape Sealant
- #14-13 x 1 5/8" Dekfast (1'-0" o.c.)
- Offset Cleat
- Double Bead Tape Sealant
- Vent Material
- Vent Drip
- Seam-Loc 24 Metal Outside Closure
- #12-14 x 1" SD N/W (see below)
- Double Bead Tape Sealant
- Compression Plate
- Vented Ridge Cover



Seam-Loc 24 Fastening Pattern



Seam-Loc 24 Fastening Pattern

