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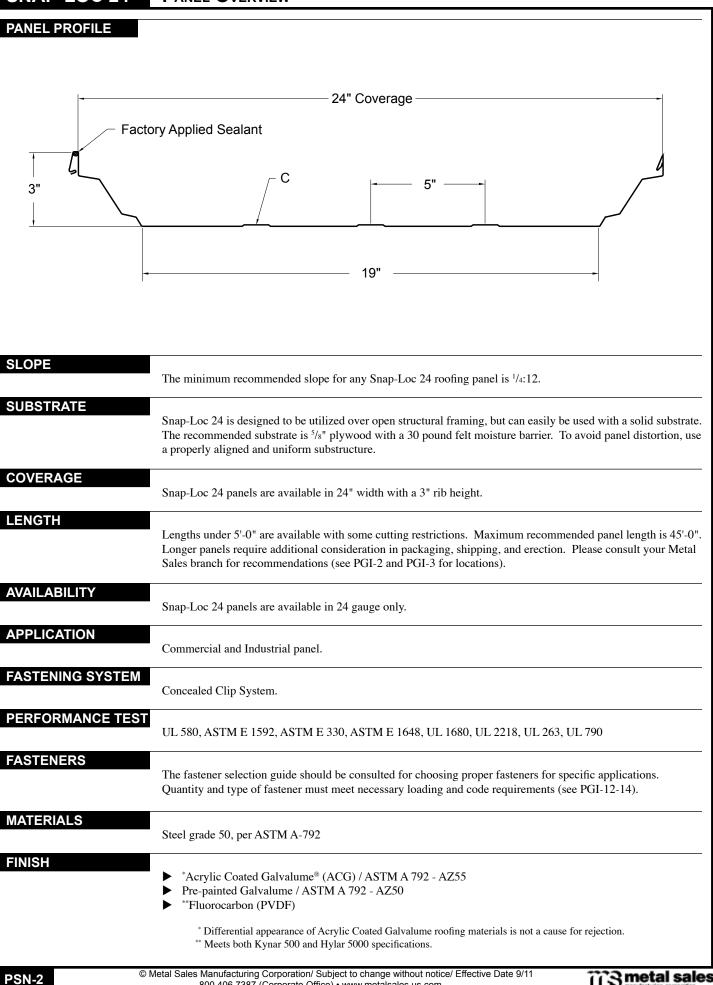
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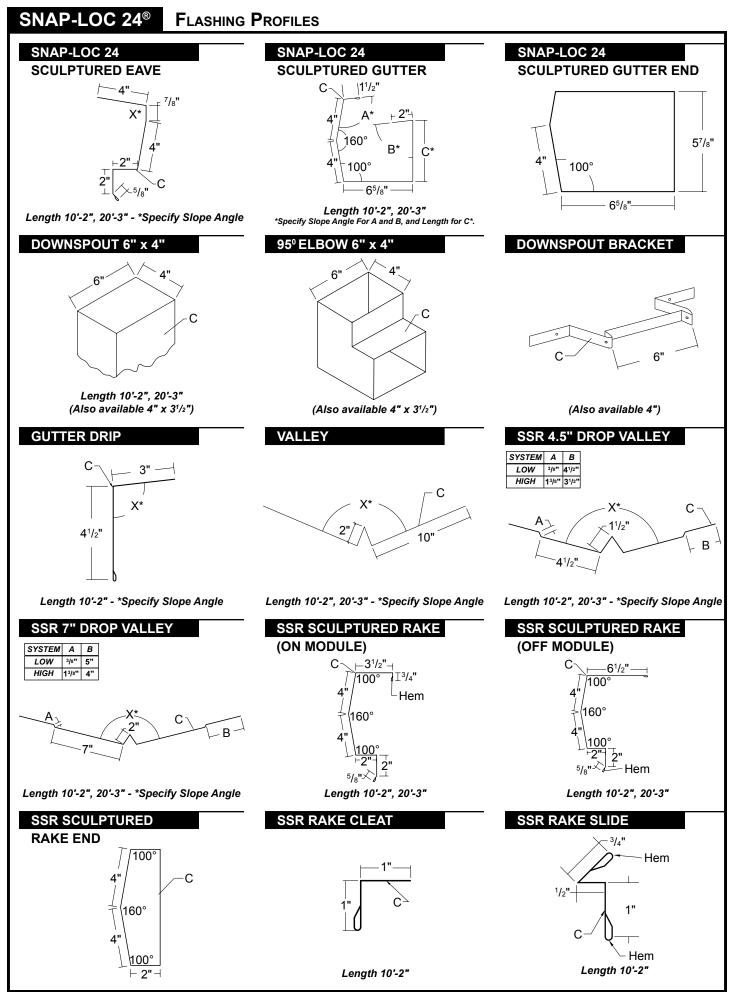
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SNAP-LOC 24[®] PANEL OVERVIEW

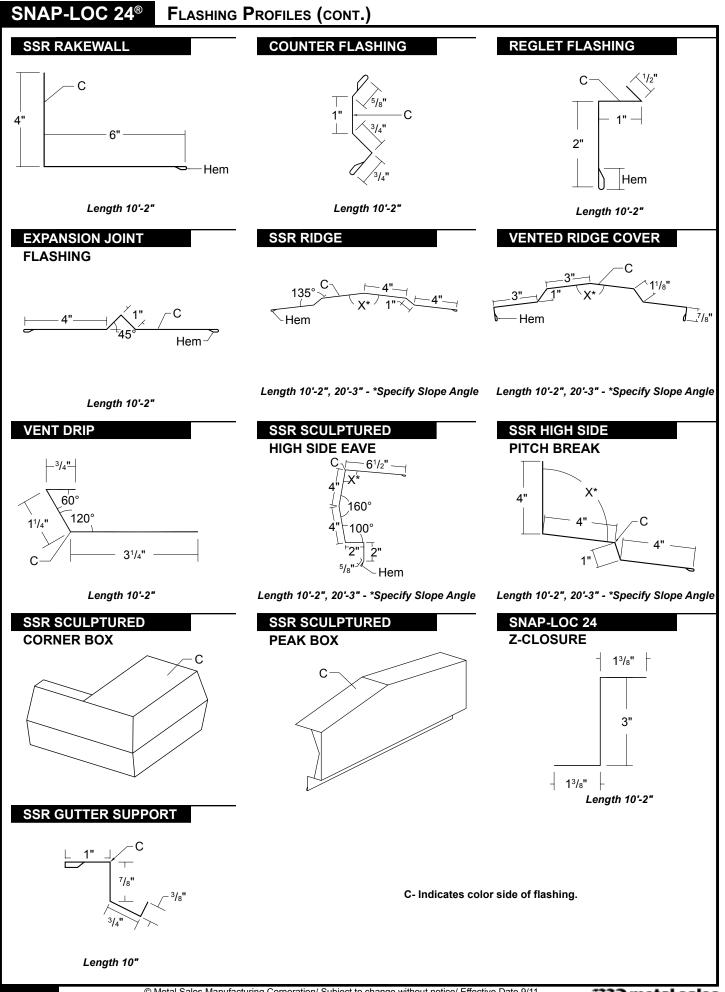


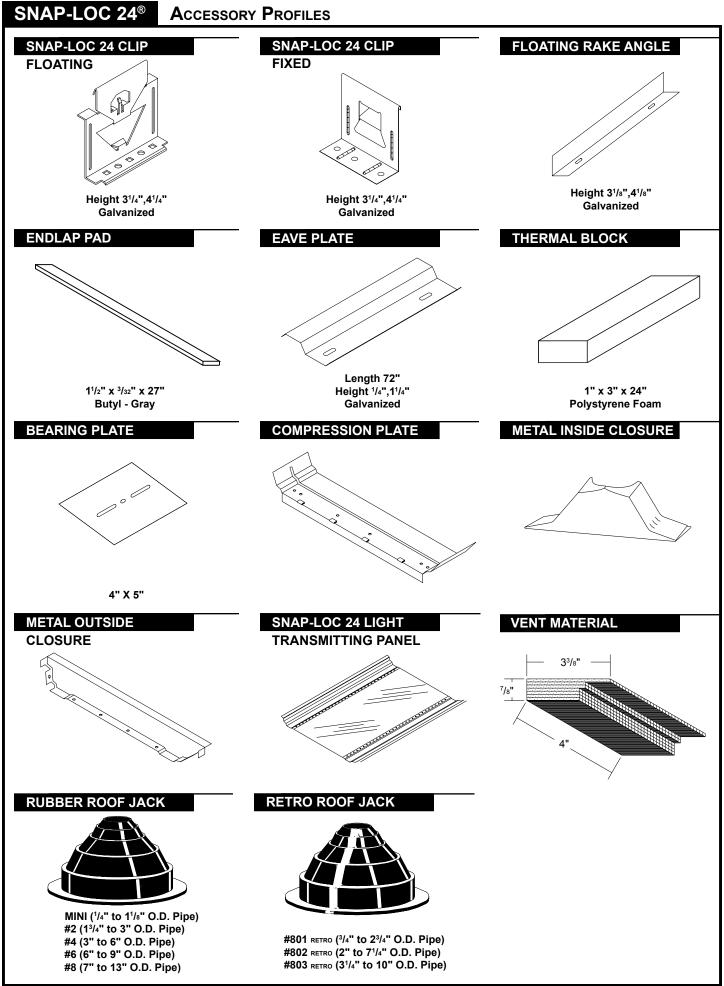
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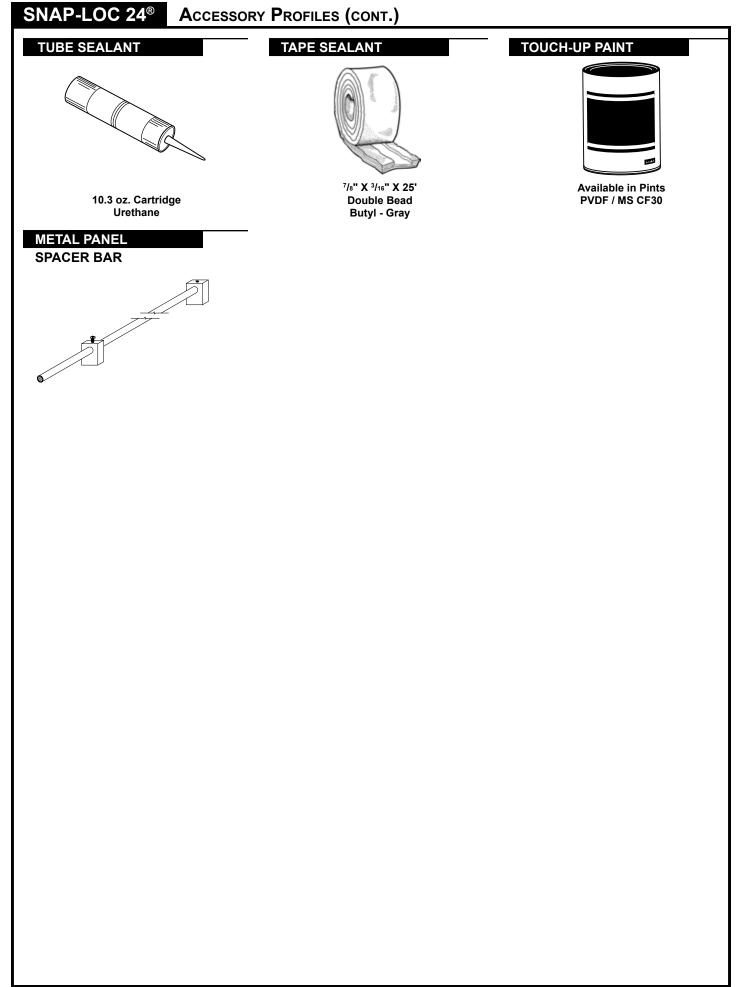


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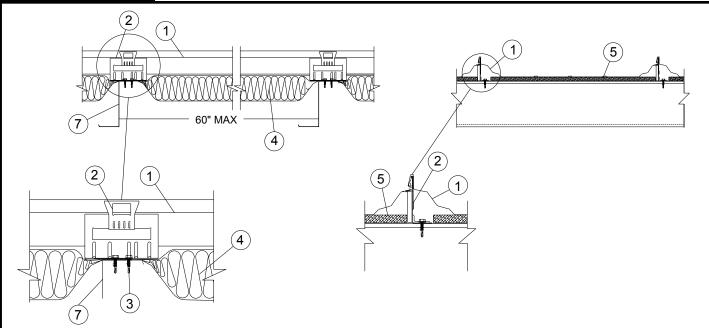




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SNAP-LOC 24[®] UL 580 Wind Uplift Information



SNAP-LOC 24

Construction No. 240 October 2, 2001 Uplift - Class 90 and 60 Fire Not Investigated 1. Metal Roof Deck Panels* For Class 60 No. 26 MSG min gauge coated steel - For Class 90 No. 24 MSG min gauge coated steel. Panels may have optional minor ribs in flat area between side ribs. Panels continuous over 2 or more spans. End laps to occur adjacent to purlins with panels overlapped 2 in. Panels may be snapped together at their side ribs or seamed with a special electric seaming tool. A bead of sealant may be used at panel end joints and side laps. METAL SALES MANUFACTURING CORPORATION - "Snap-Loc 24" Panel

2. Roof Deck Fasteners* (Panel Clips) - Fixed or sliding type. Base fabricated from 0.060 in. thick coated steel. Tab fabricated from 0.031 in. thick spring steel. Clips fabricated in two different heights and spaced 24 in. OC with clips located at panel sides for metal panels and with an additional clip located at the center span of the building unit fastened to the side lap support channel (Item No. 9).

ASC MACHINE TOOLS INC - "ASC Standing Seam Clip"

2A. Roof Deck Fasteners* (Panel Clips) - (not shown) Sliding type. Base fabricated from No. 17 MSG min coated steel. Width 4-1/4 in; height 2 in. min, 3.30 in. max. Tab fabricated from No. 28 MSG min coated steel. Width 3 in., height 1-15/16 in. BUILDING RESEARCH SYSTEMS INC - "Challenger 400 Series Clip "

3. Fasteners (Screws) - Fasteners, used to attach the panel clips to the purlins and to the side lap support channels (Item 9), to be No. 14 by 1-1/4 in. long self-drilling, self-tapping, hex-head, plated steel screws used without separate washers. A min of one screw per clip to be used. Fasteners, used at the end laps to be same type. Spacing to be in a 1-5-6-6-5-1/2 in. pattern with screws inserted into pre-drilled guide holes.

As an alternate fastener at the end lap, No. 17 by 1 in. self-drilling, self-tapping, hex-head plated steel screws with a separate 5/8 in. diameter steel washer and a neoprene sealing washer may be used.

4. Insulation (Optional) - Insulation to be a compressible blanket type, 6 in. maximum thickness before compression.

5. Thermal Spacer (Optional) - Spacer to be nominal 1 in. maximum thickness, 5-1/2 in. maximum width fabricated from beaded foamed plastic. Spacers located over purlins.

6. Panel End-Lap Detail Not shown - The panel end-lap may be one of the following options depending on the pitch of the roof: A. Fixed panel ends attached directly to purlins with or without a cinch strap.

B. Floating panel ends located adjacent to purlin supports with ends utilizing a back up plate and with an optional cinch strap.

In all options, the width of the end-lap is to be 2 in. Fasteners used in all options are also to be of the same type. The back up plate is to be 4 in. wide, fabricated from 0.046 in. thick coated steel to the approximate profile of the roof deck panels. (Yield strength to be 50,000 psi). Cinch strap to be 1-1/2 in. wide, fabricated from 0.091 in. thick aluminum. Cinch strap to be fabricated to the general profile of the panels with one end of the strap to include the profile of the side rib of the panel. Five 1/4 in. diameter pre-punched guide holes to be located in strap with four guide holes on one side of the rib profile and one guide hole located on the other side.

When panel end-lap is not continuous, (i.e., a single course) an additional back up plate and cinch strap is to be located in line with the end-lap components in adjacent panels and fastened in the same manner as at the end-lap panel course.

7. Purlins No. 16 MSG minimum thickness steel (50,000 psi minimum yield strength) or, minimum type H open web steel joists with the minimum thickness of the upper flange to be 0.060 in. thick.

 Building Unit* (Optional) - Used with 24 MSG thick panels only - Formed to the same profile as the metal roof deck panels (Item No. 1). Building unit continuous over two spans. To be used with Item 9.
WHIRLWIND STEEL BUILDINGS INC - "Super Seam - 24 Skylight Unit."

9. Building Unit Side Lap Support (Optional) - (Used with Item 8 only). Used at both sides of building unit and adjacent ribs. Channel shaped 2 in. wide with a 3/4 in. leg and a 1-1/16 in. rib. Fabricated from No. 16 MSG steel. Length to extend over two purlin spans.

Refer to General Information, Roof Deck Constructions for items not evaluated. *Bearing the UL Classification Mark



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LISTED

PSN-7

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 MFG CORP R9697

Mechanically attached metal roof panels - Type "Snap-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.

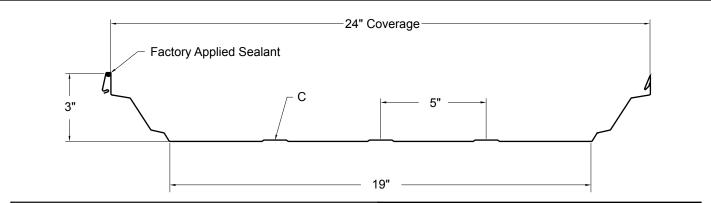
See the UL Fire Resistance Directory for explanation of each design number listed above.



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SNAP-LOC 24[®] Section Properties and General Information



SECTION PROPERTIES								AL	LOW		E UN or Mo					DS	PSF		
	Width	Yield	Weight	Top in Co	npression	Bottom in C	ompression	n Inward (Gravity / Deflection) Outward Uplift (Load Load				•	Stress)						
Ga.	(in.)	KSI	PSF	lxx	Sxx	Ixx	Sxx			LO	aa					LO	ad		
	. ,			In⁴/ft	ln³/ft	In⁴/ft	In³/ft	2.5'	3'	3.5'	4'	4.5'	5'	2.5'	3'	3.5'	4'	4.5'	5'
24	24"	50	1.14	0.3070	0.1271	0.1250	0.0819	196	150	118	96	79	66	26	25	23	21	20	18
22	24"	50	1.49	0.4045	0.1673	0.1740	0.1113	275	210	165	133	109	90	33	31	28	26	24	22
24*	24"	50	1.14	0.3070	0.1271	0.1250	0.0819	196	150	118	96	79	66	97	86	76	65	55	44

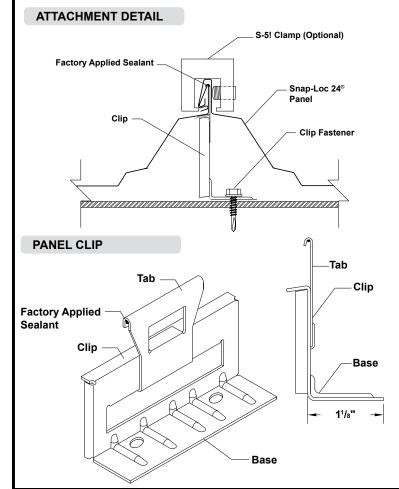
1. Theoretical section properties have been calculated per AISI 2001 "Specification for the Design of Cold-formed Steel Structural Members." Ixx and Sxx are effective section properties for deflection and bending.

Allowable load is calculated in accordance with AISI 2001 specifications considering bending, shear, combined bending and shear, deflection, and ASTM 1592 testing. Allowable load considers the worst case of 3 and 4 equal span conditions. Allowable load does not address web crippling or fasteners/support connection and panel weight is not considered.

3. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.

4. Allowable loads do not include a 1/3 stress increase in uplift.

* Loads determined using the S-5! Clamp.



GENERAL INFORMATION

Slope

The minimum recommended slope for the Snap-Loc 24 roof panel is 1/4:12.

Substructure

Snap-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

Snap-Loc 24 panels are available in a 3" seam height with a 24" 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

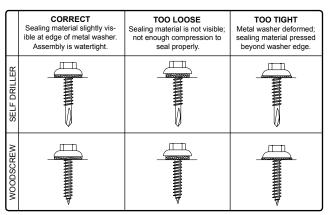
Finishes: Acrylic Coated Galvalume[®] and PVDF (Kynar 500). Gauges: 24 ga and 22 ga

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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.



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.

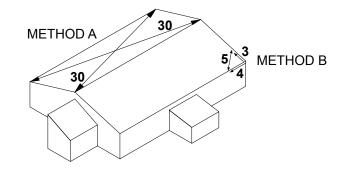
CONDITION OF SUBSTRUCTURE

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 Snap-Loc 24 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.







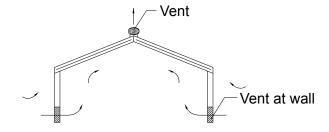
VENTILATION

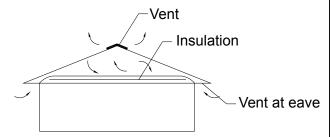
Proper design and installation of vapor barriers and ventilation systems are important to prevent condensation and the resulting problems of moisture damage and loss of insulation efficiency.

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)

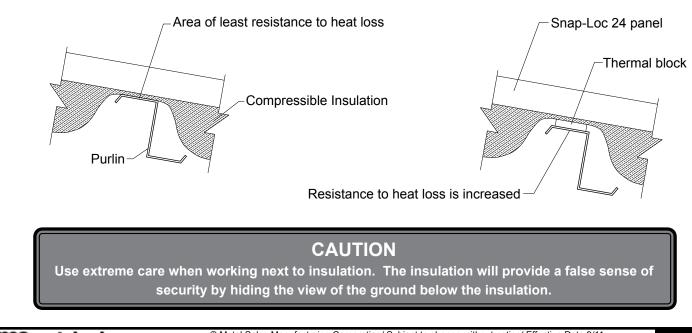
Building with attic or retrofitted

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.



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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 Snap-Loc 24 roof system. The clips for the Snap-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

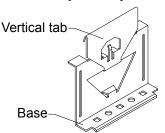
The following information should be used to determine system components needed once installation size has been selected. Refer to pages PGI-12-14 for appropriate fastener selections.

SYSTEM COMPONENTS										
SYSTEM	YSTEM CLIP EAVE PLATE RAKE ANGLE THERMAL BLOCK INSULATION									
LOW	3 ¹ /4" LOW	1/4" LOW	31/8" LOW	NONE REQUIRED	4" TO 6" BLANKET					
HIGH	4 ¹ /4" HIGH	1 ¹ /4" HIGH	41/8" LOW	1"	4" TO 6" BLANKET					

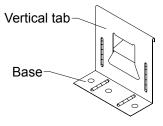
Snap-Loc 24 Panel Clips-

-The **floating clip** allows 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.

-The **fixed clip** does not allow the roof surface (panels) to move independently of the roof substructure allowing for thermal contraction. These clips are only recommended for buildings designed with panel lengths less than 30'-0".



SNAP-LOC 24 FLOATING PANEL CLIP



SNAP-LOC 24 FIXED 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-12-14 for other fasteners available).

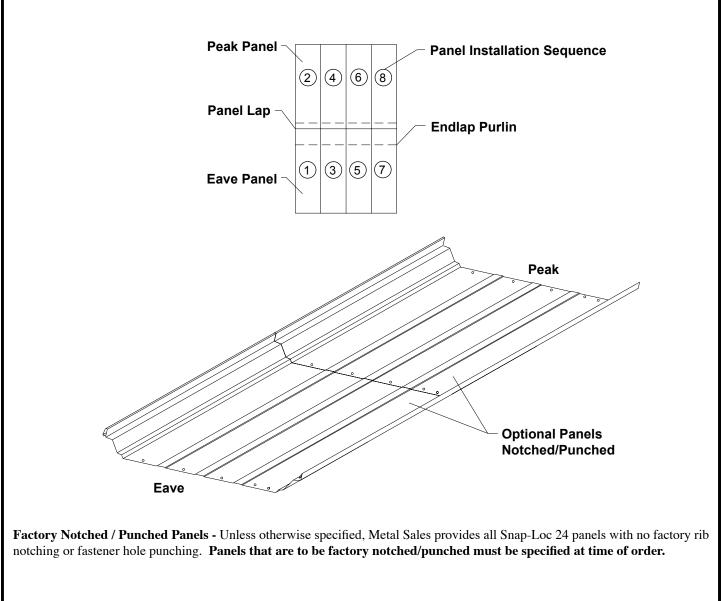
APPLICATION	CATION INSTALLATION **CLIP REQUIREMENTS SPACING TYPE OF FASTENER				
CLIPS OVER PURLINS (16 GA. MIN)	STANDARD	24 GAUGE	5'-0" O.C.	¹ /4-14 x 1 ¹ /2" SELF DRILLER NW	2 FASTENERS
CLIPS OVER ⁵/₃" WOOD DECK	STANDARD	24 GAUGE	BY DESIGN	#10 X 1" PANCAKE HEAD WOOD	2 FASTENERS
CLIP OVER RIGID INSULATION / METAL DECK	STANDARD	24 GAUGE	BY DESIGN	DECK SCREW #14*	2 FASTENERS

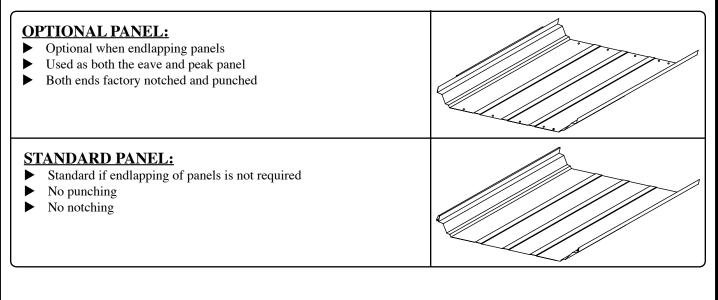
* Length of Deck Screw will vary depending on the total thickness of the rigid insulation and metal (see page PGI-12). ** Based on UL580, subject to project loading requirements, closer clip spacing may be required. Contact your local Metal Sales branch representative for more information (see pages PGI-2 and 3).



SNAP-LOC 24[®] Design / Installation Considerations (cont)

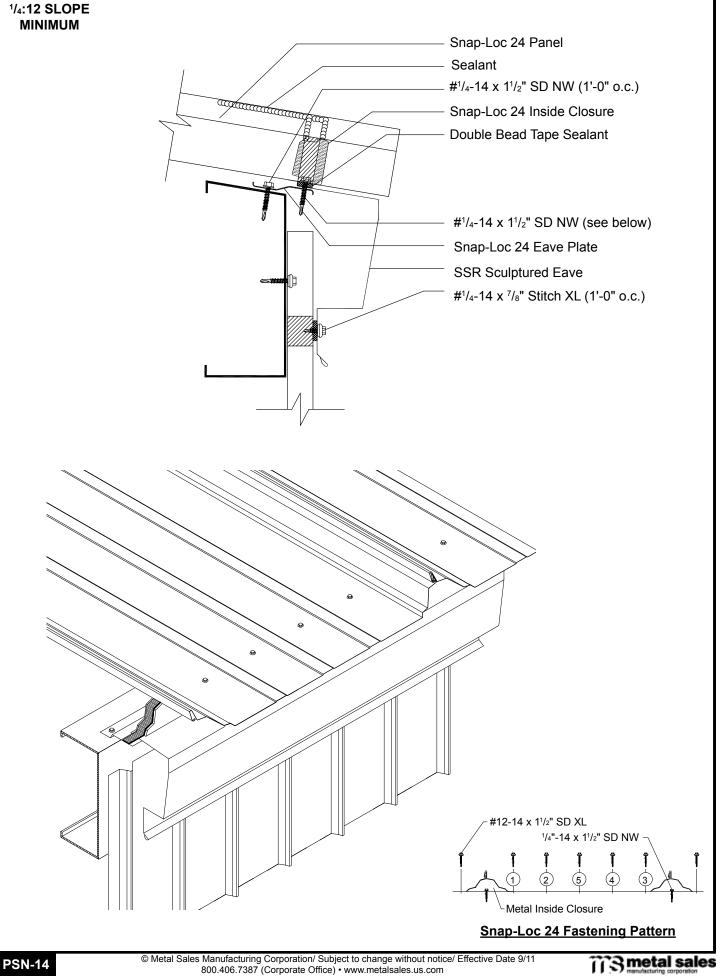
Panel Endlapping - If panel endlapping is required, endlaps are to be applied in one continuous line. This allows the cinch straps to complete full coverage of the Snap-Loc 24 Panel.



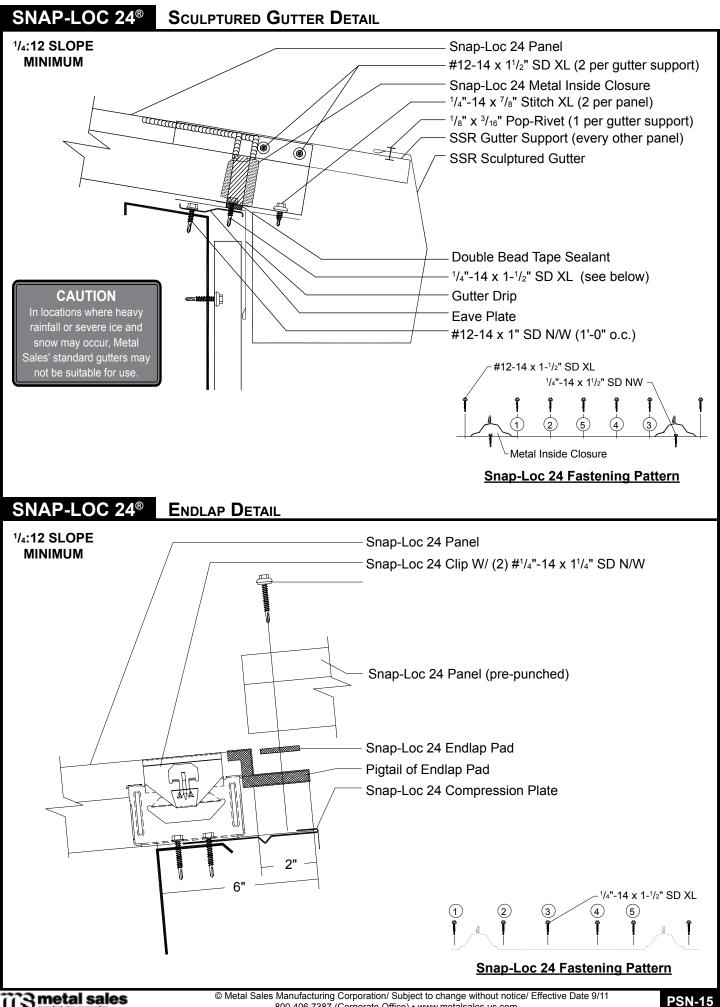


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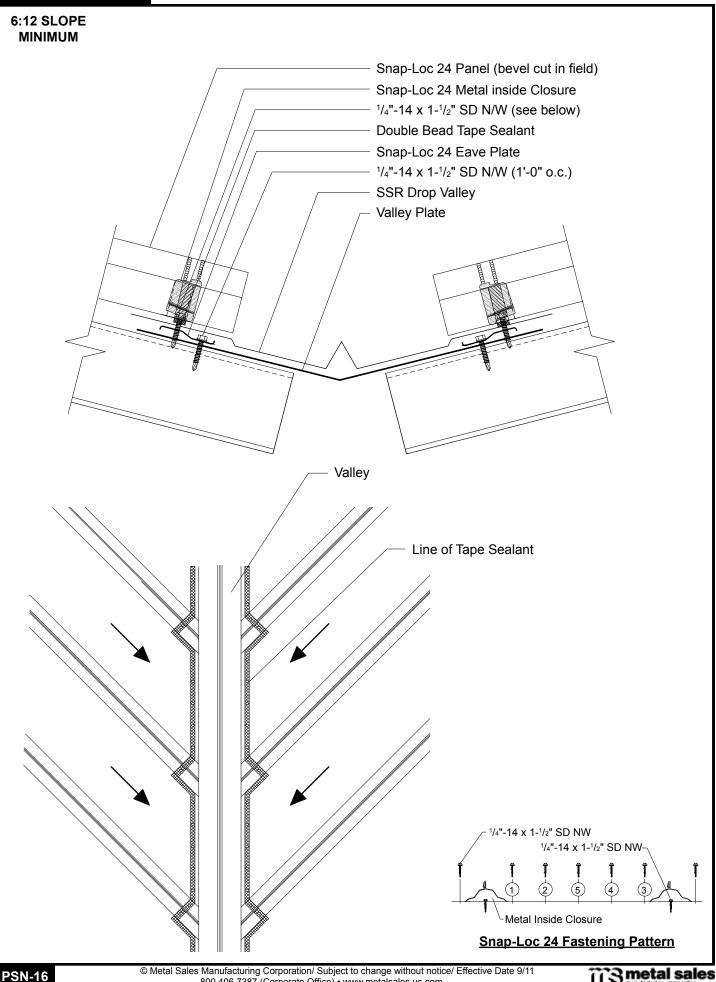
SNAP-LOC 24[®] SSR Sculptured Eave Detail



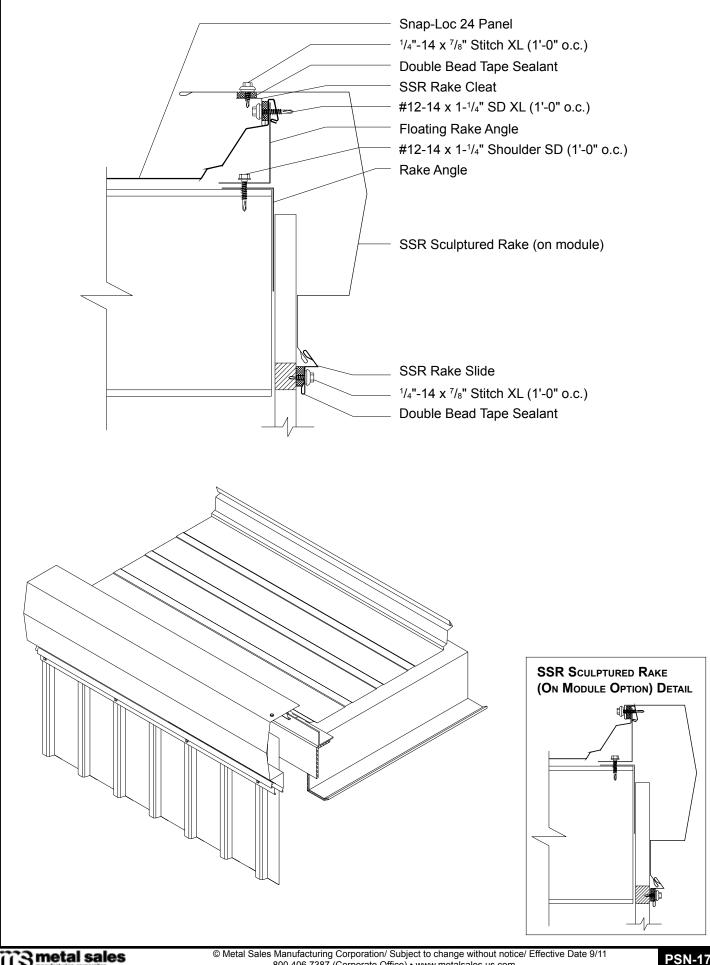




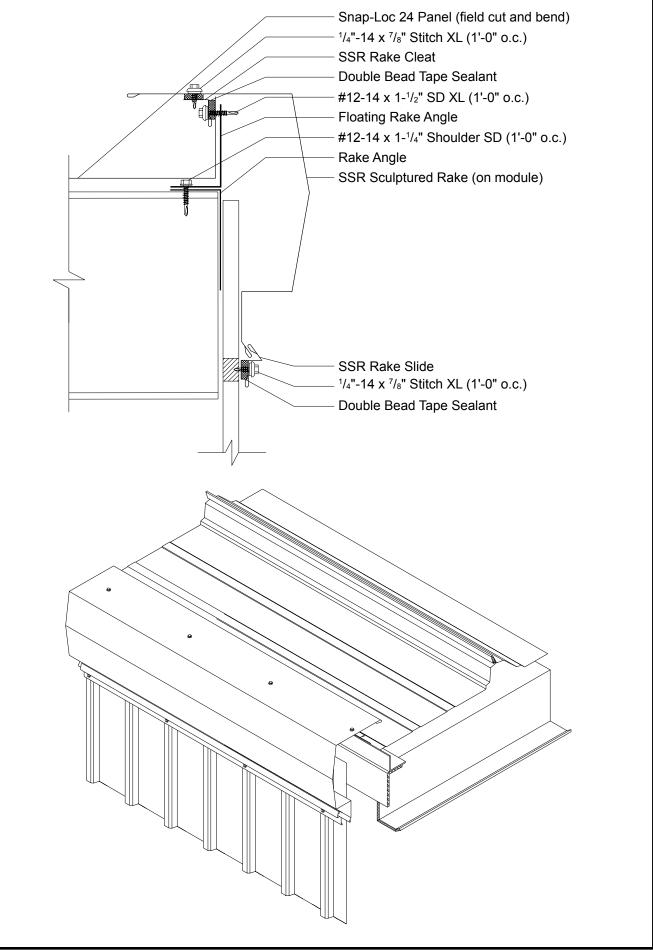
SNAP-LOC 24[®] DROP VALLEY DETAIL

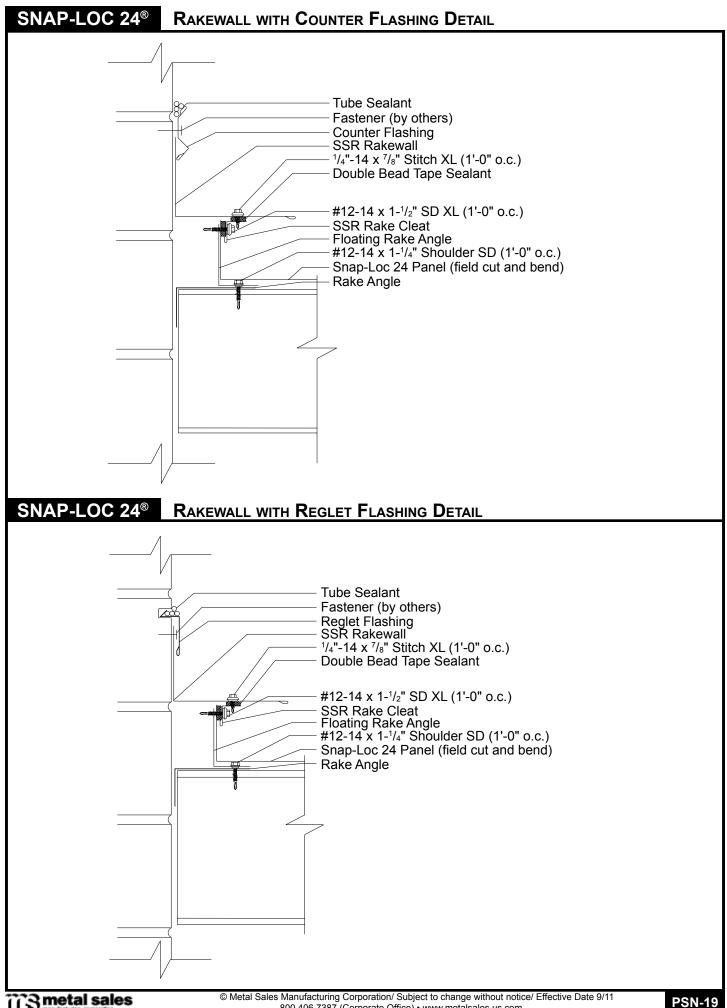


SNAP-LOC 24[®] SSR Sculptured Rake (On Module) Detail



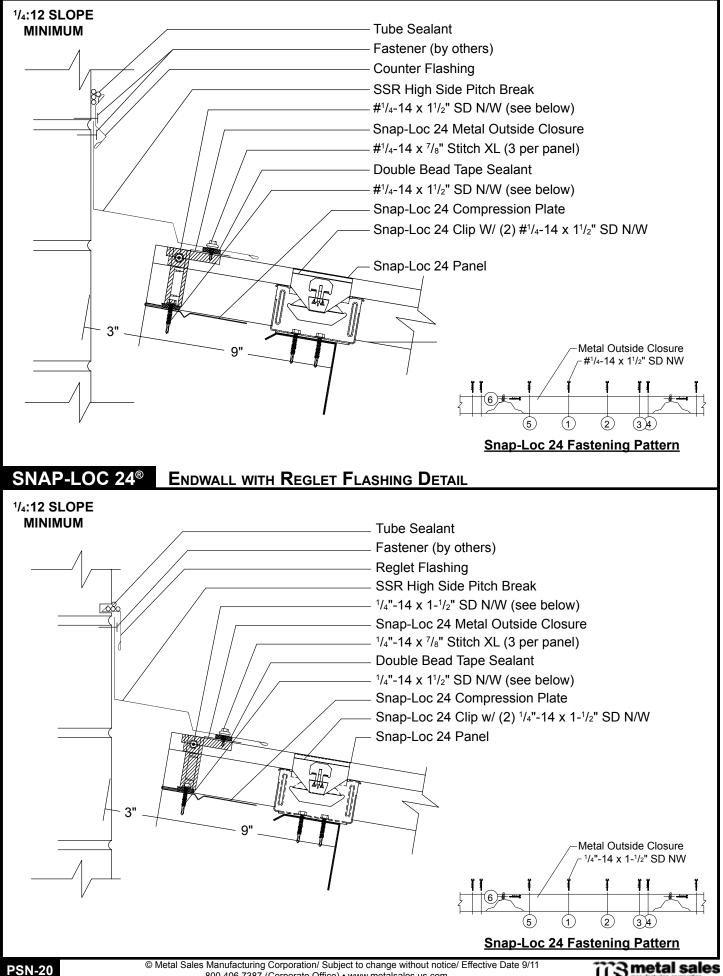
SNAP-LOC 24[®] SSR Sculptured Rake (OFF Module) Detail





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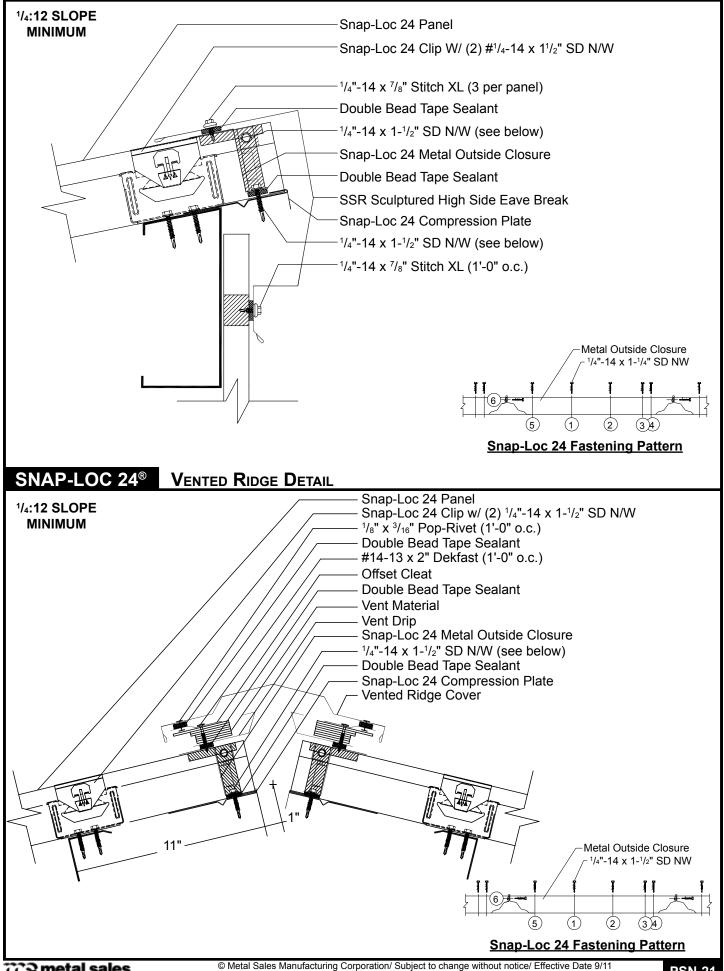
SNAP-LOC 24[®] ENDWALL WITH COUNTER FLASHING DETAIL



800.406.7387 (Corporate Office) • www.metalsales.us.com



SNAP-LOC 24[®] SSR Sculptured High Side Eave Detail



SNAP-LOC 24[®] SSR Ridge/Hip Detail

