

The application and detail drawings in this manual are strictly for illustration purposes and may not be applicable to all building designs or product installations. All projects should conform to applicable building codes for that particular area. It is recommended to follow all building regulations and standard industry practices.

Metal Sales Manufacturing Corporation is not responsible for the performance of the roof system if it is not installed in accordance with the suggested instructions referenced in this manual. If there is a conflict between this manual and the Metal Sales approved erection drawings, the approved erection drawings are to take precedence.

Prior to ordering and installing materials, all dimensions should be verified by field measurements.

Metal Sales reserves the right to modify, without notice, any details, recommendations or suggestions. Any questions you may have regarding proper installation of the Vertical Seam roofing system should be directed to your Metal Sales representative, see page 3.

Oil canning is not a cause for rejection. Oil canning can be described as the amount of waviness found in the flat areas of metal panels. Oil canning is an inherent characteristic of light gauge cold formed metal products, particularly those with broad flat areas. There are many factors which may contribute to oil canning that Metal Sales is not able to control. These factors include: misalignment of the support system, over-driving of fasteners used on the panels, stress (whether inherent in the panel or induced), thermal expansion and contraction of the panel, material handling, width, gauge, length, color of panels and installation. (Reference Metal Construction Association "Oil Canning Position Paper" - Appendix A).

Consult Metal Sales for any additional information not outlined in this manual.

This manual is designed to be utilized as a guide when installing Vertical Seam roofing system. It is the responsibility of the erector to ensure the safe installation of this product system.

## **SAFETY**

### **STUDY APPLICABLE OSHA AND OTHER SAFETY REQUIREMENTS BEFORE FOLLOWING THESE INSTRUCTIONS.**

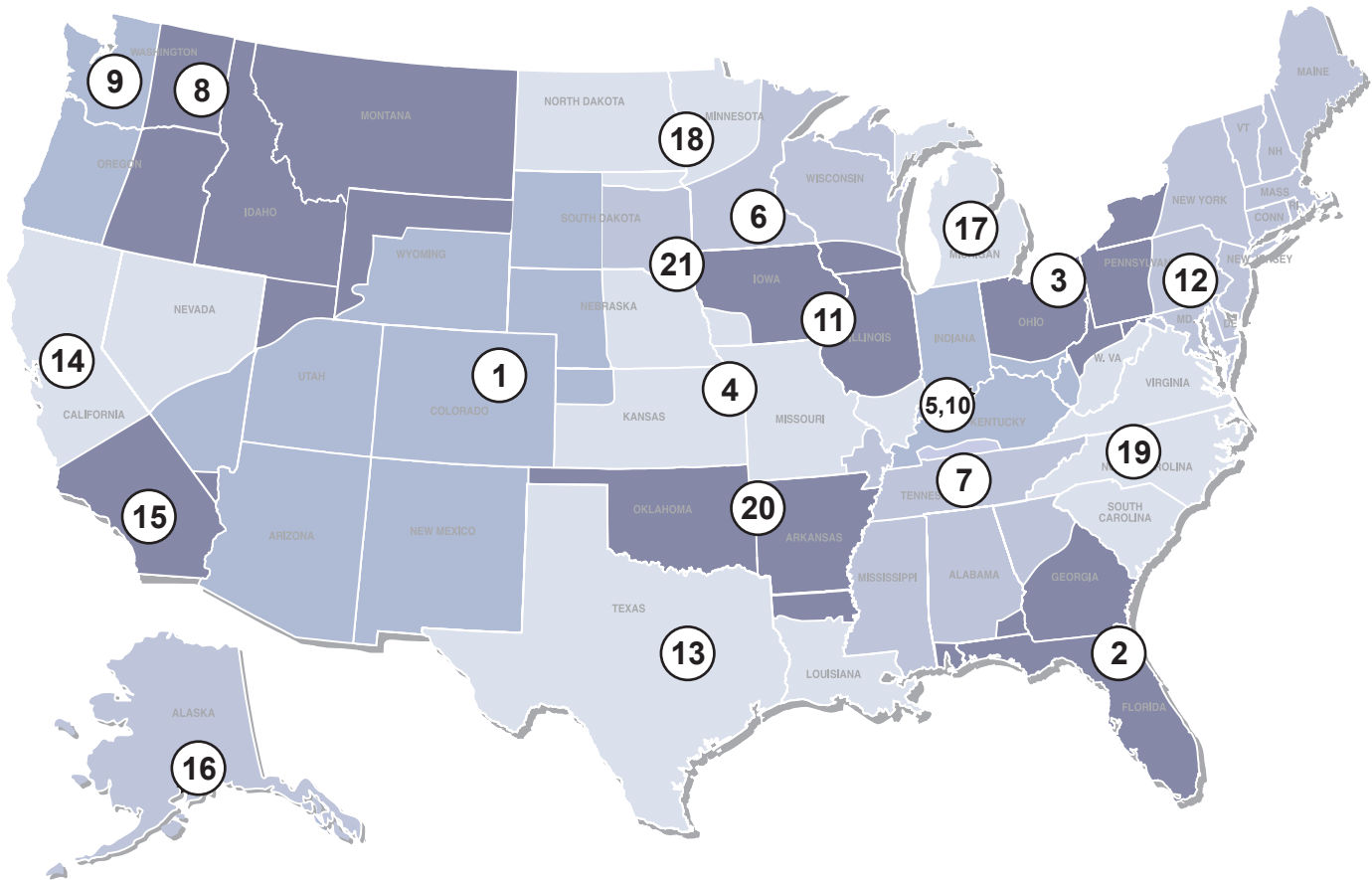
The installation of metal roof systems is a dangerous procedure and should be supervised by trained knowledgeable erectors. **USE EXTREME CARE WHILE INSTALLING ROOF PANELS.** It is not possible for Metal Sales to be aware of all the possible job site situations that could cause an unsafe condition to exist. The erector of the roof system is responsible for reading these instructions and determining the safest way to install the roof system.

These instructions are provided only as a guide to show a knowledgeable, trained erector the correct parts and placement one to another. If following any of the installation steps would endanger a worker, the erector should stop work and decide upon a corrective action.

Provide required safety railing, netting or safety lines for crew members working on the roof.

Do not use the roof panel as a walking platform. The roof panels will not withstand the weight of a person standing at the edge of the panel.

Do not stand on a roof panel until it has been securely attached.



## **ms Metal Sales™**

Metal Sales offers a complete line of metal roof, wall, and fascia panel systems for the commercial, architectural, industrial, residential, and agricultural markets. We offer over 75 profiles with a wide selection of widths, colors and gauges – new construction or retrofit. In addition, Metal Sales offers a 45 year paint warranty and a series of panels that are tested for wind, fire and uplift.

## METAL SALES LOCATIONS

### 1. DENVER

7990 East I-25 Frontage Road  
Longmont, CO 80504  
303.702.5440  
800.289.7663  
800.289.1617 /FAX

### 2. JACKSONVILLE

7110 Stuart Avenue  
Jacksonville, FL 32254  
904.783.3660  
800.394.4419  
904.783.9175 /FAX

### 3. JEFFERSON

352 East Erie Street  
Jefferson, OH 44047  
440.576.9070  
800.321.5833  
440.576.9242 /FAX  
800.233.5719 /FAX

### 4. INDEPENDENCE

1306 South Powell Road  
Independence, MO 64057  
816.796.0900  
800.747.0012  
816.796.0906 /FAX

### 5. SELLERSBURG

7800 State Road 60  
Sellersburg, IN 47172  
812.246-1866  
800.999.7777  
812.246.0893 /FAX  
800.477.9318 /FAX

### 6. ROGERS

22651 Industrial Boulevard  
Rogers, MN 55374  
763.428.8080  
800.328.9316  
763.428.8525 /FAX  
800.938.9119 /FAX

### 7. NASHVILLE

4314 Hurricane Creek Boulevard  
Antioch, TN 37013  
615.641.7100  
800.251.8508  
615.641.7118 /FAX

### 8. SPOKANE

2727 East Trent Avenue  
Spokane, WA 99202  
509.536.6000  
800.572.6565  
509.534.4427 /FAX

### 9. SEATTLE

20213 84th Avenue, South  
Kent, WA 98032  
253.872.5750  
800.431.3470 (outside WA)  
800.742.7900 (inside WA)  
253.872.2008 /FAX

### 10. NEW ALBANY

999 Park Place  
New Albany, IN 47150  
812.944.2733  
812.944.1418 /FAX

### 11. ROCK ISLAND

8111 West 29th Street  
Rock Island, IL 61201  
309.787.1200  
800.747.1206  
309.787.1833 /FAX

### 12. DEER LAKE

29 Pinedale Industrial Road  
Orwigsburg, PA 17961  
570.366.2020  
800.544.2577  
570.366.1648 /FAX  
800.544.2574 /FAX

### 13. TEMPLE

3838 North General Bruce Drive  
Temple, TX 76501  
254.791.6650  
800.543.4415  
254.791.6655 /FAX  
800.543.4473 /FAX

### 14. WOODLAND

1326 Paddock Place  
Woodland, CA 95776  
530.668.5690  
800.759.6019  
530.668.0901 /FAX

### 15. FONTANA

14213 Whittram Avenue  
Fontana, CA 92335  
909.829.8618  
800.782.7953  
909.829.9083 /FAX

### 16. ANCHORAGE

4637 Old Seward Highway  
Anchorage, AK 99503  
866.640.7663  
907.646.7663  
907.646.7664 /FAX

### 17. BAY CITY

5209 Mackinaw Road  
Bay City, MI 48706  
989.686.5879  
888.777.7640  
989.686.5870 /FAX  
888.777.0112 /FAX

### 18. DETROIT LAKES

1435 Egret Avenue  
Detroit Lakes, MN 56501  
218.847.2988  
888.594.1394  
218.847.4835 /FAX  
888.594.4835 /FAX

### 19. MOCKSVILLE

188 Quality Drive  
Mocksville, NC 27028  
336.751.6381 Phone  
800.228.6119 Toll Free  
336.751.6301 Fax  
800.228.7916 Toll Free Fax

### 20. FORT SMITH

7510 Ball Road  
Fort Smith, AR 72908  
479.646.1176  
877.452.3915  
479.646.5204 Fax

### 21. SIOUX FALLS

2700 West Third Street, Suite 4  
Sioux Falls, SD 57104  
605.335.2745  
888.902.8320

## TECHNICAL SUPPORT

### TECHNICAL SERVICES

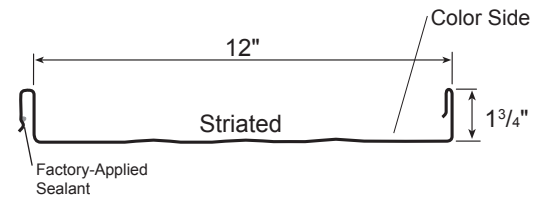
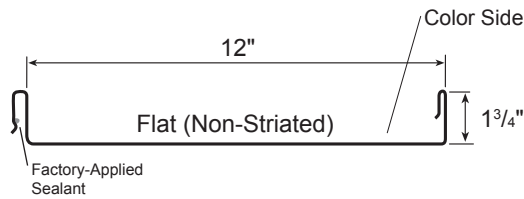
7800 State Road 60  
Sellersburg, IN 47172

502.855.4300  
800.406.7387  
502.855.4290 /FAX

	PAGE NO.
<b>General Information</b>	
Important Information .....	1
Metal Sales' Locations .....	2
Customer Service .....	3
<b>Panel Profile .....</b>	<b>5, 6</b>
<b>Flashing Profiles .....</b>	<b>7 - 11</b>
<b>Accessory Profiles .....</b>	<b>12, 13</b>
<b>Fasteners .....</b>	<b>14</b>
<b>UL 580 Uplift Information .....</b>	<b>15 - 17</b>
<b>Design Information .....</b>	<b>18</b>
<b>Handling Material .....</b>	<b>19, 20</b>
<b>Storage .....</b>	<b>21, 22</b>
<b>Foot Traffic .....</b>	<b>23</b>
<b>Field Cutting and Touch-up .....</b>	<b>24</b>
<b>Design / Installation Considerations .....</b>	<b>25 - 27</b>
<b>Installation Procedure Overview .....</b>	<b>28</b>
<b>Installation Over Decking</b>	
Panel Installation .....	29, 30
Eave with Offset.....	31
Extended Eave .....	32
Box Gutter .....	33
Valley .....	34
Rake (On Module) .....	35
Rake (Off Module) .....	36
Rake Parapet (On Module) .....	37
Rake Parapet (Off Module) .....	38
11" Ridge/Hip .....	39
Vented Ridge .....	40
Peak.....	41
Highside Parapet .....	42
Highside Parapet .....	43
<b>Installation Over Open Framing</b>	
Panel Installation .....	44, 45
Eave.....	46
Extended Eave .....	47
Box Gutter.....	48
Valley .....	49
Rake (On Module) .....	50
Rake (Off Module) .....	51
Rake Parapet (On Module).....	52
Rake Parapet (Off Module).....	53
SSR Ridge/Hip.....	54
Vented Ridge .....	55
Highside Parapet .....	56
Z-Closure Installation.....	57
Panel Hemming .....	58
Roof Penetration.....	59
Care and Maintenance .....	60
Notes .....	61-63

# VERTICAL SEAM PANEL PROFILES

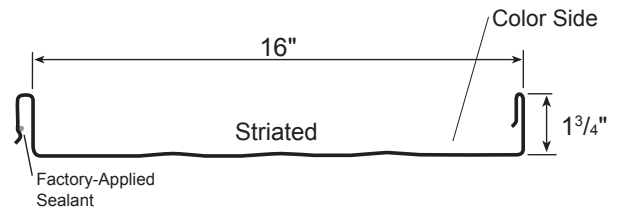
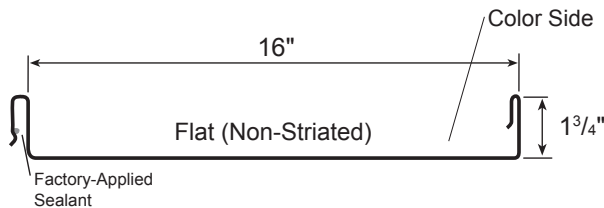
## 12" COVERAGE



FINISH	GAUGE	COVER	PRODUCT NO.	WT/SQ
ACG (Striated Only)	26	12"	2543941	117
MS Colorfast45® (Standard)* (Striated Only)	26	12"	25439__	117
PVDF (Standard)* (Striated Only)	26	12"	26439__	117
ACG (Flat)	24	12"	2743841	147
ACG (Striated)	24	12"	2743941	147
PVDF (Standard)* (Flat)	24	12"	28438__	147
PVDF (Standard)* (Striated)	24	12"	28439__	147
ACG (Flat)	22	12"	2943841	185
ACG (Striated)	22	12"	2943941	185
PVDF (Standard)* (Flat)	22	12"	30438__	185
PVDF (Standard)* (Striated)	22	12"	30439__	185

\_\_ Represents color code designation.\* See Metal Sales color guides for color selection.  
 \*\* Requires additional lead time.

## 16" COVERAGE

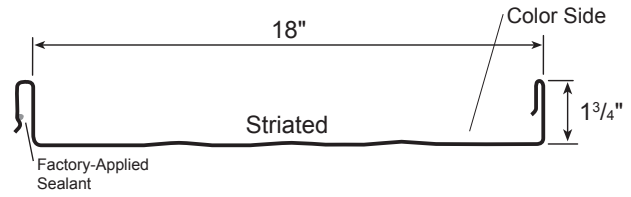
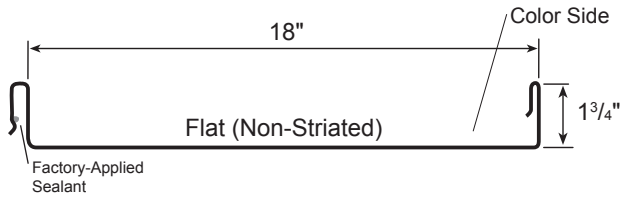


FINISH	GAUGE	COVER	PRODUCT NO.	WT/SQ
ACG (Striated Only)	26	16"	2545941	110
MS Colorfast45® (Standard)* (Striated Only)	26	16"	25459__	110
PVDF (Standard)* (Striated Only)	26	16"	26459__	110
ACG (Flat)	24	16"	2745641	135
ACG (Striated)	24	16"	2745941	135
PVDF (Standard)* (Flat)	24	16"	28456__	135
PVDF (Standard)* (Striated)	24	16"	28459__	135
ACG (Flat)	22	16"	2945041	170
ACG (Striated)	22	16"	2945941	170
PVDF (Standard)* (Flat)	22	16"	30450__	170
PVDF (Standard)* (Striated)	22	16"	30459__	170

\* See Metal Sales color guides for color selection.  
 \_\_ Represents color code designation.  
 \*\* Requires additional lead time.

# VERTICAL SEAM PANEL PROFILES

## 18" COVERAGE



FINISH	GAUGE	COVER	PRODUCT NO.	WT/SQ
ACG (Striated Only)	26	18"	2546241	101
MS Colorfast45® (Standard)* (Striated Only)	26	18"	25462__	101
PVDF (Standard)* (Striated Only)	26	18"	26462__	101
ACG (Flat)	24	18"	2746041	131
ACG (Striated)	24	18"	2746241	131
PVDF (Standard)* (Flat)	24	18"	28460__	131
PVDF (Standard)* (Striated)	24	18"	28462__	131
ACG (Flat)	22	18"	2946041	165
ACG (Striated)	22	18"	2946241	165
PVDF (Standard)* (Flat)	22	18"	30460__	165
PVDF (Standard)* (Striated)	22	18"	30462__	165

\* See Metal Sales color guides for color selection.

-- Represents color code designation.

\*\* Requires additional lead time.

### PANEL NOTES

#### PRICING

1. All square pricing is based on net coverage. (12", 100 LF = 1 square; 16", 75 LF = 1 square; 18", 66.67 LF = 1 square)
2. For panel lengths shorter than 5'-0" a cutting charge may apply.
3. All panels will be invoiced by the lineal foot in U.S. dollars.
4. All prices F.O.B. See pages 2 and 3 for locations.
5. Flat Sheet pricing available on request.

#### PACKAGING

1. Panel pricing DOES NOT include packaging charges. Packaging cost will vary depending upon quantity and length of panels.
2. Special packaging is available, please inquire.

#### AVAILABILITY

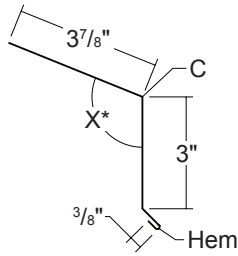
1. 26 and 24 gauge Acrylic-Coated Galvalume® (ACG) and 26 and 24 gauge stocked colors, approximately 10 working days.
2. 26, 24 and 22 gauge non-stock colors (minimum order required), please inquire.
3. All other gauges and colors, please inquire.

#### NOTES

1. For panel lengths over 45'-0", please inquire. See page 3.
2. All panels have factory-applied sealant.
3. Oil canning is not a cause for rejection. Thicker gauges, narrower widths, and striations help minimize oil canning.
4. Finishes:
  - a. MS Colorfast45®
  - b. PVDF (meets Kynar 500/Hylar 5000 Spec)
5. Factory Rib Notching available at Denver, Deer Lake, and Woodland branches only.

# VERTICAL SEAM FLASHING PROFILES

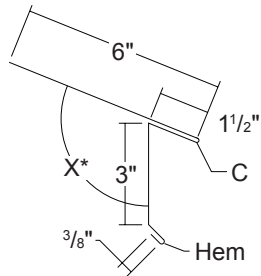
## EAVE



\* See chart on page 11.

GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5506541	5.2 lbs	10'-2"
26	MS Colorfast45®	55065__	5.2 lbs	10'-2"
26	PVDF	56065__	5.2 lbs	10'-2"
24	ACG	5706541	6.3 lbs	10'-2"
24	PVDF	58065__	6.3 lbs	10'-2"

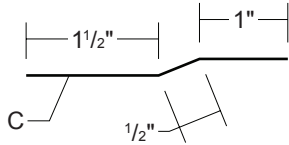
## EXTENDED EAVE



\* See chart on page 11.

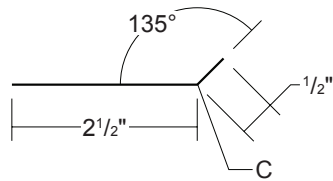
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5507341	7.6 lbs	10'-2"
26	MS Colorfast45®	55073__	7.6 lbs	10'-2"
26	PVDF	56073__	7.6 lbs	10'-2"
24	ACG	5707341	9.5 lbs	10'-2"
24	PVDF	58073__	9.5 lbs	10'-2"

## OFFSET CLEAT



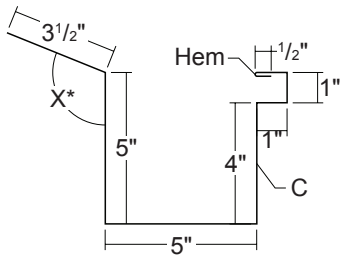
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	Supplied in Various Colors	5506499	2.0 lbs	10'-2"
24	Supplied in Various Colors	5806499	2.4 lbs	10'-2"

## CLEAT



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	Supplied in Various Colors	5506099	2.0 lbs	10'-2"
24	Supplied in Various Colors	5806099	2.4 lbs	10'-2"

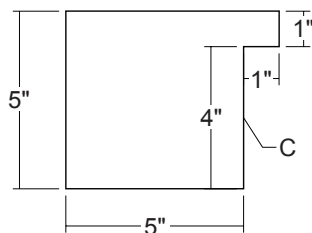
## BOX GUTTER



\* See chart on page 11.

GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5507741	14.0 lbs	10'-2"
26	ACG	5507941	28.0 lbs	20'-3"
26	MS Colorfast45®	55077__	14.0 lbs	10'-2"
26	MS Colorfast45®	55079__	28.0 lbs	20'-3"
26	PVDF	56077__	14.0 lbs	10'-2"
26	PVDF	56079__	28.0 lbs	20'-3"
24	ACG	5707741	16.9 lbs	10'-2"
24	ACG	5707941	33.9 lbs	20'-3"
24	PVDF	58077__	16.9 lbs	10'-2"
24	PVDF	58079__	33.9 lbs	20'-3"

## BOX GUTTER END

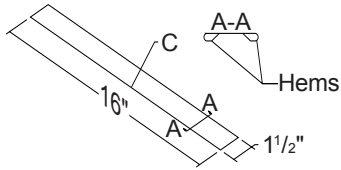


GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5508141 (Left)	0.2 lbs	
		5508241 (Right)		
26	MS Colorfast45®	55081__ (Left)	0.2 lbs	
		55082__ (Right)		
26	PVDF	56081__ (Left)	0.2 lbs	
		56082__ (Right)		
24	ACG	5708141 (Left)	0.2 lbs	
		5708241 (Right)		
24	PVDF	58081__ (Left)	0.2 lbs	
		58082__ (Right)		

# VERTICAL SEAM

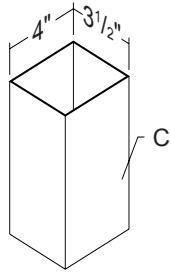
## FLASHING PROFILES

### UNIVERSAL GUTTER/ DOWNSPOUT STRAP



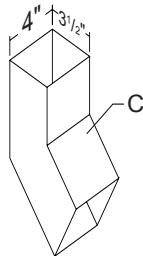
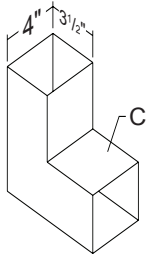
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5509241	0.3 lbs	1'-4"
26	MS Colorfast45®	55092__	0.3 lbs	1'-4"
26	PVDF	56092__	0.3 lbs	1'-4"
24	ACG	5709241	0.4 lbs	1'-4"
24	PVDF	58092__	0.4 lbs	1'-4"

### 3 1/2" x 4" DOWNSPOUT



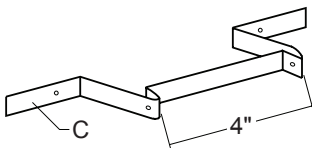
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5509441	10.4 lbs	10'-2"
26	ACG	5509741	20.8 lbs	20'-3"
26	MS Colorfast45®	55094__	10.4 lbs	10'-2"
26	MS Colorfast45®	55097__	20.8 lbs	20'-3"
26	PVDF	56094__	10.4 lbs	10'-2"
26	PVDF	56097__	20.8 lbs	20'-3"
24	ACG	5709441	12.9 lbs	10'-2"
24	ACG	5709741	25.8 lbs	20'-3"
24	PVDF	58094__	12.9 lbs	10'-2"
24	PVDF	58097__	25.8 lbs	20'-3"

### DOWNSPOUT ELBOWS



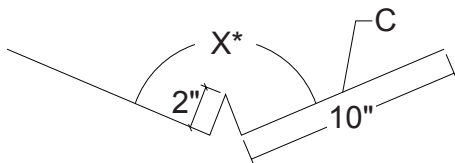
GAUGE	FINISH	PRODUCT NO.	WT
95 DEGREE			
24	ACG	5710241	2.30 lbs
24	PVDF	58102__	2.30 lbs
45 DEGREE			
24	ACG	5710641	2.30 lbs
24	PVDF	58106__	2.30 lbs

### 4" DOWNSPOUT BRACKET



GAUGE	FINISH	PRODUCT NO.	WT
26	ACG	5511041	0.1 lbs
26	MS Colorfast45®	55110__	0.1 lbs
26	PVDF	56110__	0.1 lbs
24	ACG	5711041	0.1 lbs
24	PVDF	58110__	0.1 lbs

### VALLEY

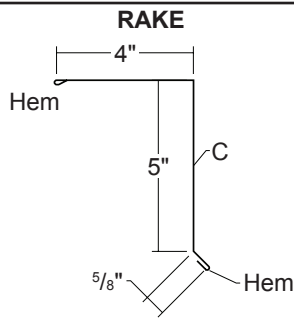


GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5301841	13.9 lbs	10'-2"
26	ACG	5502041	27.8 lbs	20'-3"
26	MS Colorfast45®	53018__	13.9 lbs	10'-2"
26	MS Colorfast45®	55020__	27.8 lbs	20'-3"
26	PVDF	54018__	13.9 lbs	10'-2"
26	PVDF	56020__	27.8 lbs	20'-3"
24	ACG	5701841	16.8 lbs	10'-2"
24	ACG	5702041	33.7 lbs	20'-3"
24	PVDF	58018__	16.8 lbs	10'-2"
24	PVDF	58020__	33.7 lbs	20'-3"

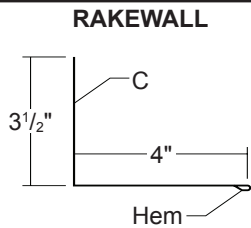
\* See chart on page 11.



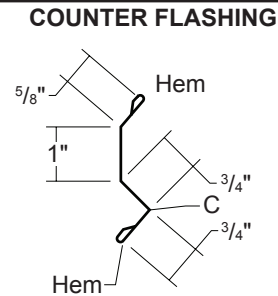
# VERTICAL SEAM FLASHING PROFILES



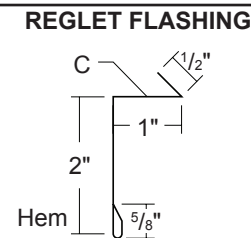
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5503441	8.2 lbs	10'-2"
26	ACG	5503641	16.5 lbs	20'-3"
26	MS Colorfast45®	55034__	8.2 lbs	10'-2"
26	MS Colorfast45®	55036__	16.5 lbs	20'-3"
26	PVDF	56034__	8.2 lbs	10'-2"
26	PVDF	56036__	16.5 lbs	20'-3"
24	ACG	5703441	9.9 lbs	10'-2"
24	ACG	5703641	19.9 lbs	20'-3"
24	PVDF	58034__	9.9 lbs	10'-2"
24	PVDF	58036__	19.9 lbs	20'-3"



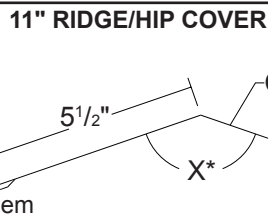
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5505641	6.9 lbs	10'-2"
26	MS Colorfast45®	55056__	6.9 lbs	10'-2"
26	PVDF	56056__	6.9 lbs	10'-2"
24	ACG	5705641	8.3 lbs	10'-2"
24	PVDF	58056__	8.3 lbs	10'-2"



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5505241	2.7 lbs	10'-2"
26	MS Colorfast45®	55052__	2.7 lbs	10'-2"
24	ACG	5705241	3.3 lbs	10'-2"
24	PVDF	58052__	3.3 lbs	10'-2"

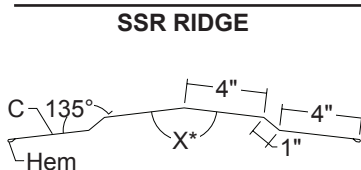


GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5505441	2.6 lbs	10'-2"
26	MS Colorfast45®	55054__	2.6 lbs	10'-2"
26	PVDF	56054__	2.6 lbs	10'-2"
24	ACG	5705441	3.2 lbs	10'-2"
24	PVDF	58054__	3.2 lbs	10'-2"



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5500241	7.9 lbs	10'-2"
26	ACG	5500441	15.8 lbs	20'-3"
26	MS Colorfast45®	55002__	7.9 lbs	10'-2"
26	MS Colorfast45®	55004__	15.8 lbs	20'-3"
26	PVDF	56002__	7.9 lbs	10'-2"
26	PVDF	56004__	15.8 lbs	20'-3"
24	ACG	5700241	9.5 lbs	10'-2"
24	ACG	5700441	19.0 lbs	20'-3"
24	PVDF	58002__	9.5 lbs	10'-2"
24	PVDF	58004__	19.0 lbs	20'-3"

\* See chart on page 11.

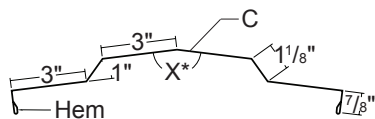


GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
24	ACG	5775141	15.2 lbs	10'-2"
24	ACG	5775341	30.4 lbs	20'-3"
24	PVDF	58751__	15.2 lbs	10'-2"
24	PVDF	58753__	30.4 lbs	20'-3"

\* See chart on page 11.

# VERTICAL SEAM FLASHING PROFILES

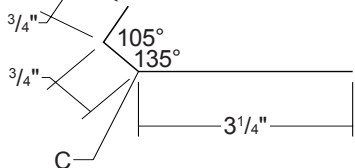
## VENTED RIDGE COVER



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5501341	11.0 lbs	10'-2"
26	ACG	5501541	22.1 lbs	20'-3"
26	MS Colorfast45®	55013__	11.0 lbs	10'-2"
26	MS Colorfast45®	55015__	22.1 lbs	20'-3"
26	PVDF	56013__	11.0 lbs	10'-2"
26	PVDF	56015__	22.1 lbs	20'-3"
24	ACG	5701341	13.4 lbs	10'-2"
24	ACG	5701541	26.8 lbs	20'-3"
24	PVDF	58013__	13.4 lbs	10'-2"
24	PVDF	58015__	26.8 lbs	20'-3"

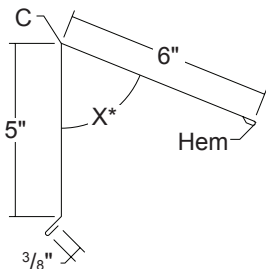
\* See chart on page 11.

## VENT DRIP



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5501741	2.7 lbs	10'-2"
26	MS Colorfast45®	55017__	2.7 lbs	10'-2"
26	PVDF	56017__	2.7 lbs	10'-2"
24	ACG	5701741	3.3 lbs	10'-2"
24	PVDF	58017__	3.3 lbs	10'-2"

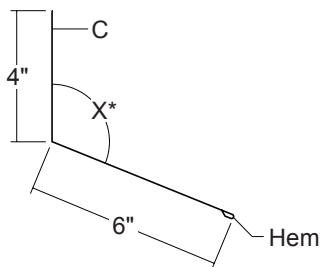
## PEAK



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5502241	8.2 lbs	10'-2"
26	ACG	5502441	16.5 lbs	20'-3"
26	MS Colorfast45®	55022__	8.2 lbs	10'-2"
26	MS Colorfast45®	55024__	16.5 lbs	20'-3"
26	PVDF	56022__	8.2 lbs	10'-2"
26	PVDF	56024__	16.5 lbs	20'-3"
24	ACG	5702241	9.9 lbs	10'-2"
24	ACG	5702441	19.9 lbs	20'-3"
24	PVDF	58022__	9.9 lbs	10'-2"
24	PVDF	58024__	19.9 lbs	20'-3"

\* See chart on page 11.

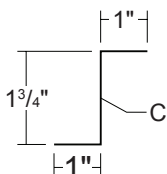
## PITCH BREAK



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5504841	6.9 lbs	10'-2"
26	MS Colorfast45®	55048__	6.9 lbs	10'-2"
26	PVDF	56048__	6.9 lbs	10'-2"
24	ACG	5704841	8.3 lbs	10'-2"
24	PVDF	58048__	8.3 lbs	10'-2"

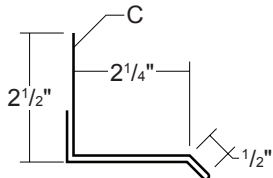
\* See chart on page 11.

## Z-CLOSURE



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5570241	3.0 lbs	10'-2"
26	MS Colorfast45®	55702__	3.0 lbs	10'-2"
26	PVDF	56702__	3.0 lbs	10'-2"
24	ACG	5770241	4.1 lbs	10'-2"
24	PVDF	58702__	4.1 lbs	10'-2"

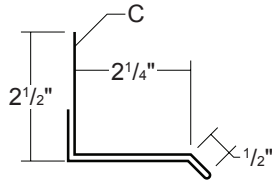
## 2.25" SILL/HEAD



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5511641	5.9 lbs	10'-2"
26	MS Colorfast45®	55116__	5.9 lbs	10'-2"
26	PVDF	56116__	5.9 lbs	10'-2"
24	ACG	5711641	7.1 lbs	10'-2"
24	PVDF	58116__	7.1 lbs	10'-2"

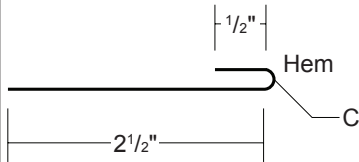
# VERTICAL SEAM FLASHING PROFILES

## 2.25" SILL/HEAD



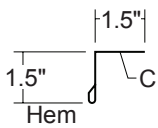
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5511641	5.9 lbs	10'-2"
26	MS Colorfast45®	55116__	5.9 lbs	10'-2"
26	PVDF	56116__	5.9 lbs	10'-2"
24	ACG	5711641	7.1 lbs	10'-2"
24	PVDF	58116__	7.1 lbs	10'-2"

## STARTER



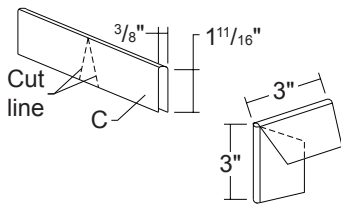
GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5506241	2.0 lbs	10'-2"
26	MS Colorfast45®	55062__	2.0 lbs	10'-2"
26	PVDF	56062__	2.0 lbs	10'-2"
24	ACG	5706241	2.4 lbs	10'-2"
24	PVDF	58062__	2.4 lbs	10'-2"

## SSR RAKE CLEAT



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
24	ACG	5776741	2.0 lbs	10'-2"
24	PVDF	58767__	2.0 lbs	10'-2"

## RIB COVER



GAUGE	FINISH	PRODUCT NO.	WT	LENGTH
26	ACG	5570541	0.6 lbs	6"
26	MS Colorfast45®	55705__	0.6 lbs	6"
26	PVDF	56705__	0.6 lbs	6"
24	ACG	5770541	0.6 lbs	6"
24	PVDF	58705__	0.6 lbs	6"


\*Field cutting and bending required.


## Flashing Angle Chart

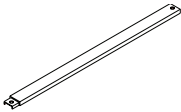
PROFILE/FLASHING	1/4":12	1/2":12	1:12	2:12	3:12	4:12	5:12	6:12	7:12	8:12
RIDGE										
SSR RIDGE	178°	175°	170°	161°	152°	143°	*135°	*127°	*119°	*113°
VENTED RIDGE COVER										
HIP	178°	177°	173°	167°	160°	154°	148°	143°	138°	134°
VALLEY										
EAVE										
EXTENDED EAVE	91°	92°	95°	99°	104°	108°	113°	117°	120°	124°
SCULPTURED EAVE										
SSR SCULPTURED	99°	98°	95°	91°	86°	82°	*77°	*73°	*70°	*66°
HIGH SIDE EAVE										
PEAK	89°	88°	85°	81°	76°	72°	67°	63°	60°	56°
PITCH BREAK										
HIGH SIDE PITCH BREAK	91°	92°	95°	99°	104°	108°	113°	117°	120°	124°
GUTTER DRIP										
BOX GUTTER	91°	92°	95°	99°	104°	108°	113°	117°	120°	124°

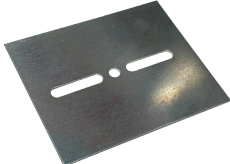
# VERTICAL SEAM

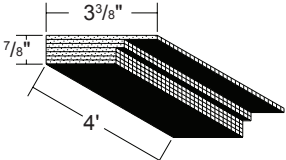
## ACCESSORIES


VERTICAL SEAM CLIP	SIZE	FINISH	PRODUCT NO.	CARTON QUANTITY	WT/CARTON
		1 <sup>3</sup> / <sub>4</sub> "	Galvanized	4923565	250 pieces
	1 <sup>3</sup> / <sub>4</sub> "	Stainless	4923570	250 pieces	37.5 lbs

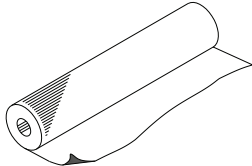
FLOATING RAKE ANGLE	SIZE	FINISH	TYPE	PRODUCT NO.	WT
		1 <sup>3</sup> / <sub>4</sub> "x16 Ga.	Galvanized	Utility 10'-0"	4923805

BACK-UP CHANNEL	SIZE	FINISH	LENGTH	PRODUCT NO.	WT
		3" x 3/8"x16 Ga.	Galvanized	48"	4923640
	3" x 3/8"x 16 Ga.	Galvanized	72"	4923645	4.00 lbs

BEARING PLATE	SIZE	FINISH	PRODUCT NO.	WT/100
		4" x 5" x 20 Ga.	Galvanized	4923886

VENT MATERIAL	SIZE	TYPE	PRODUCT NO.	CARTON QUANTITY	WT/CARTON
		3 <sup>3</sup> / <sub>8</sub> " x 7/8" x 4'	Black	6852406	24 pieces
<p>V-600 T by Cor-A-Vent For use on roof with a 3:12 or greater slope.</p>					

RUBBER ROOF JACK	TYPE	SIZE	BASE DIAM.	PRODUCT NO.	WT
		Rubber	#1 Flasher	1/4" - 2"	68501_ _ *
	Rubber	#2 Flasher	1 <sup>3</sup> / <sub>4</sub> " - 3 <sup>1</sup> / <sub>4</sub> "	68502_ _ *	3.0 lbs
	Rubber	#3 Flasher	1/4" - 5"	68503_ _ *	3.0 lbs
	Rubber	#4 Flasher	3" - 6 <sup>1</sup> / <sub>4</sub> "	68504_ _ *	3.0 lbs
	Rubber	#5 Flasher	4 <sup>1</sup> / <sub>4</sub> " - 7 <sup>1</sup> / <sub>2</sub> "	68505_ _ *	5.0 lbs
	Rubber	#6 Flasher	5" - 9"	68506_ _ *	9.0 lbs
	Rubber	#7 Flasher	6" - 11"	68507_ _ *	11.0 lbs
	Rubber	#8 Flasher	7" - 13"	68508_ _ *	13.0 lbs
	Rubber	#9 Flasher	10" - 19"	68509_ _ *	13.0 lbs

ms-HT UNDERLAYMENT	TYPE	SIZE	PRODUCT NO.	WT/ROLL
		Peel-and-Stick (2 Sq Roll)	36" x 66.67'	4121200

# VERTICAL SEAM ACCESSORIES

## TUBE SEALANT



SIZE	COLOR	PRODUCT NO.	QTY/BOX	WT/BOX
10.3 oz GEOCEL 4600	Urethane White	6402830	30 cartridges	19.3 lbs
10.3 oz GEOCEL 4600	Urethane Bronze	6402999	30 cartridges	19.3 lbs
10.3 oz GEOCEL 4600	Urethane Gray	6402829	30 cartridges	19.3 lbs
10.3 oz GEOCEL 4600	Acrylic Clear	6402800	30 cartridges	19.3 lbs

## DOUBLE BEAD TAPE SEALANT



SIZE	TYPE	PRODUCT NO.	QTY/BOX	WT/BOX
7/8" x 3/16" x 25'	Butyl	6403899	20 rolls	40.0 lbs

## TOUCH-UP PAINT



TYPE	SIZE	PRODUCT NO.	WT
MS CF45	Pint	66004__	1.6 lbs
PVDF	Pint	66010__	1.6 lbs
PVDF	2 oz. Bottle	66005__	0.1 lbs

\_\_ Represents color code designation.

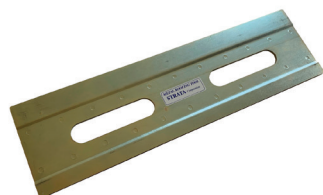
## HEMMING TOOL



Used for bending lower end of the metal panel to engage Offset Cleat or Extended Eave flashings for concealed-fastened applications.

TYPE	SIZE	PRODUCT NO.	WT/100
Zinc Plated	20"	6560102	4.0 lbs

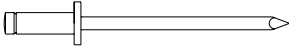
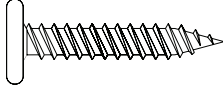
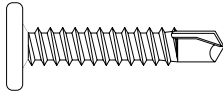
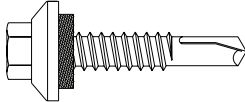
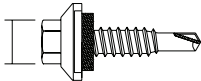
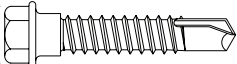
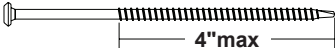
## DUAL-BAR HEMMING TOOL

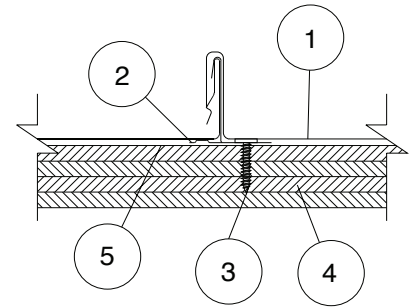
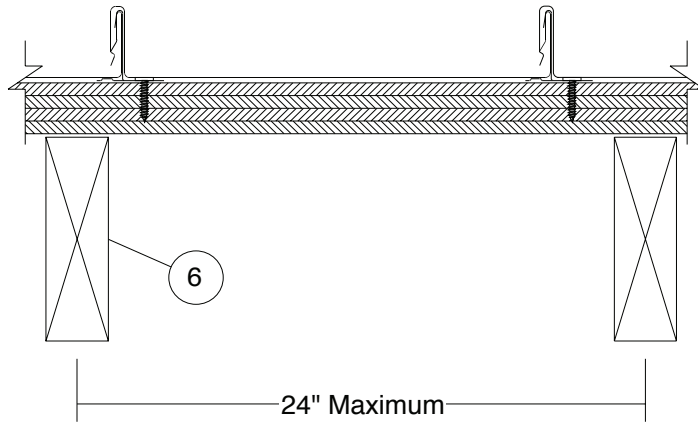


Used for bending lower end of the metal panel to engage Offset Cleat or Extended Eave flashings for concealed-fastened applications.

TYPE	SIZE	PRODUCT NO.	WT/100
Zinc Plated	20"	6531299	4.0 lbs

# VERTICAL SEAM FASTENERS

POP RIVET	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	1/8" x 3/16"	Stainless Steel	Unpainted	8240901	0.8 lbs
	1/8" x 3/16"	Stainless Steel	Painted	82409__	0.8 lbs
	1/8" x 3/8"	Stainless Steel	Unpainted	8240901	0.8 lbs
	1/8" x 3/8"	Stainless Steel	Painted	82409__	0.8 lbs
PANCAKE HEAD WOOD SCREW (PHWS)	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	#10-12 x 1"	Type A	Plated	8243100	1.9 lbs
	#10-12 x 1"	Type A	Stainless Steel	8243101	1.9 lbs
	#10-12 x 2"	Type A	Plated	8243100	2.2 lbs
PANCAKE HEAD DRILLER (PHD)	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	#10-16 x 1" (#2 Point)	Driller	Plated	8242100	1.9 lbs
SELF DRILLER XL (SD XL)	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	#12-14 x 1"	Driller	XL	8235200	5.7 lbs
	#12-14 x 1 1/4"	Driller	XL	8235300	6.0 lbs
	#12-14 x 1 1/2"	Driller	XL	8235400	6.5 lbs
	#12-14 x 2"	Driller	XL	8235500	7.0 lbs
	1/4"-14 x 1 1/4"	Driller	XL	8251200	7.2 lbs
	#12-14 x 1 1/4"	Driller	XL(Painted)	82353__	6.0 lbs
	#12-14 x 1 1/2"	Driller	XL(Painted)	82354__	6.5 lbs
	#12-14 x 2"	Driller	XL(Painted)	82355__	7.0 lbs
1/4"-14 x 1 1/4"	Driller	XL(Painted)	82512__	7.2 lbs	
STITCH SCREW XL	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	1/4"-14 x 7/8"	Stitch	XL	8236800	5.2 lbs
	1/4"-14 x 7/8"	Stitch	XL (Painted)	82368__	5.2 lbs
SHOULDER SELF DRILLER (SHOULDER SD)	SIZE	TYPE	FINISH	PRODUCT NO.	WT/250
	1/4"-14 x 1 1/4"	Driller	Plated	8281300	3.7 lbs
DECK SCREW	SIZE	TYPE	FINISH	PRODUCT NO.	WT/1000
	#14-13 x 2"	Driller	Black	8242506	28.0 lbs
	#14-13 x 4"	Driller	Black	8241706	84.0 lbs
	#14-13 x 5"	Driller	Black	8241806	102.0 lbs
	#14-13 x 6"	Driller	Black	8241906	120.0 lbs
	#14-13 x 8"	Driller	Black	8242206	140.0 lbs



## VERTICAL SEAM

**Construction No. 436**  
 February 27, 2001  
 Uplift - Class 90  
 Fire Not Investigated

**1. Metal Roof Deck Panels\*** No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over two or more spans. Endlap for panels to be overlapped 6 in. A bead of sealant may be used at panel ends and side joints.

METAL SALES MFG CORP - "Vertical Seam"

**2. Roof Deck Fasteners\*** - (Panel Clips) One piece assembly, 3-1/2 in. wide by 1-7/8 in high. Clip spacing to be 48 in. OC.

METAL SALES MFG CORP - "Vertical Seam Clip"

**3. Fasteners** - (Screws) Screws used to attach the panel clips to Substructure (Item 4) to be No. 10 by 1 in long Pancake head wood screws with a No. 2 Phillips head or 10x1 in., 1/4 in. Hex Head Woodgrip. Two screws per clip. Screws used to attach Substructure (Item 4) to wood trusses or joists (Item 6) to be No. 8 by 2 in. Bugle head screws. As an optional fastener, 2-1/2 in. long 8d common deformed shank nails may be used. Fasteners used at endlaps to be 14x1 in. Type AB or 10x1 in. woodgrip.

When light gauge structural steel joists are used, screws to be No. 12 by 1-5/8 in. long with a Phillips head. Spacing of screws to be 6 in. OC at plywood or OSB ends and 12 in. OC at interior joists.

**4. Substructure** (Plywood or OSB) Plywood decking or oriented strand board (OSB) to be a nom 5/8 in. thick, exposure sheathing span C-D, 40/20 plywood. (All butt joints to be sealed against leakage by using tape and/or caulking). In lieu of plywood, 1 in. tongue and groove decking may be used.

**5. Moisture Barrier** - (Optional) Any suitable membrane to protect Substructure (Item 4).

**6. Joists** Joists, spaced at 2 ft, 0 in. OC max (when tongue and groove decking is used, joist spacing may be 30 in. OC max), may be one of the following:

A. Nom 2 by 6 in. wood joists, No. 2 or better.

B. Nom 2 by 4 in wood when used on a top chord of a wood truss, No. 2 or better.

C. Light gauge structural steel framing with the member against the plywood to be a min No. 22 MSG coated steel.

Refer to General Information, Roof Deck Constructions, for Items Not Evaluated.

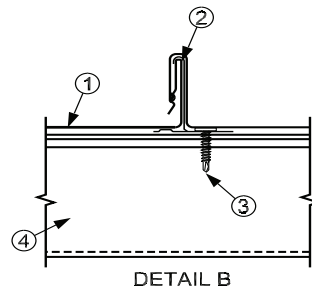
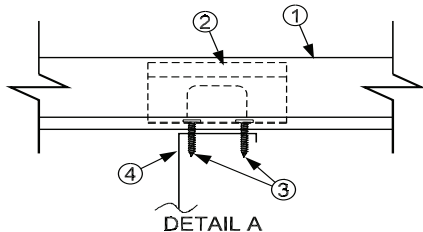
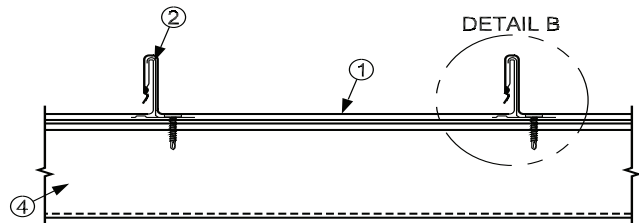
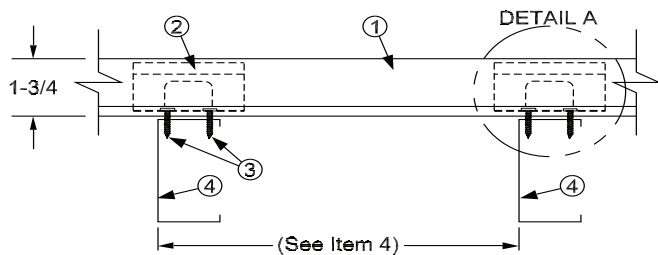
\*Bearing the UL Classification Mark



Underwriters Laboratories Inc.®

LISTED

# VERTICAL SEAM UL 580 UPLIFT INFORMATION



## VERTICAL SEAM

### Construction No. 446

December 12, 2003

Uplift - Class 90

Fire Not Investigated

**1. Metal Roof Deck Panels\*** - No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over 2 or more spans. No endlaps. A bead of sealant may be used at the panel ends and side joints.

**2. Roof Deck Fasteners\* - (Panel Clips)** - One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. Clip spacing to be 48 in. OC.

**3. Panel Fasteners - (Screws)** - Screws used to attach panel clips (Item 2) to purlins to be No. 10 by 1 in. long No. 3 self-drilling point, No. 2 Phillips Pancake head. Two screws per clip.

**4. Purlins** - No. 16 MSG min thickness steel (min yield 50 ksi) spaced 48 in. OC.

**5. Insulation - (Optional)(not shown)** - 3 in. thick vinyl faced blanket insulation. To be installed between metal panels (Item 1) and purlins (Item 4).

**5A. Insulation - (Optional)(not shown)** - 1/4 in. thick closed/microcellular polyethylene insulation with foil facing designated "Low-E Insulation™." To be installed between metal panels (Item 1) and purlins (Item 4).

### 6. Batten Clips and Cap\*

**A. Batten Clips\*** - Slipped over ribs formed by roof deck panels. One piece assembly formed to engage ribs of panels (Item 1) and Batten Cap (Item B) spaced 48 in. OC.

**B. Batten Cap\*** - Slipped over batten clip (Item A), formed to snap over and engage Batten clip.

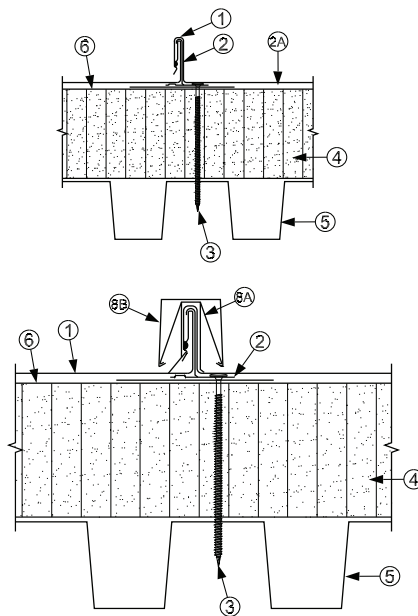
Refer to General Information, Roof Deck Constructions, for Items Not Evaluated.



Underwriters Laboratories Inc.®

LISTED





## VERTICAL SEAM

**Construction No. 448**  
 December 12, 2003  
 Uplift - Class 90  
 Fire Not Investigated

- 1. Metal Roof Deck Panels\*** - No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over three or more spans. Endlaps for panels to be overlapped 6 in. and to include back-up plate (Item 2B). A bead of sealant may be used at the panel ends and side joints.
- 2. Roof Deck Fasteners\* - (Panel Clips)** - One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. Clip spacing to be 48 in. OC.
- 2A. Bearing Plate - (Optional)** - To be used in lieu of plywood or OSB (Item 4A) with rigid insulation (Item 4). Bearing plates to be 16 MSG min coated steel. Located under each clip (Item 2) for support.
- 2B. Endlap Back-Up Plate - (not shown)** - No. 16 MSG min coated steel, width of back-up plate to correspond to width of panel. Two 1 in. wide by 3/4 in. long tabs are used for sliding over end panels.
- 3. Panel Fasteners - (Screws)** - Screws used to attach panel clips and bearing plates (Items 2 and 2A) through rigid insulation and into metal deck (Item 5). Screws to be No. 14 Truss head with No. 3 Phillips drive. Length to be a min of 1/2 in. longer than thickness of rigid insulation and metal deck. Two screws per clip. Fasteners used at endlaps to be one of the following: 14x1 in. Type AB self-tapper; 14x1-1/4 in. Hex washer head self-driller; 14x1 in. Type AB Phillips stainless steel self-tapper.
- 4. Rigid Insulation - (Optional)** - Foamed plastic, max thickness 4 in. Density to be a min of 2 PCF.
- 4A. Plywood or OSB - (Optional)(not shown)** - Min APA rated plywood, exposure sheathing span C-D 40/20, nom 1/2 in. thick, or Oriented Strand Board (OSB), nom 7/16 in. thick. 4x8 ft. Sheets to be installed on top of rigid insulation (Item 4) in lieu of bearing plates (Item 2A).
- 4B. Gypsum Board - (Optional)** - Any 5/8 in. thick gypsum wallboard supplied in sheets 2x4 ft to 4x12 ft. Applied perpendicular to steel roof deck direction with adhesive. End joints to occur over crests of steel roof deck and be staggered 2 ft. in adjacent rows. The total cumulative thickness of the rigid board (Item 4) and the gypsum may not exceed 4 in.
- 5. Metal Deck** - No.22 MSG min thickness coated steel. Min yield strength 33 KSI. Min depth 1-1/2 in. Max pitch 6 in.
- 6. Vapor Barrier - (Optional)** - Installed on top of metal deck (Item 5) or on top of gypsum wallboard (Item 4B) if used. Min 6 mil plastic sheet.
- 6A. Bearing Plate - (Optional)(not shown)** - Used to protect plywood or OSB (Item 4A). Installed under panels (Item 1).
- 7. Supports - (not shown)** - Used to support metal deck, spaced per deck manufacturer's specifications.
- 8. Batten Clips and Cap\*** -
  - A. Batten Clips\*** - Slipped over ribs formed by roof deck panels. One piece assembly formed to engage ribs of panels (Item 1) and Batten Cap (Item B) spaced 48 in. OC.
  - B. Batten Cap\*** - Slipped over batten clip (Item A), formed to snap over and engage batten clip.

Refer to General Information, Roof Deck Constructions, for Items Not Evaluated.

\*Bearing the UL Classification Mark



Underwriters Laboratories Inc.®  
 LISTED

### TESTING AND APPROVALS

- ▶ UL 2218 Impact Resistance - Class 4
- ▶ UL 790 Fire Resistance Rating - Class A, per building code
- ▶ UL 263 Fire Resistance Rating - per assembly
- ▶ ASTM E 283 Air Leakage - 0.035 cfm/ft<sup>2</sup> at 1.57 psf
- ▶ ASTM E 331 Water Penetration - none at 12 psf
- ▶ ASTM E 1680 Air Leakage - 0.0036 cfm/ft<sup>2</sup> at 6.24 psf
- ▶ ASTM E 1646 Water Penetration - none at 6.24 psf
- ▶ ASTM E 1592 Structural Performance
- ▶ UL 580 Uplift Resistance - Class 90 Constructions: #436, #446 and #448
- ▶ Texas Windstorm - Evaluation RC-412
- ▶ 2020 FBC Approvals - FL11560.8, FL11560.9, FL11560.10, FL11560.11, FL11560.12, FL40264.7 and FL40264.8
- ▶ Miami-Dade County, Florida - NOA 18-1227.01, expires 3/8/2024
- ▶ ICC Evaluation Report - ESR-2385

### FASTENING INFORMATION

#### ▶ Clips

1. Clip spacing is based upon the design loads, the spanning capacity of the panels, the fasteners and the support members.
2. Clips are 0.050" thick. G90 is standard, 304 stainless is optional. 2 fastener holes is standard, 3 holes is optional.
3. Clips can accommodate practically unlimited thermal movement.

#### ▶ Fasteners

1. Overdriven fasteners will cause panel distortions.
2. Fasteners to wood and steel should extend 1/2" or more past the inside face of the support material.

#### Clip Fasteners and Concealed End Fasteners:

##### Attaching to Wood:

#10-12 Pancake Head Wood Screw

##### Attaching to Steel:

<18 ga: 1/4"-14 Deck Screw

>=18 ga, <=12 ga: #10-16 Pancake Head Driller

##### Attaching to Concrete:

3/16" or 1/4" TapCon, Phillips Flat Head

#### Exposed End Fasteners:

##### Attaching to Wood:

#10-14 XL Wood Screw

##### Attaching to Steel:

#12-14 XL Driller

#### Trim Fasteners:

1/4"-14 x 7/8" XL Stitch Screw

1/8" x 3/16" Pop Rivet

### SECTION PROPERTIES

Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression	
				Ixx in <sup>4</sup> /ft	Sxx in <sup>3</sup> /ft	Ixx in <sup>4</sup> /ft	Sxx in <sup>3</sup> /ft
26	12	50	1.06	0.0783	0.05320	0.0370	0.0405
26	16	50	0.97	0.0617	0.0403	0.0278	0.0304
26	18	50	0.94	0.0560	0.0359	0.0247	0.0270
24	12	50	1.38	0.1120	0.0777	0.0525	0.0554
24	16	50	1.26	0.0885	0.0590	0.0398	0.0416
24	18	50	1.22	0.0807	0.0527	0.0353	0.0369
22	12	50	1.81	0.1534	0.1072	0.0763	0.0768
22	16	50	1.66	0.1230	0.0823	0.0578	0.0577
22	18	50	1.60	0.1113	0.0737	0.0513	0.0513

### ALLOWABLE UNIFORM LOADS, psf For various clip spacings

Ga	Width in	Yield ksi	Weight psf	Ixx in <sup>4</sup> /ft	Sxx in <sup>3</sup> /ft	Ixx in <sup>4</sup> /ft	Sxx in <sup>3</sup> /ft	Inward Load						Outward Load					
								2.5'	3'	3.5'	4'	4.5'	5'	2.5'	3'	3.5'	4'	4.5'	5'
								26	12	50	1.06	0.0783	0.05320	0.0370	0.0405	148	104	76	59
26	16	50	0.97	0.0617	0.0403	0.0278	0.0304	111	78	57	44	-	-	55	49	42	36	-	-
26	18	50	0.94	0.0560	0.0359	0.0247	0.0270	-	-	-	-	-	-	-	-	-	-	-	-
24	12	50	1.38	0.1120	0.0777	0.0525	0.0554	204	142	105	80	64	52	44	43	42	41	40	39
24	16	50	1.26	0.0885	0.0590	0.0398	0.0416	153	107	79	60	48	39	42	38	34	30	27	24
24	18	50	1.22	0.0807	0.0527	0.0353	0.0369	136	95	70	54	42	34	33	30	27	24	20	19
22	12	50	1.81	0.1534	0.1072	0.0763	0.0768	283	197	145	111	88	71	69	67	65	62	60	58
22	16	50	1.66	0.1230	0.0823	0.0578	0.0577	212	148	109	84	66	54	54	51	48	45	36	35
22	18	50	1.60	0.1113	0.0737	0.0513	0.0513	189	132	97	74	59	48	31	30	29	29	28	27

1. Theoretical section properties have been calculated per AISI 2016 'North American Specification for the Design of Cold-Formed Steel Structural Members'. Ixx and Sxx are effective section properties for deflection and bending.
  2. Allowable loads are calculated in accordance with AISI 2016 specifications considering bending, shear, combined bending & shear, deflection and ASTM E 1592 uplift testing for 24 ga and 22 ga and UL 580 uplift testing for 26 ga. Allowable loads do not address web crippling, fasteners or support material. Allowable loads consider the three or more equal spans condition. 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 for wind.
- Indicates that no testing is available for the application.

# VERTICAL SEAM HANDLING MATERIAL

## RECEIVING MATERIAL

It is the responsibility of the installer to unload material from the delivery truck. The installer shall be responsible for providing suitable equipment for unloading of material from the delivery truck.

After receiving material, check the condition of the material, and review the shipment against the shipping list to ensure all materials are accounted for. If damages or shortages are discovered, it should be noted on the Bill of Lading at the time of delivery. A claim should be made against the carrier as soon as possible. **Metal Sales is not responsible for any damages or shortages unless they are documented in writing and presented to Metal Sales within 48 hours of delivery.**

## GENERAL HANDLING

Each bundle should be handled carefully to avoid being damaged. Care should be taken to prevent bending of the panel or abrasion to finish. Whenever possible, the bundle should remain crated until it is located in its place of storage. If bundles must be opened, we recommend you recreate them before lifting. To avoid damage, please lift the bundle at its center of gravity.

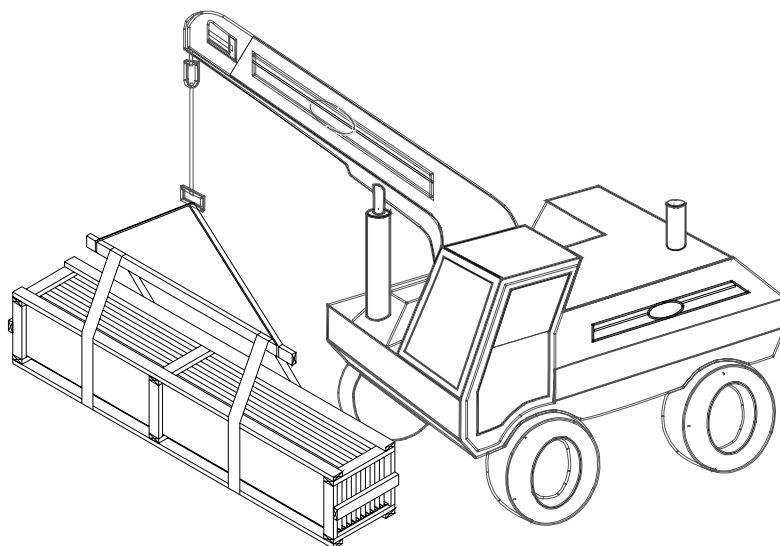
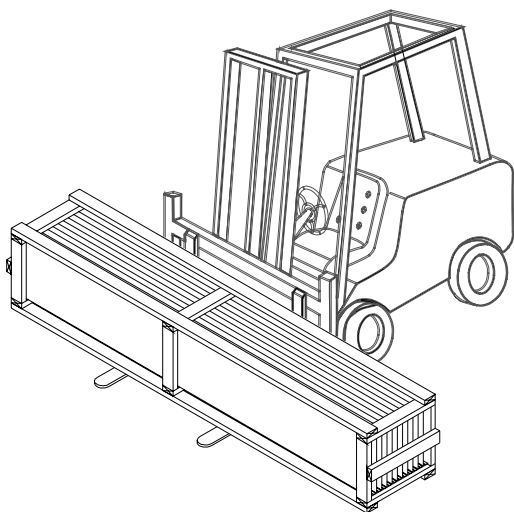
### CAUTION

Improper loading and unloading of bundles and crates may result in bodily harm and/or material damage. Metal Sales is not responsible for bodily injuries and/or material damages resulting from improper loading and unloading.

## MECHANICAL HANDLING

**Forklift** - A forklift may be used for panels up to 20'-0" long. Please make sure the forks are at their maximum separation. Do not transport open bundles. When transporting bundles across rough terrain, or over a longer distance, some means of supporting the panel load must be used.

**Crane** - A crane should be used when lifting panels with lengths greater than 20'-0". Please be sure to utilize a spreader bar to ensure the even distribution of the weight to the pick up points. As a rule when lifting panels, no more than  $\frac{1}{3}$  of the length of the panel should be left unsupported. Never use wire rope because this will damage the panels.



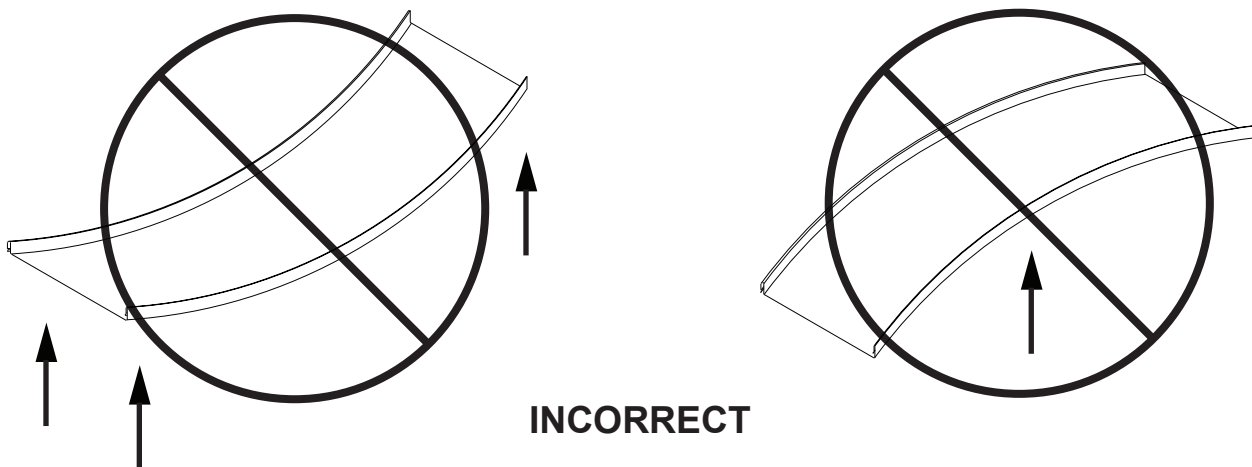
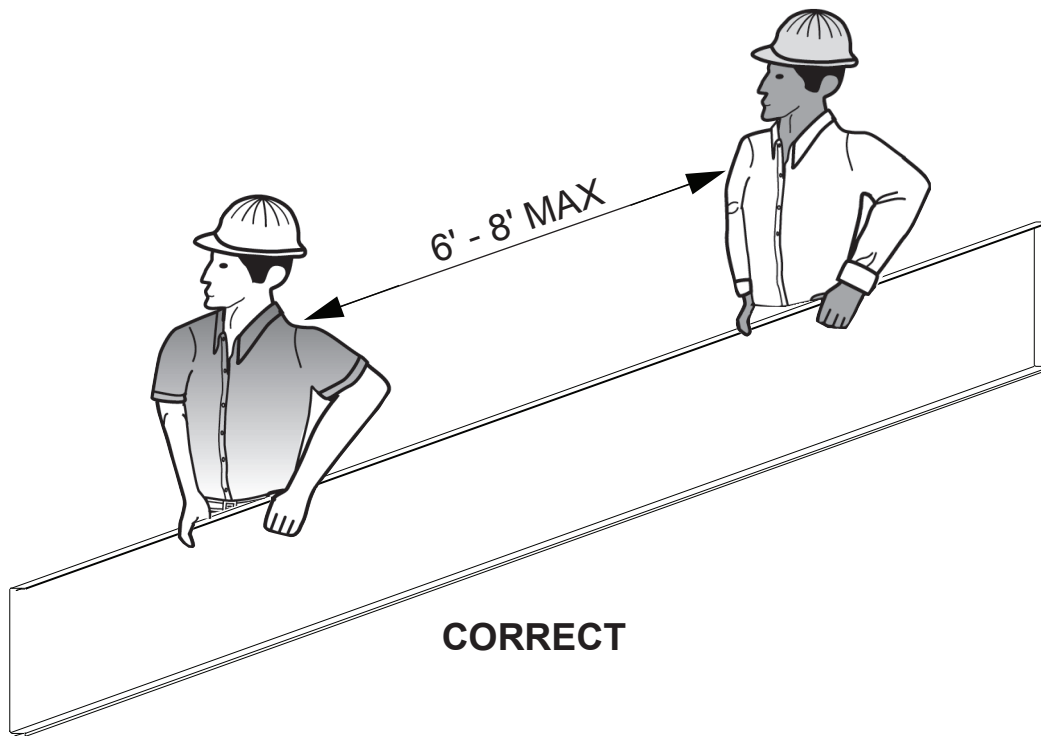
# VERTICAL SEAM HANDLING MATERIAL

## MANUAL HANDLING

When handling painted steel, care should be taken to prevent scratching of material. Clean gloves should be worn at all times to prevent a reaction with salts found on bare skin. Installers should wear rubber sole shoes to keep from scuffing material while walking on the roof.

Handling of individual panels should be done carefully and properly to avoid bending or damaging. Vertical Seam panels should be carried by grasping the edge of the panel so that the Vertical Seam panel is vertical to the ground. The Vertical Seam panel should not be carried with the panel horizontal to the ground as this could cause the panel to buckle or bend in the center.

Normally individual panels can be handled by people placed every 6'-0" to 8'-0" along the length of the panel.

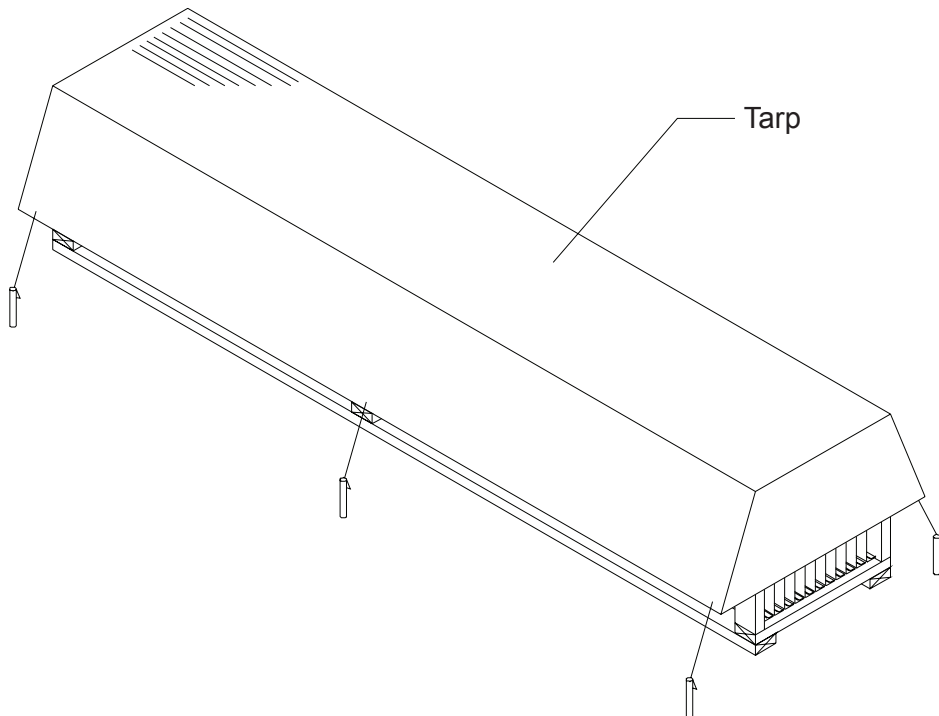
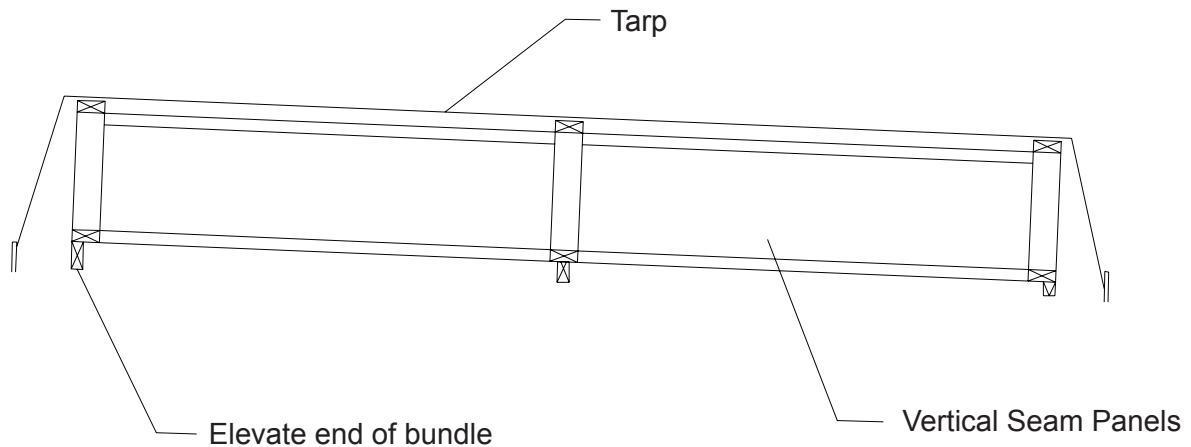


# VERTICAL SEAM STORAGE

## GENERAL

Please inspect panels for moisture accumulation. If moisture has formed, the panels should be unbundled, wiped dry, and allowed to dry completely. Once dry, carefully restack the panels and loosely recover allowing for ample air circulation.

Bundled sheets should be stored high enough off of the ground to allow for air circulation and prevent contact with accumulating water. If possible, elevate one end of the bundle to allow any moisture to run off the panels. Metal Sales recommends covering the bundle with a tarp. Do not use tight fitting plastic-type tarp as panel bundle covers. While they may provide protection from heavy downpours, they can also retard necessary ventilation and trap heat and moisture that may accelerate metal corrosion. If panels are to be stored in possible bad weather, we suggest they be stored inside. Extended storage of panels in a bundle is not recommended. **Under no circumstances should the sheets be stored near or come in contact with salt water, corrosive chemicals, ash, or fumes generated or released inside the building or nearby plants, foundries, plating works, kilns, fertilizer and wet or green lumber.**

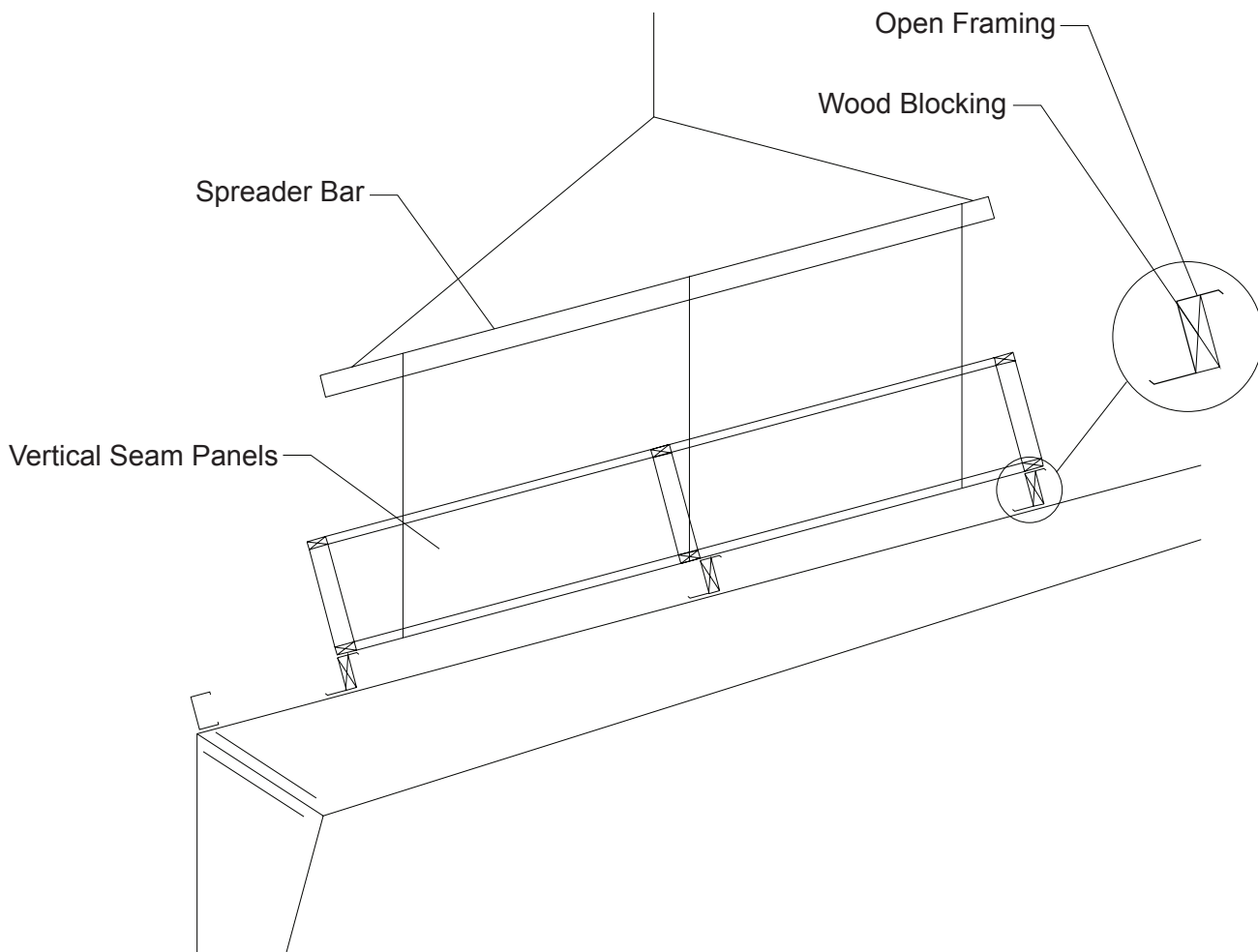


## STORAGE ON ROOF

To facilitate the handling of Vertical Seam panels, panel bundles may be lifted and placed on the roof. Loading capabilities of the roof structure must be checked. Bundles need to be placed on the roof in areas that the roof structure can handle the weight.

When lifting packaged sheets, make certain they are adequately supported. Panels less than 20'-0" in length can normally be lifted with a forklift; however, when lifting panels in excess of 20'-0", it is recommended that a spreader bar and slings be used. As a rule, when lifting, no more than  $\frac{1}{3}$  of the length of the panel should be left unsupported.

Make a plan for bundle placement by determining how much area a bundle of panels will cover. Bundles should be placed on the roof in accordance with the direction the panel will be installed. Consider where the string line, if any, is to run at the eave to set roof panels by. Roof bundles should not interfere with this string line.



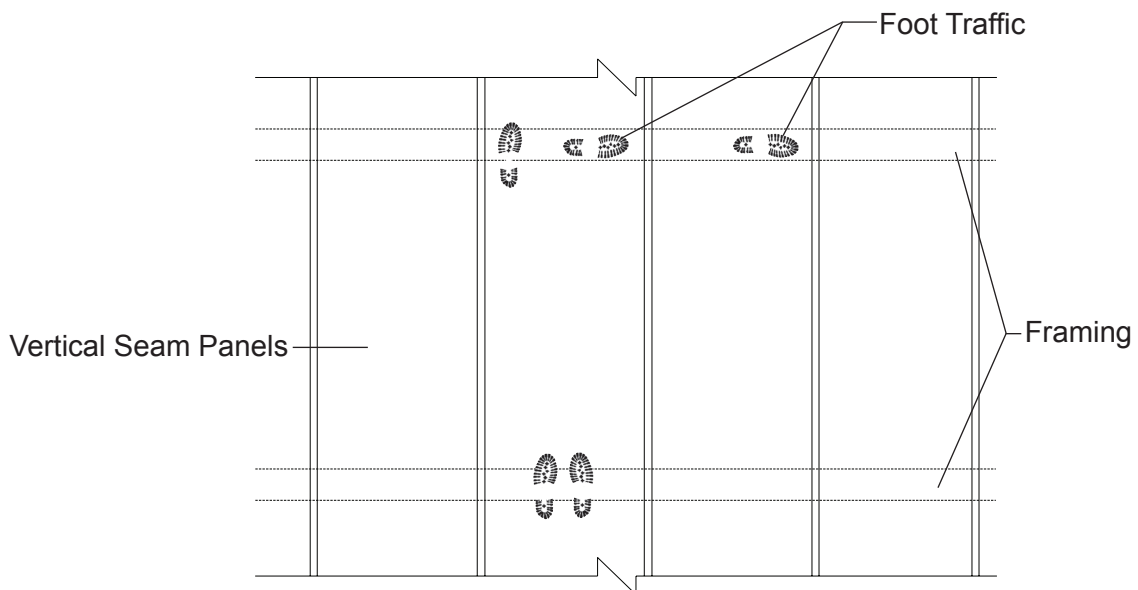
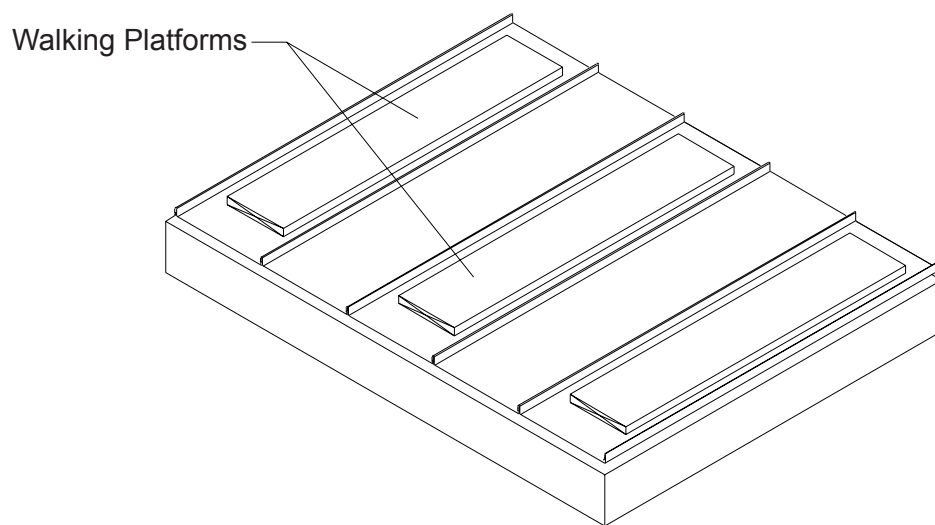
# VERTICAL SEAM FOOT TRAFFIC

Care of metal panels and flashings must be exercised throughout erection. Foot traffic can cause distortion of panel and damage to finish. Traffic over the installed system must be kept to an absolute minimum. If continuous foot traffic is necessary for maintenance over certain areas of the roof, then a permanent walkway should be installed.

If metal panels are installed over open framing, do not use the roof panel as a walking platform. The roof panels will not withstand the weight of a person standing at the edge of the panel. Provide walking platforms to avoid any panel damage as shown below.

When walking on the roof panels is unavoidable, walk only in the flats of the panel. Walking on the ribs can cause damage to the panels. If Vertical Seam is installed over open framing, step in the flat of the panel only and as close to the framing as possible.

## OVER OPEN FRAMING



### FIELD CUTTING

Tin snips or a "nibbler" type electric tool are recommended for field cutting Vertical Seam panels. Cutting the steel generates slivers or metal chips. These slivers and metal chips must be immediately removed from the Vertical Seam panels because they will damage the finish and shorten the life of the product.

One method of preventing this problem is to flip the Vertical Seam panels over when cutting. This allows the slivers and metal chips to be brushed from the back side and avoids damaging the paint on the top side of the panels.

When cutting Vertical Seam panels, goggles must be worn for eye protection.

### CAUTION

All product surfaces should be free of debris at all times. Installed surfaces should be wiped clean at the end of each work period. Never cut panels over metal surfaces. Metal shavings will rust on the surface, voiding the warranty.

### TOUCH-UP PAINT

All painted panels and flashings have a factory applied baked on finish. Handling and installing panels may result in some small scratches or nicks to the paint finish. Touch-up paint is available in matching colors from Metal Sales. It is recommended that a small brush be used to apply touch-up paint to those areas that are in need of repair. Touch-up paint does not have the superior chalk and fade resistance of the factory applied paint finish and will normally discolor at an accelerated rate. Aerosol paint should not be used because of the overspray that may occur.



SPRAY PAINT



TOUCH-UP PAINT

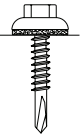
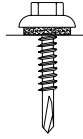

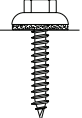
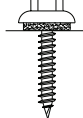
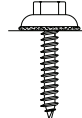


### TECHNIQUE

**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.

	<b>CORRECT</b> Sealing material slightly visible at edge of metal washer. Assembly is watertight.	<b>TOO LOOSE</b> Sealing material is not visible; not enough compression to seal properly.	<b>TOO TIGHT</b> 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.

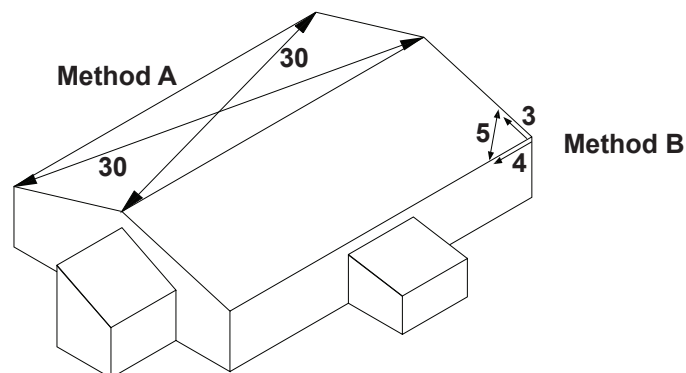
### CONDITION OF SUBSTRUCTURE

Whether over solid decking 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 Vertical Seam 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.



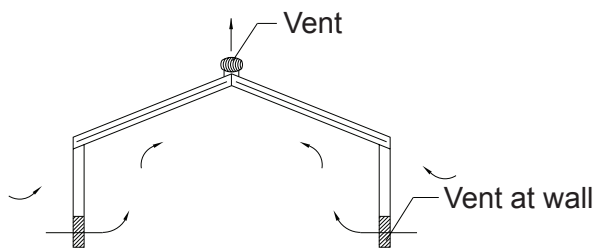
### VENTILATION

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.

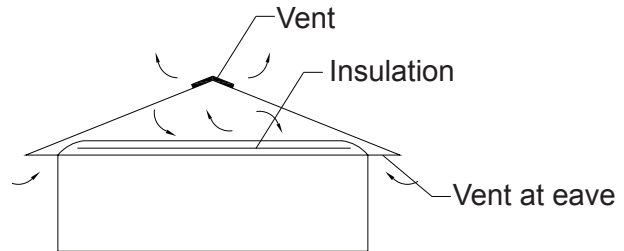
Condensation occurs when moisture laden air comes in contact with a surface temperature equal to or below the dew point of the air. This phenomenon creates problems that are not unique with metal buildings; these problems are common to all types of construction.

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)**

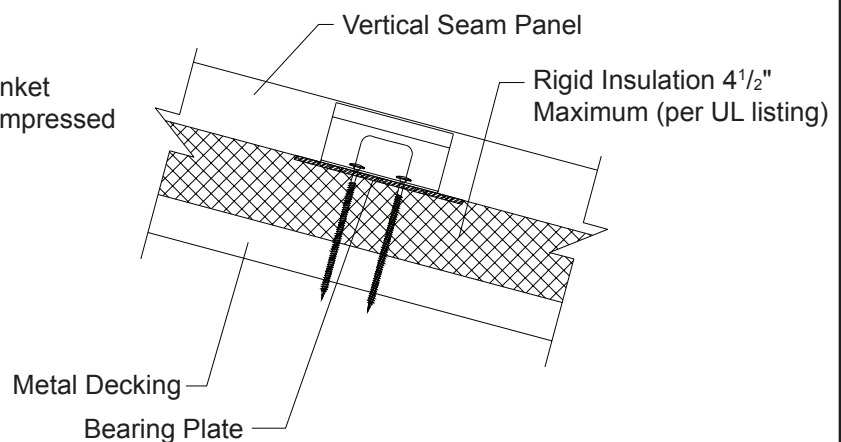
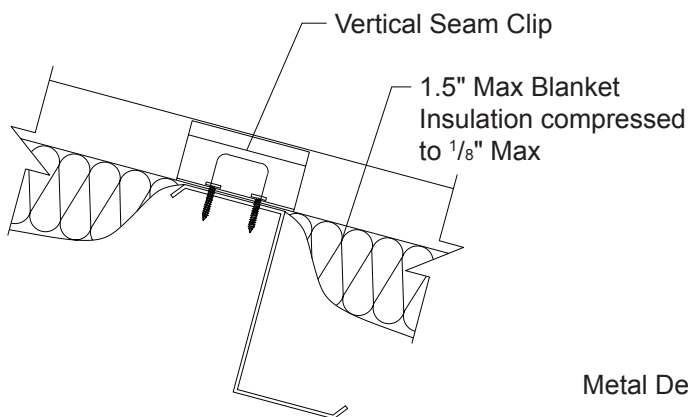


**BUILDING WITH ATTIC OR RETROFITTED**

### INSULATION

Insulation is recommended on all applications to act as a sound barrier, prevent condensation and increase insulating value of the roof or ceiling system.

Typically, panels are installed over solid decking but can be installed over open framing or metal decking (shown below) with many different types of insulation. Blanket, rigid and reflective insulation are just a few. Maximum thickness for blanket insulation is 1.5 inches. Please contact your insulation supplier for specific recommendations on type of insulation, vapor barriers and installation procedures.



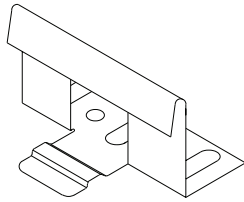
### CAUTION

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.

# VERTICAL SEAM DESIGN / INSTALLATION CONSIDERATIONS

## SELECTION OF SYSTEM COMPONENTS

**Vertical Seam Panel Clip** - Clips are placed along the underlap rib of each panel prior to installing adjacent panels. Design wind uplift must be considered for proper clip spacing.



VERTICAL SEAM UL-90 CLIP  
(2 Fasteners Required)

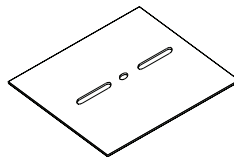
The following chart should be used to determine proper fasteners required for clip installation on the selected applications (see page 14 for other available fasteners).

APPLICATION	INSTALLATION REQUIREMENTS		**CLIP SPACING	TYPE OF FASTENER	# REQ.
<b>CLIPS OVER PURLINS (16 GA. MIN)</b>	UL-90	24 GAUGE	4'-0" O.C.	#10 X 1" PANCAKE HEAD DRILLER	- 2 FASTENERS
	UL-90	22 GAUGE	4'-0" O.C.	#10 X 1" PANCAKE HEAD DRILLER	- 2 FASTENERS
	UL-90	22 GAUGE	5'-0" O.C.***	#10 X 1" PANCAKE HEAD DRILLER	- 2 FASTENERS
<b>CLIPS OVER 5/8" WOOD DECK</b>	UL-90	24 GAUGE	4'-0" O.C.	#10 X 1" PANCAKE HEAD WOOD	- 2 FASTENERS
	UL-90	22 GAUGE	4'-0" O.C.	#10 X 1" PANCAKE HEAD WOOD	- 2 FASTENERS
<b>CLIP OVER RIGID INSULATION / METAL DECK</b>	UL-90	24 GAUGE	4'-0" O.C.	#14-13 DECK SCREWS*	- 2 FASTENERS
	UL-90	22 GAUGE	4'-0" O.C.	#14-13 DECK SCREWS*	- 2 FASTENERS

\* Length of Deck Screws will vary depending on the total thickness of the rigid insulation and metal.

\*\* Contact your local Metal Sales branch representative for more information (see pages 2 and 3).

\*\*\* 12" Panel Only.

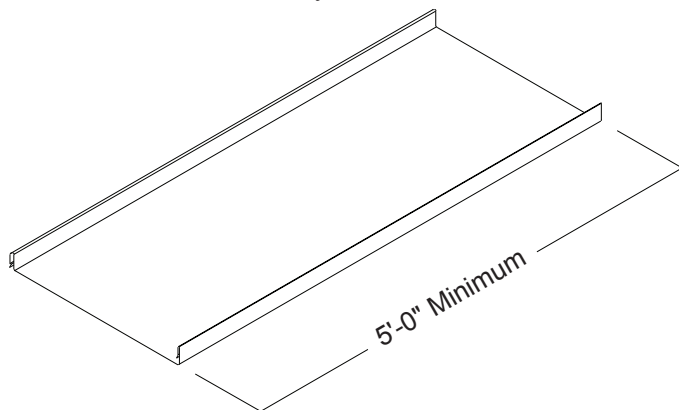


BEARING PLATE  
(Flat)

## PANEL LENGTH

**Length** - Minimum factory cut length is 5'-0" on panels. Panels over 45'-0" require additional consideration in packaging, shipping, and erection. Please consult Metal Sales for recommendations.

There are two critical measurements involving Vertical Seam roof panels: the length of panel overhang required at the eave, and the peak end. In each case a certain measurement is required. Check each measurement to ensure panel placement gives you the distance required at the eave and peak condition. In most cases any variance can be taken out at the eave or peak ends.

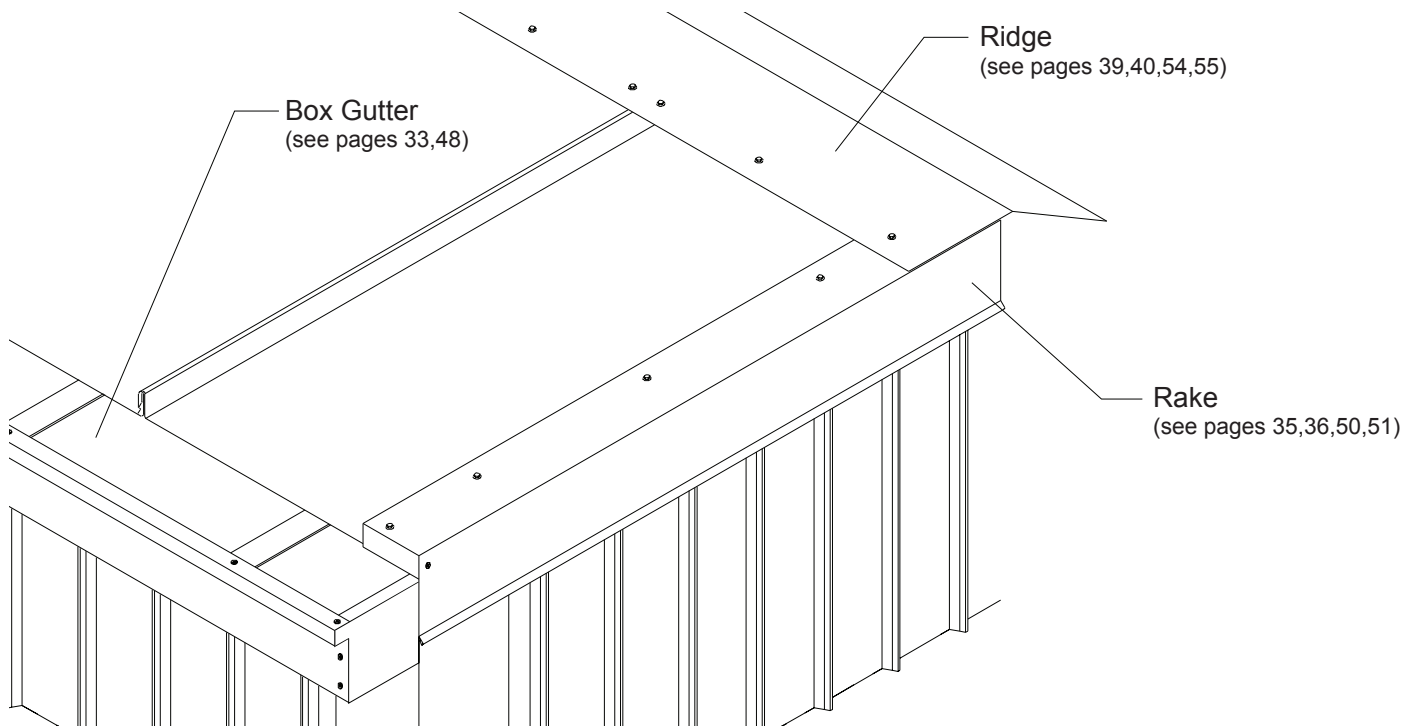


# VERTICAL SEAM INSTALLATION PROCEDURE OVERVIEW

The following procedures (pages 29 to 59) are presented as a general guide for installing Vertical Seam panels, flashings and accessories on a typical building or residence. Details are shown for installing Vertical Seam and related flashings over solid decking and over open framing. For other applications please contact Metal Sales.

The installation procedures will include the following conditions:

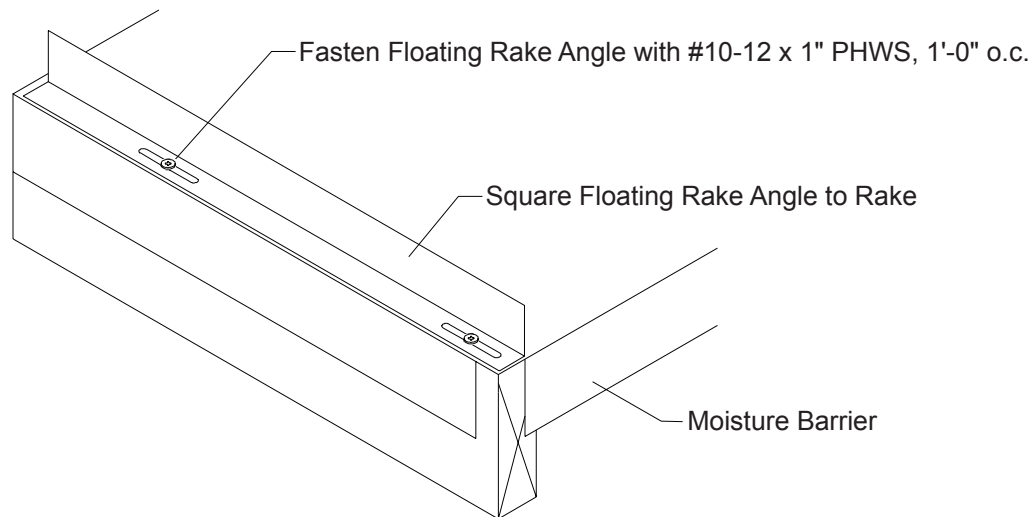
1. Floating Rake Angle, pages 29 and 44
2. Panel, installed from left to right (looking from eave to peak), pages 29, 30, 44 and 45
3. Panel Clip, pages 30 and 45
4. Eave, pages 31 and 46
5. Extended Eave, pages 32 and 47
6. Box Gutter, pages 33 and 48
7. Valley, pages 34 and 49
8. Rake, pages 35, 36, 50 and 51
9. Rakewall, pages 37, 38, 52 and 53
10. Ridge / Hip, pages 39 and 54
11. Vented Ridge, pages 40 and 55
12. Peak, page 41
13. Highside Parapet, pages 42 and 56
14. Transition, page 43
15. Z-Closure, page 57
16. Panel Hemming, page 58
17. Roof Penetration, page 59



### INSTALLING FLOATING RAKE ANGLE

# STEP 1

1. Install Floating Rake Angle at all rake and rake parapet conditions. Square Floating Rake Angle to rake condition. **It is critical that Floating Rake Angle be square to building as this will control alignment of panels (see page 25 to check building square).**
2. Fasten to decking with #10-12 x 1" Pancake Head Wood Screws, 1'-0" o.c. **Do not over tighten screws for it is imperative that the Floating Rake Angle be free to slide.**
3. If two or more Floating Rake Angles are required, butt ends. **Do not overlap Floating Rake Angles.**

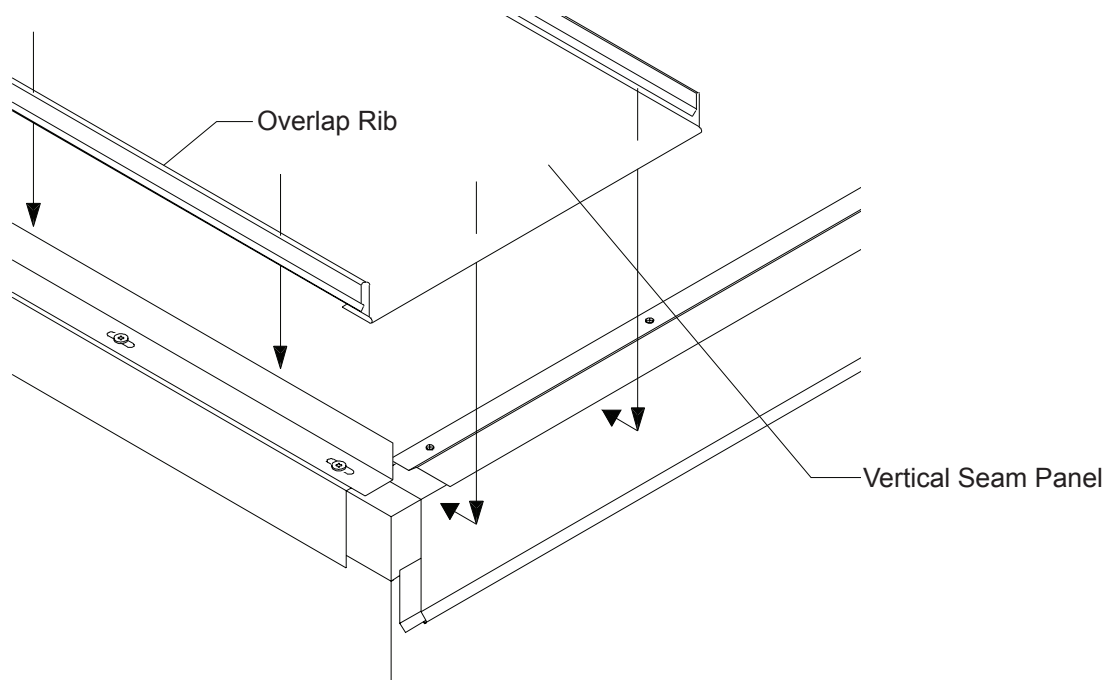


### INSTALLING FIRST PANEL

# STEP 2

**Note: Moisture Barriers, Eave, Gutter and Valley flashings must first be installed before panel installation can begin (see pages 31 to 34). Vertical Seam panels must be installed going from left to right when looking from eave to peak.**

1. Field notch and hem the Vertical Seam panel (as shown on page 58). Apply a single bead of Tube Sealant inside the open hem of the Vertical Seam panel.
2. Position the first panel so overlap rib is on top of the Floating Rake Angle. Slide the panel toward the peak of the roof engaging the Vertical Seam panel and the Offset Cleat. Offset Cleat must be fully engaged into the Vertical Seam panel. Additional overhang must be considered if using wall panels.

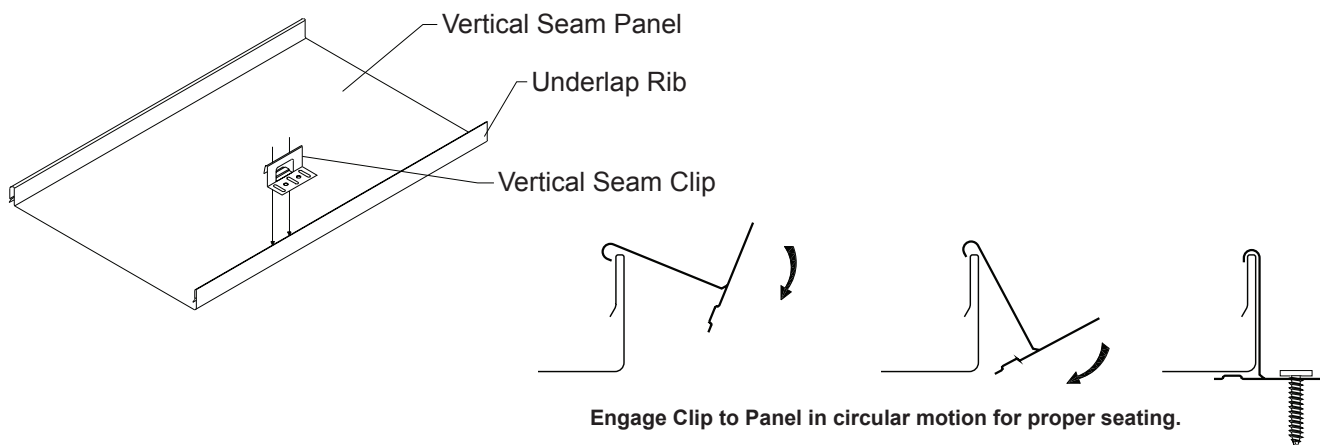


# VERTICAL SEAM INSTALLATION OF PANEL OVER DECKING

## INSTALLING VERTICAL SEAM CLIP

### STEP 3

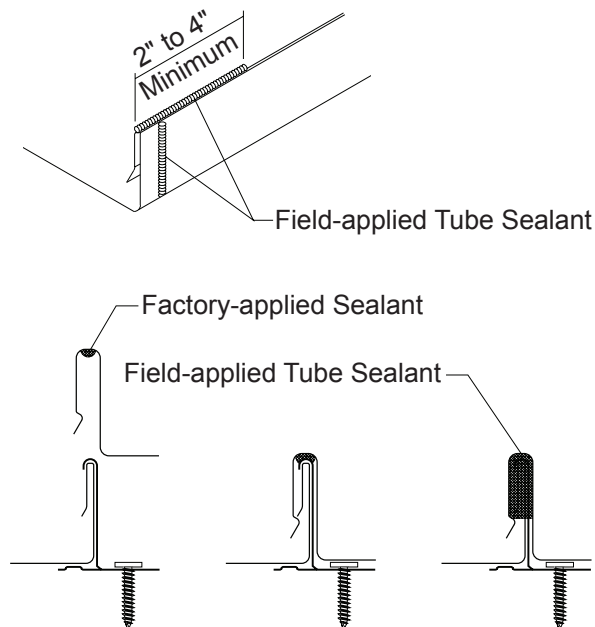
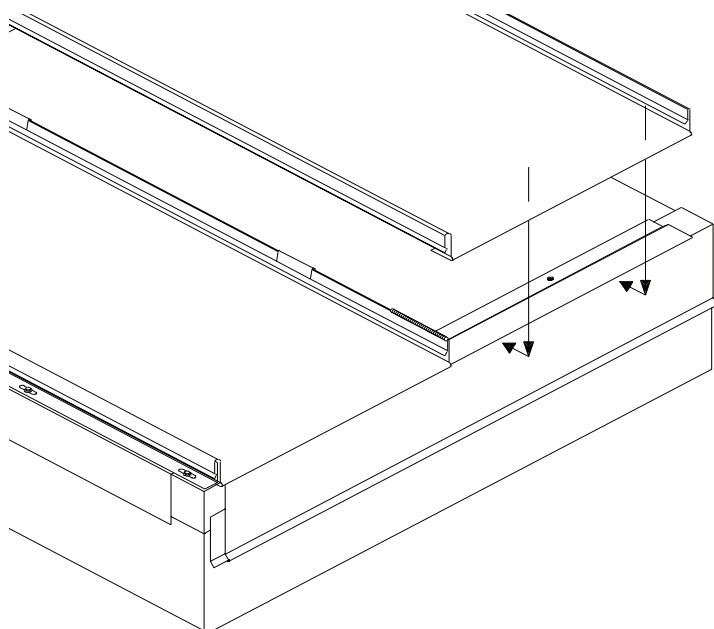
1. Once the first panel has been installed, roll the first clip into lock position over the underlap rib of the panel (see below).
2. Fasten the Vertical Seam clip to the deck with the proper type and number of fasteners (see chart on page 27). If a fastener strips out, remove the clip and reposition it so the fastener can drill a new hole at least  $\frac{3}{8}$ " from the stripped hole or install an oversized fastener into the stripped hole. Failure to do so will impact the system to resist the applied loads.
3. Repeat steps 1 and 2 to install clips along the underlap rib of the panel from eave to peak. For certain building codes and state or county specifications, special clip spacing may be required. Please contact Metal Sales for specific clip and fastener spacing.



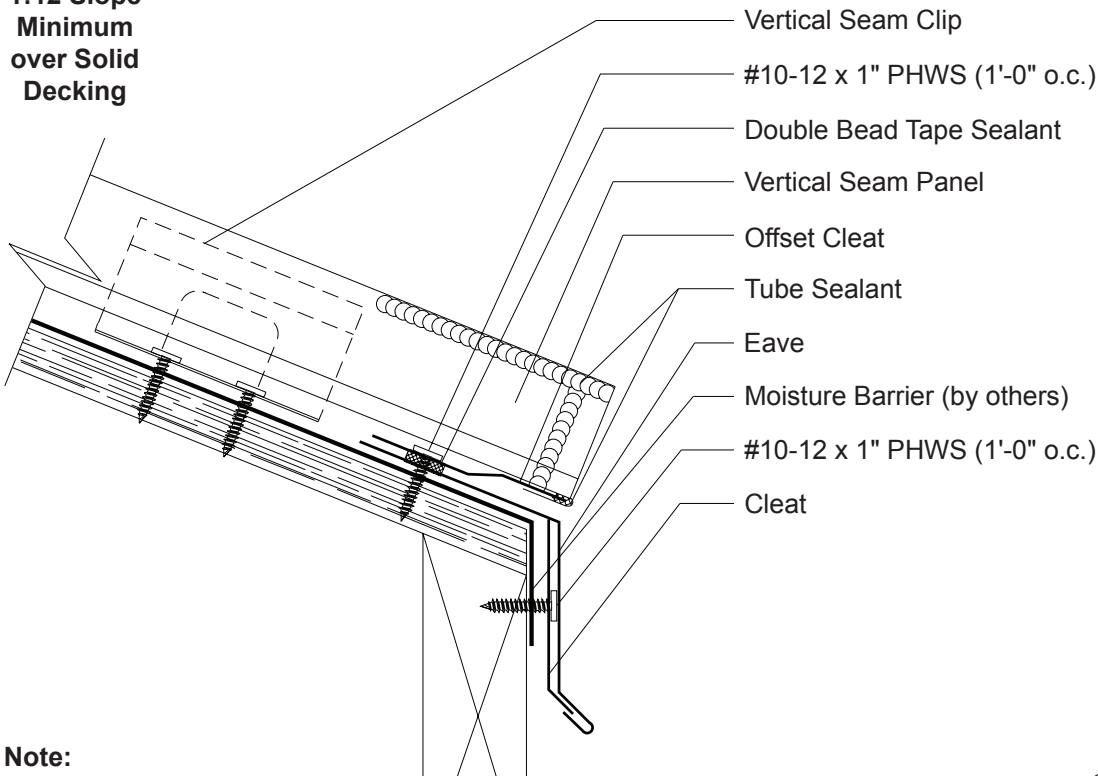
## INSTALLING SECOND PANEL

### STEP 4

1. Prior to installing the second Vertical Seam panel, Tube Sealant must be placed on the underlap rib of the first panel (see below).
2. Place the second panel on top of previously installed panel so that the second hemmed panel can be engaged with the Offset Cleat.
3. Begin snapping the panels together working from eave to peak. **It is critical that panels only be snapped in one direction.**
4. Repeat steps 2 and 3 for remaining panels.
5. Make sure all panels are properly snapped into place. Also clean any debris and excess sealant before continuing to the next section of the roof.
6. Once installation is complete, fill the end of each panel rib with Tube Sealant (as shown below).

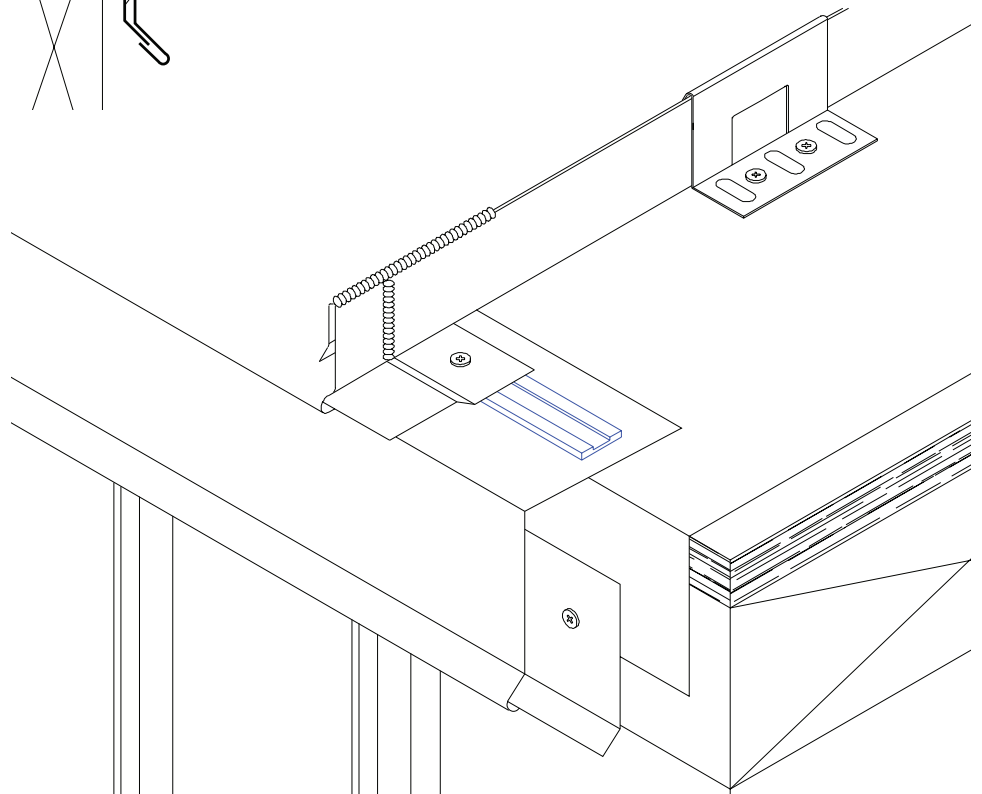


**1:12 Slope  
Minimum  
over Solid  
Decking**



**Note:**  
The high end of the panels must be direct fastened to secure the panels to the decking.

**Note:**  
Panel ribs must be field notched and the flat part of the panel must be field hemmed to accept Offset Cleat (see page 58).

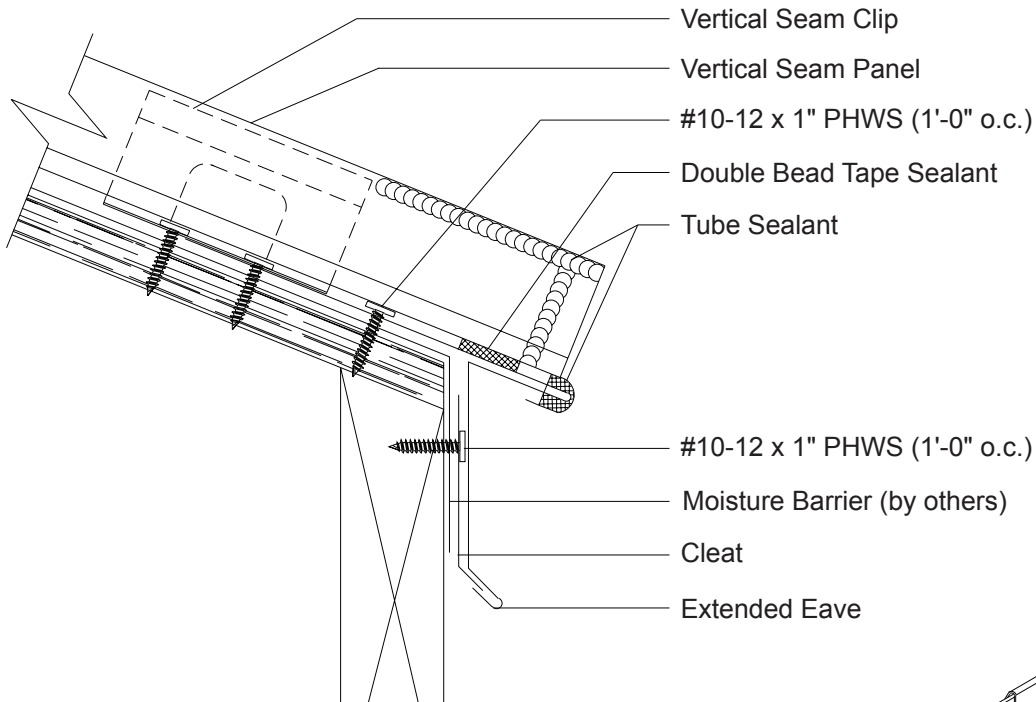


### INSTALLATION NOTES

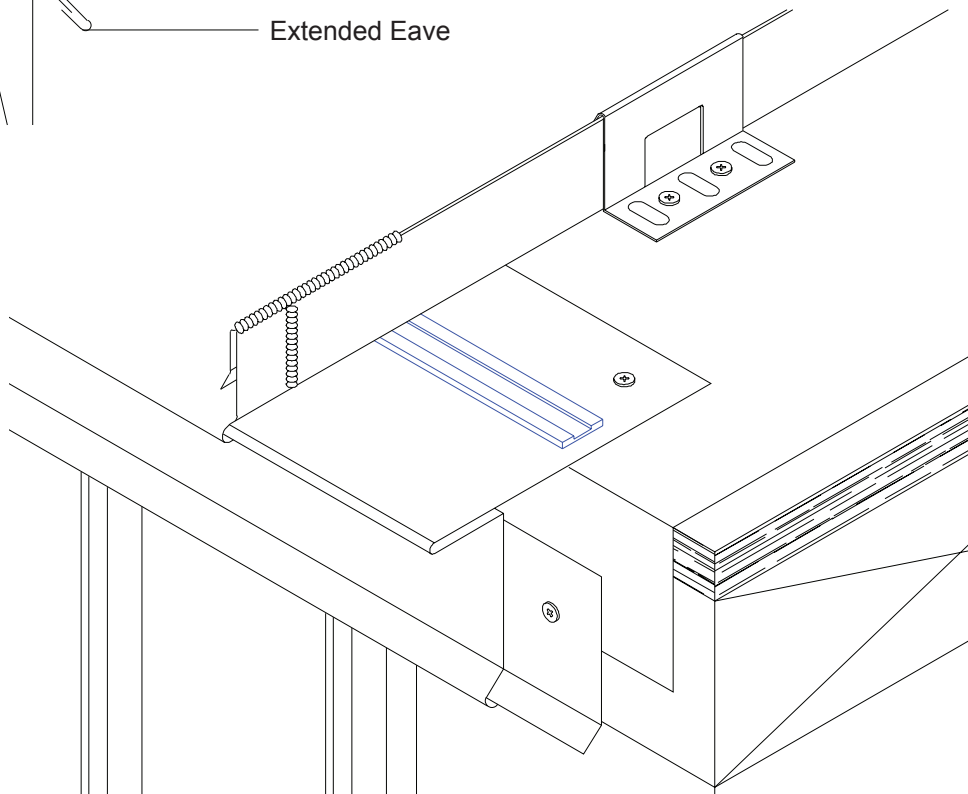
**All Eave flashings must be installed prior to panel installation.**

1. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows proper Eave attachment.
2. Install Eave flashing by sliding open hem onto Cleat and resting the Eave flashing against the decking and fasten with #10-12 x 1" Pancake Head Wood Screws, 4'-0" o.c. to hold the Eave Flashing in place during installation.
3. Apply a row of Double Bead Tape Sealant on the bottom leg of the Offset Cleat and fasten to decking with #10-12 x 1" Pancake Head Wood Screw through top of Eave flashing and into decking, 1'-0" o.c. Make sure Offset Cleat is lined up to properly accommodate hemmed panel.
4. Install panel by engaging field-hemmed end of panel (see page 58) to Offset Cleat (see pages 29 and 30 for panel installation).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

1:12 Slope  
Minimum  
over Solid  
Decking



**Note:**  
The high end of the panels must be direct fastened to secure the panels to the decking.



**Note:**  
Panel ribs must be field notched and the flat part of the panel must be field hemmed to accept Extended Eave (see page 58).

## INSTALLATION NOTES

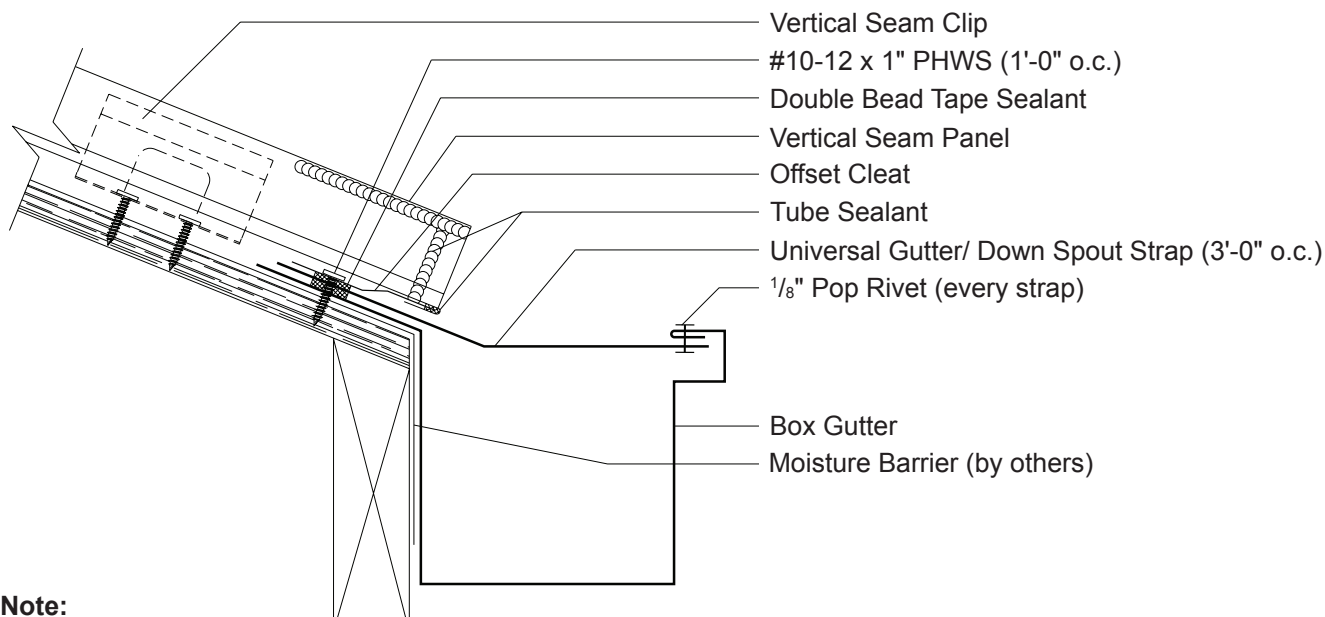
**All Extended Eave flashings must be installed prior to panel installation.**

1. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Extended Eave attachment.
2. Install Extended Eave flashing by sliding open hem onto Cleat and resting Extended Eave flashing back against decking. Fasten to decking with #10-12 x 1" Pancake Head Wood Screw, 1'-0" o.c.
3. Apply a row of Double Bead of Tape Sealant to extended leg of the Extended Eave flashing.
4. Install panel by engaging field-hemmed end of panel (see page 58) to Extended Eave (see pages 29 and 30 for panel install).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with  $\frac{1}{8}$ " Pop Rivets spaced 2 $\frac{1}{2}$ " o.c.



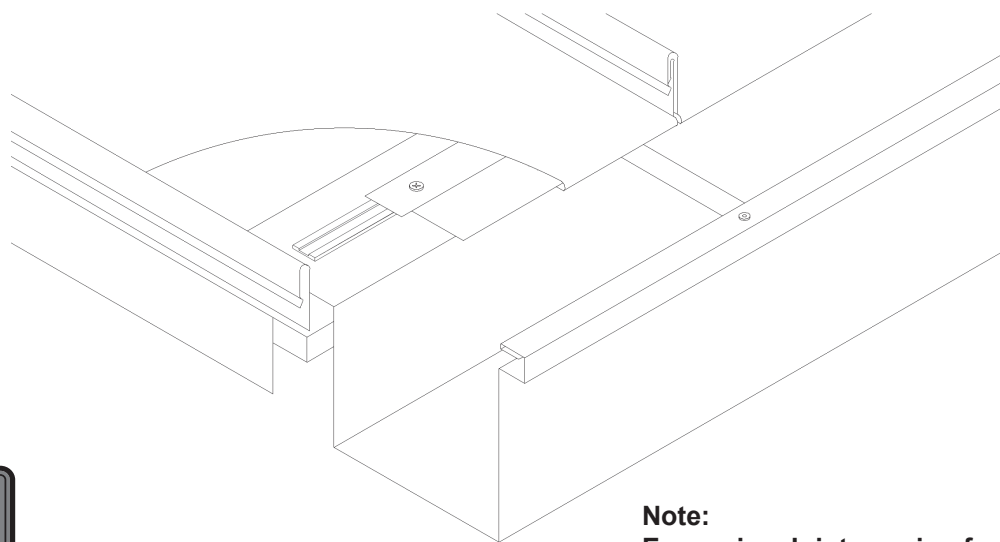
# VERTICAL SEAM BOX GUTTER OVER DECKING

**1:12 Slope  
Minimum  
over Solid  
Decking**



**Note:**  
The high end of the panels must be direct fastened to secure the panels to the decking.

**Note:**  
Panel ribs must be field notched and the flat part of the panel must be field hemmed to accept Offset Cleat (see page 58).



**Note:**  
Expansion Joint spacing for Box Gutter should be no more than 50'. Down Spout spacing should be no more than 50'.

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

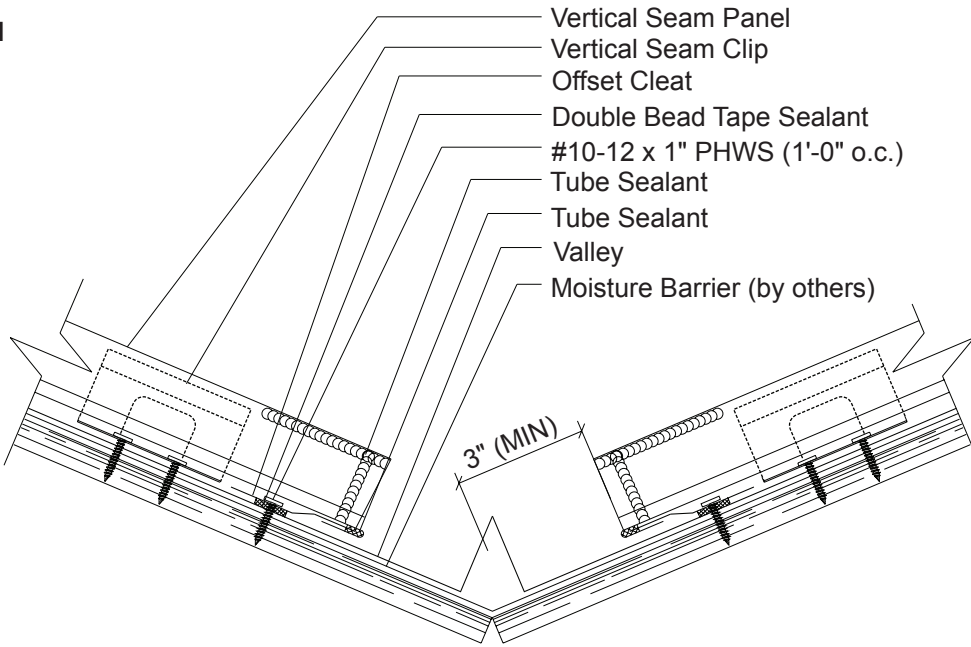
## INSTALLATION NOTES

**All Box Gutter flashing must be installed prior to panel installation.**

1. Install Box Gutter flashing back against decking. To hold Box Gutter flashing in place, fasten to decking with #10-12 x 1" Pancake Head Wood Screw, 4'-0" o.c.
2. Install Universal Gutter/Downspout Straps every 3'-0" of gutter length to decking with #10-12 x 1" Pancake Head Wood Screw and fasten to Box Gutter with (1) 1/8" Pop Rivet per strap.
3. Apply a row of Double Bead of Tape Sealant to bottom leg of Offset Cleat, position on back leg of Box Gutter and fasten to decking with #10-12 x 1" Pancake Head Wood Screw, 1'-0" o.c.
4. Install panel by engaging field-hemmed end of panel (see page 58) to Offset Cleat (see pages 29 and 30 for panel installation).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.
6. Note: Size and gauge of Box Gutter must be designed to applicable governing building code.

# VERTICAL SEAM VALLEY OVER DECKING

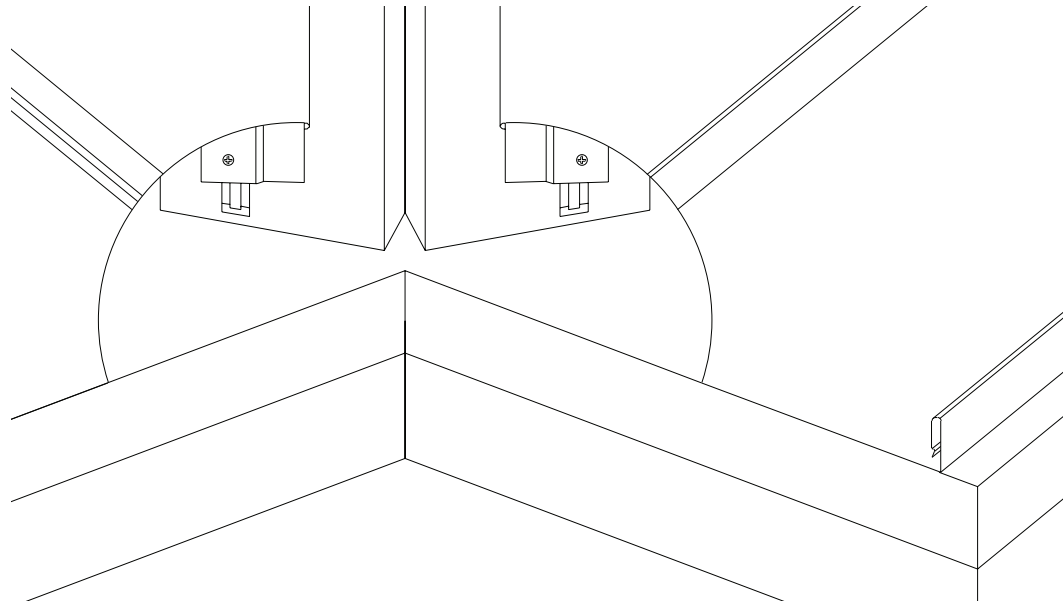
1:12 Slope  
Minimum  
over Solid  
Decking



Vertical Seam Panel  
Vertical Seam Clip  
Offset Cleat  
Double Bead Tape Sealant  
#10-12 x 1" PHWS (1'-0" o.c.)  
Tube Sealant  
Tube Sealant  
Valley  
Moisture Barrier (by others)

3" (MIN)

**Note:**  
The high end of the panels must be direct fastened to secure the panels to the decking.



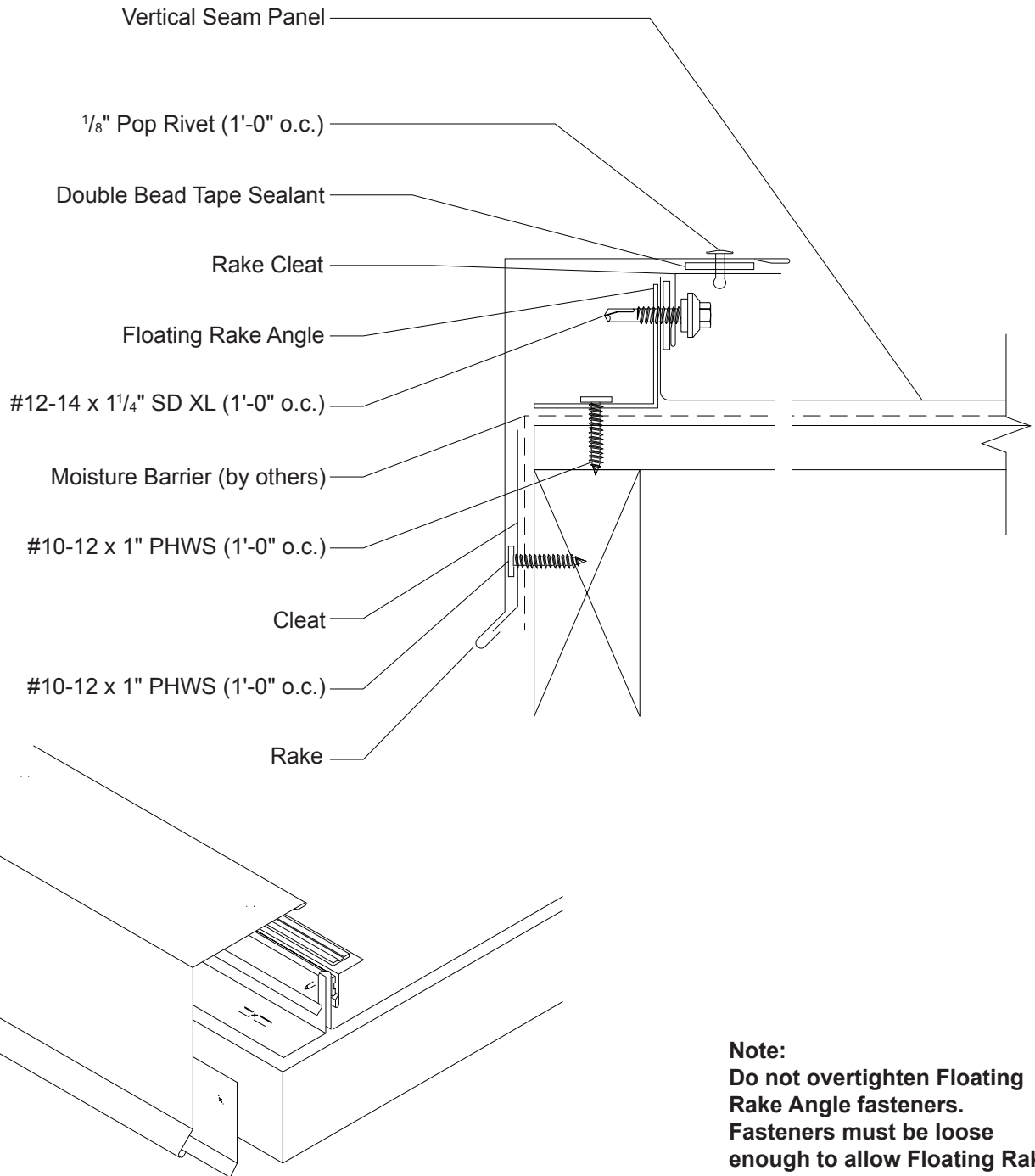
**Note:**  
Panel ribs must be field notched and the flat part of the panel must be field hemmed to accept Offset Cleat (see page 58).

## INSTALLATION NOTES

All Valley flashings must be installed prior to panel installation. If two or more Valley flashings are required, Valley flashing must be installed working from eave to peak. It is recommended that ms-HT be installed under Valley flashing for added moisture protection.

1. Install Valley flashing against decking. To hold Valley flashing in place, fasten to decking with #10-12 x 1" Pancake Head Wood Screw, 4'-0" o.c.
2. Apply a row of Double Bead Tape Sealant across both sides of Valley flashing approximately 5" from center of valley.
3. Properly align and install Offset Cleat on both sides of Valley flashing to accommodate panel hem and fasten to decking with #10-12 x 1" Pancake Head Wood Screw, 1'-0" o.c.
4. Install panel by engaging field-hemmed end of panel (see page 58) to Offset Cleat (see pages 29 and 30 for panel installation).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2", placing a bead of Tube Sealant between the flashings and securing with (2) Pop Rivets in the 2" water diverter.

**1:12 Slope  
Minimum  
over Solid  
Decking**



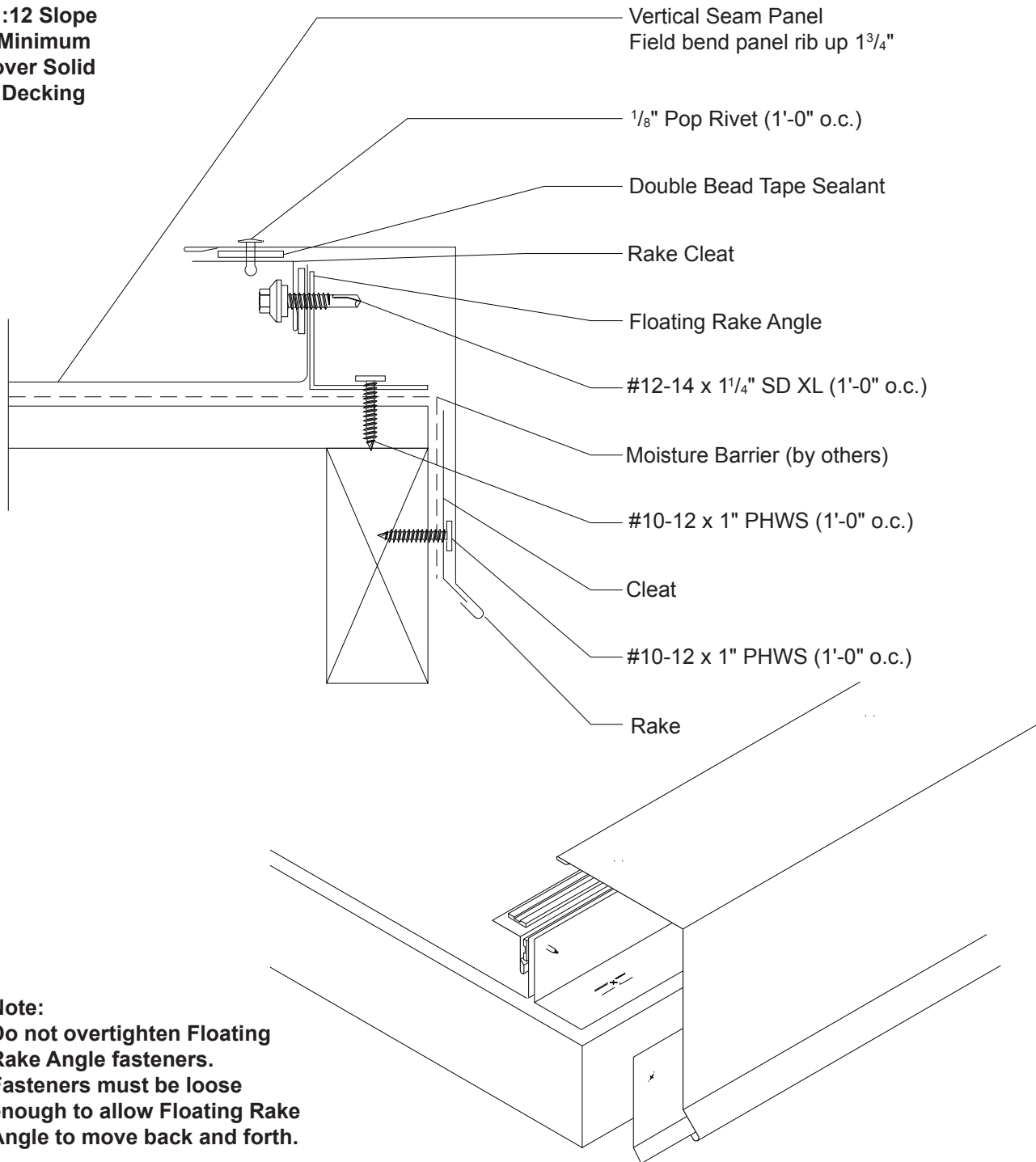
**Note:**  
Do not overtighten Floating Rake Angle fasteners. Fasteners must be loose enough to allow Floating Rake Angle to move back and forth.

## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rake installation (see pages 29 and 30).**

1. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
2. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x 1 1/4" Self-Driller XL, 1'-0" o.c.
3. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Rake trim attachment.
4. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
5. Install Rake by sliding the open hem onto the Cleat and then attaching to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
6. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**1:12 Slope  
Minimum  
over Solid  
Decking**



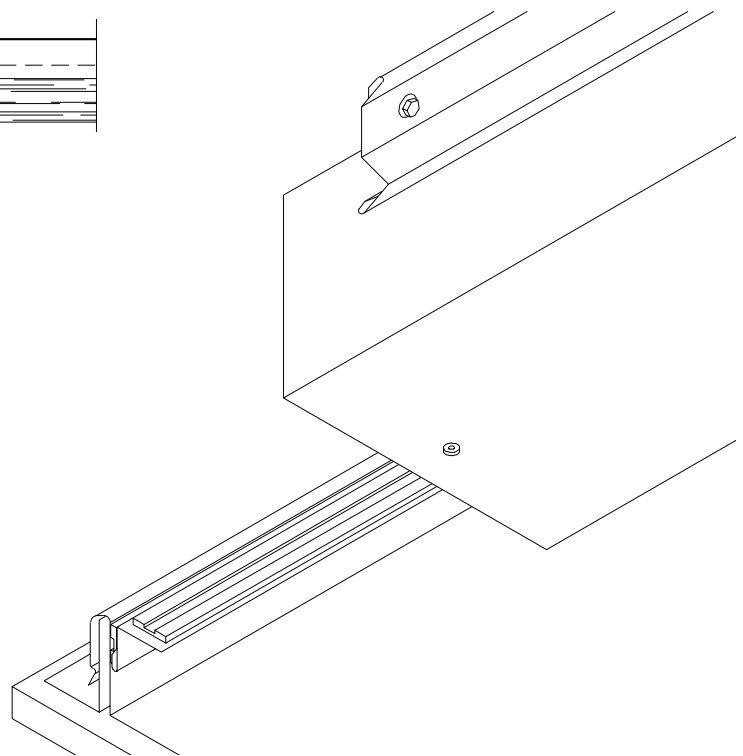
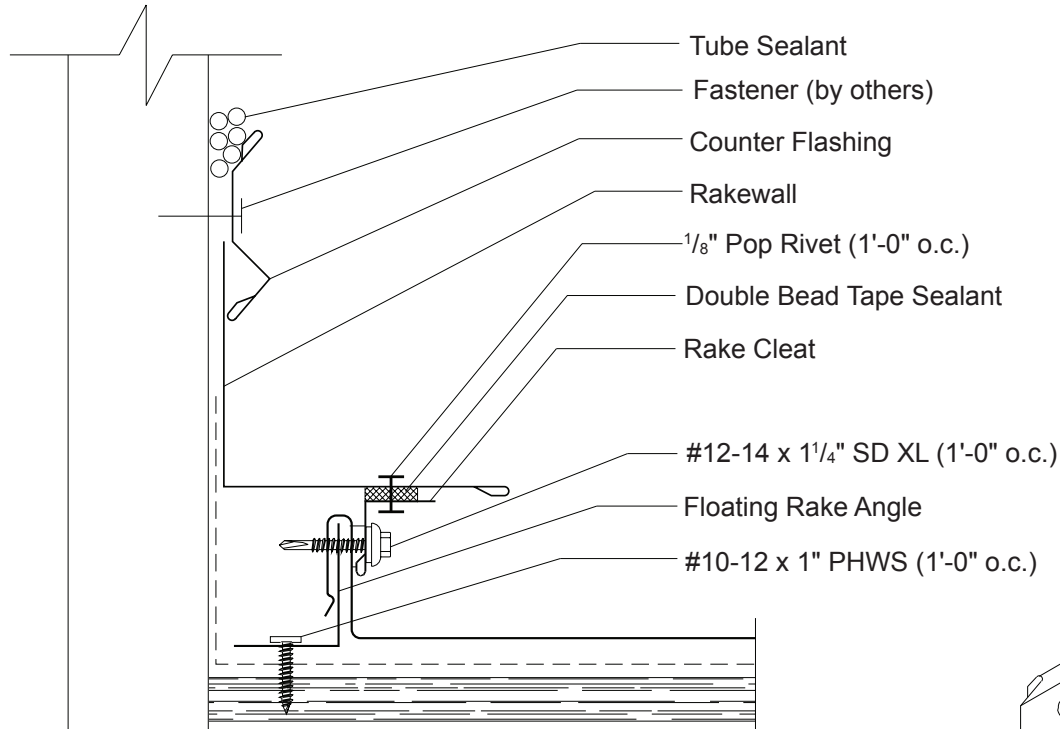
**Note:**  
**Do not overtighten Floating Rake Angle fasteners. Fasteners must be loose enough to allow Floating Rake Angle to move back and forth.**

## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rake installation (see pages 29 and 30).**

1. Field cut and bend off module panel up 1<sup>3</sup>/<sub>4</sub>".
2. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
3. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x 1<sup>1</sup>/<sub>4</sub>" Self-Driller XL, 1'-0" o.c.
4. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Rake trim attachment.
5. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
6. Install Rake trim by sliding the open hem onto the Cleat and then attaching to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2<sup>1</sup>/<sub>2</sub>" o.c.

1:12 Slope  
Minimum  
over Solid  
Decking



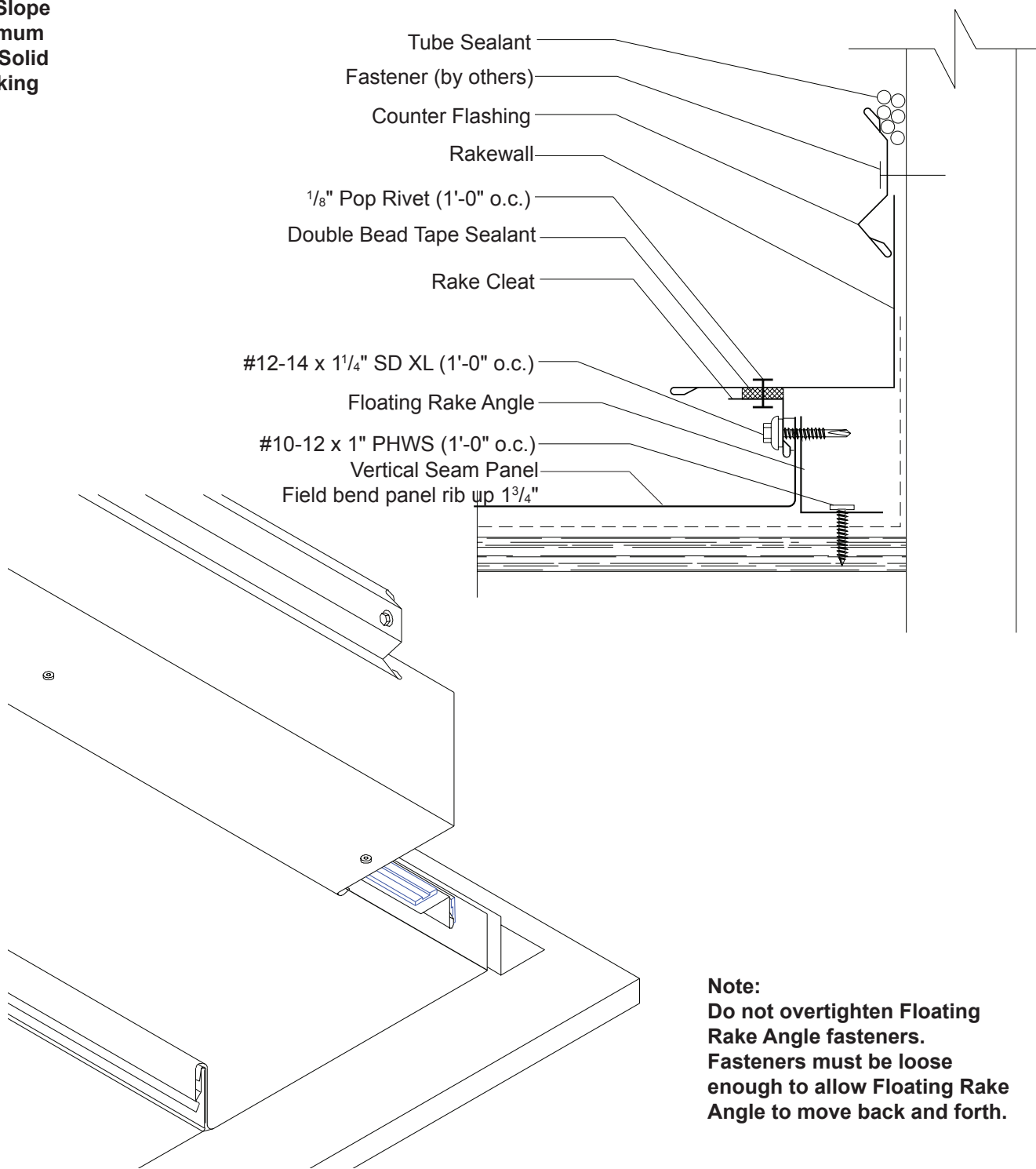
**Note:**  
Do not overtighten Floating Rake Angle fasteners. Fasteners must be loose enough to allow Floating Rake Angle to move back and forth.

## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rakewall installation (see pages 29 and 30).**

1. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
2. Position and install Rake Cleat through panel and into Floating Rake Angle with #12-14 x 1 1/4" Self Driller XL, 1'-0" o.c.
3. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
4. Install Rakewall to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
5. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
6. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

1:12 Slope  
Minimum  
over Solid  
Decking



**Note:**  
Do not overtighten Floating Rake Angle fasteners. Fasteners must be loose enough to allow Floating Rake Angle to move back and forth.

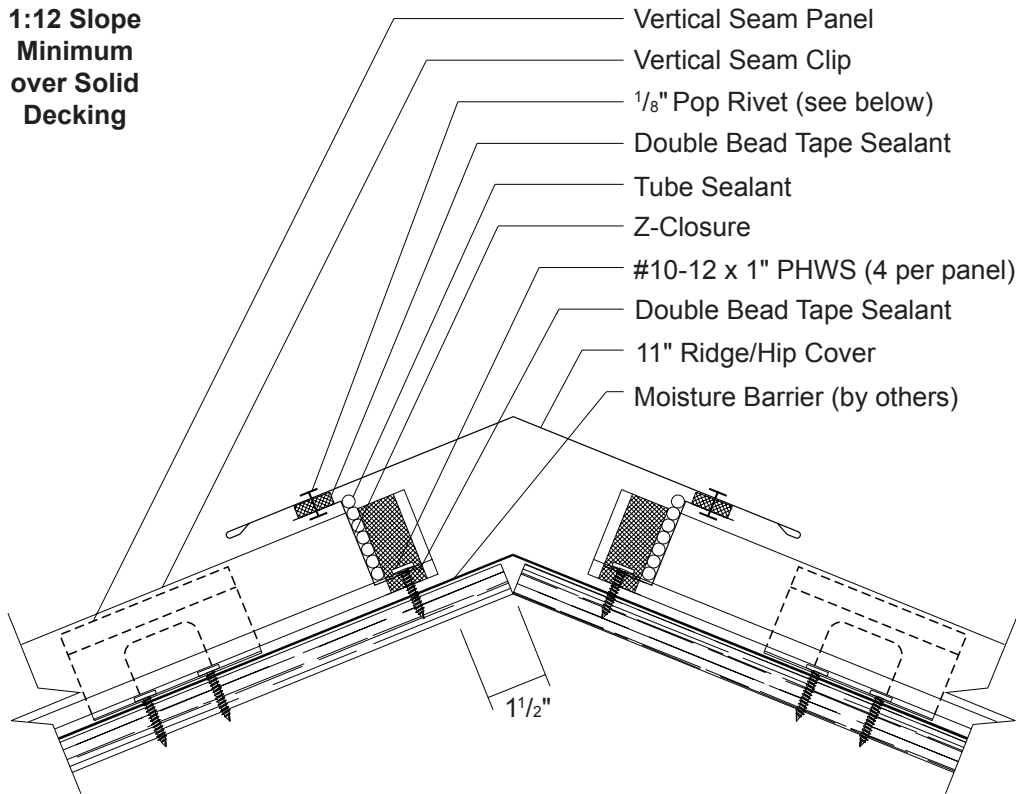
### INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rakewall installation (see pages 29 and 30).**

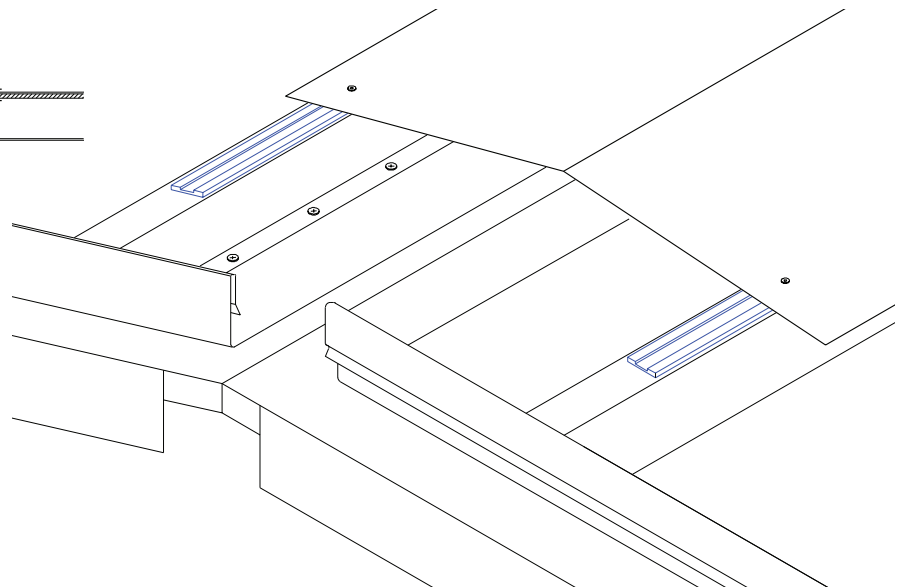
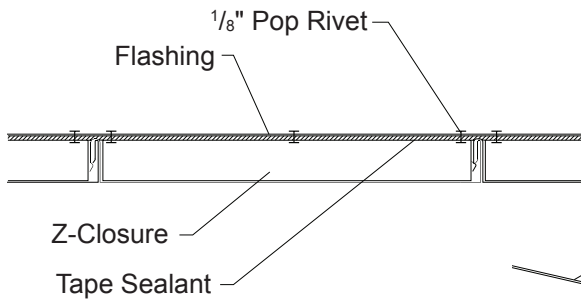
1. Field cut and bend off module panel up  $1\frac{3}{4}$ ".
2. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
3. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x  $1\frac{1}{4}$ " Self Driller XL, 1'-0" o.c.
4. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
5. Install Rakewall to the Rake Cleat with  $\frac{1}{8}$ " Pop Rivets, 1'-0" o.c. Do **NOT** fasten Rakewall to parapet wall.
6. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with  $\frac{1}{8}$ " Pop Rivets spaced  $2\frac{1}{2}$ " o.c.

# VERTICAL SEAM 11" RIDGE/HIP OVER DECKING

**1:12 Slope  
Minimum  
over Solid  
Decking**



**Note:**  
The low end of the panels must not be direct fastened to the decking.

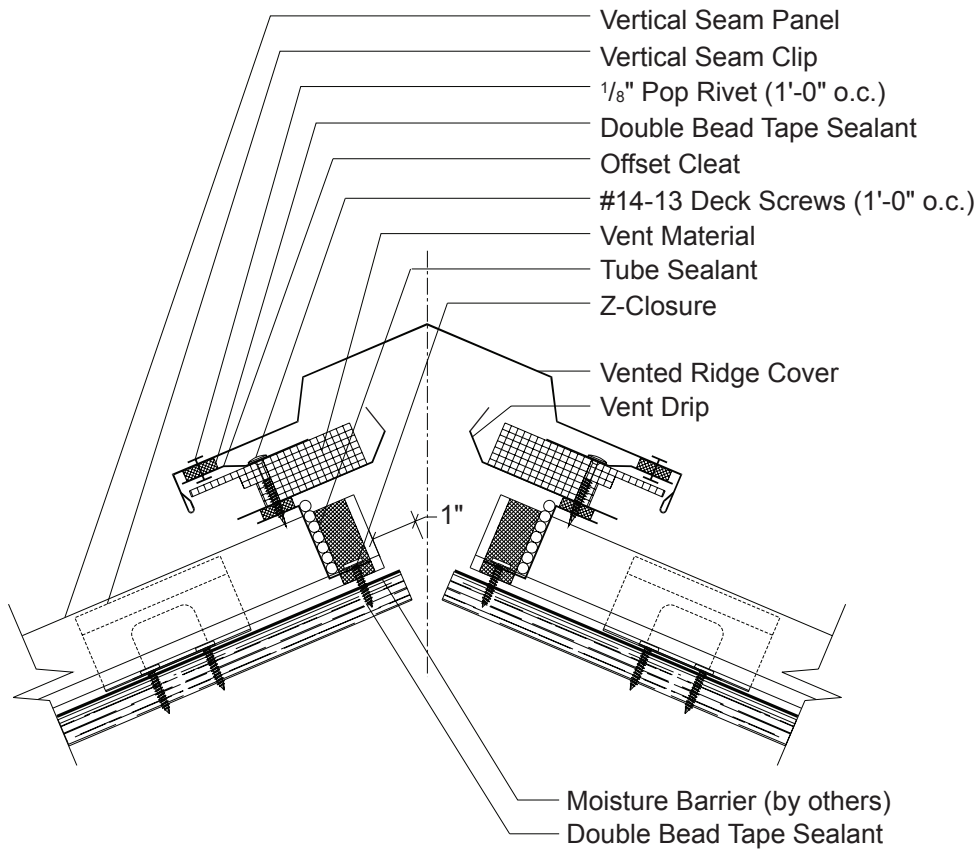


**CAUTION**  
Additional screws and pop rivets may be required for high snow / wind loading and steep slopes.

## INSTALLATION NOTES

1. Once panels have been installed, field cut the Z-Closure (see page 57) to fit between the panel ribs.
2. Place a row of Double Bead Tape Sealant across panel and over each panel rib approximately 2" from panel end. Before proceeding make sure Z-Closure location will accommodate 11" Ridge/Hip cover.
3. Install field cut Z-Closure (see page 57).
4. Fasten Z-Closure through panel with (4) #10-12 x 1" Pancake Head Wood Screws per panel.
5. Apply a row of Double Bead Tape Sealant across top leg of Z-Closure filling any gaps or openings around panel ribs.
6. Position and install 11" Ridge/Hip Cover flashing to Z-Closure with 1/8" Pop Rivets (as shown).
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

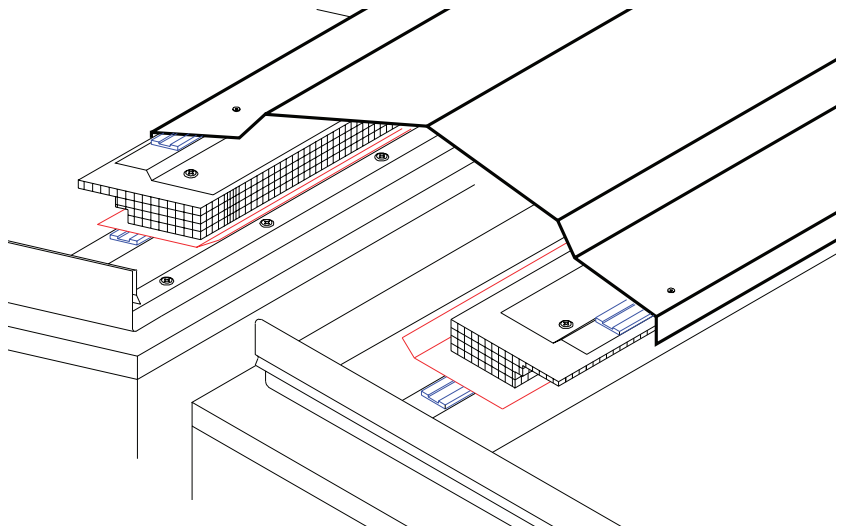
**1:12 Slope  
Minimum  
over Solid  
Decking**



**Note:**  
The low end of the panels must not be direct fastened to the decking.

### CAUTION

Additional screws and pop rivets may be required for high snow / wind loading and steep slopes.



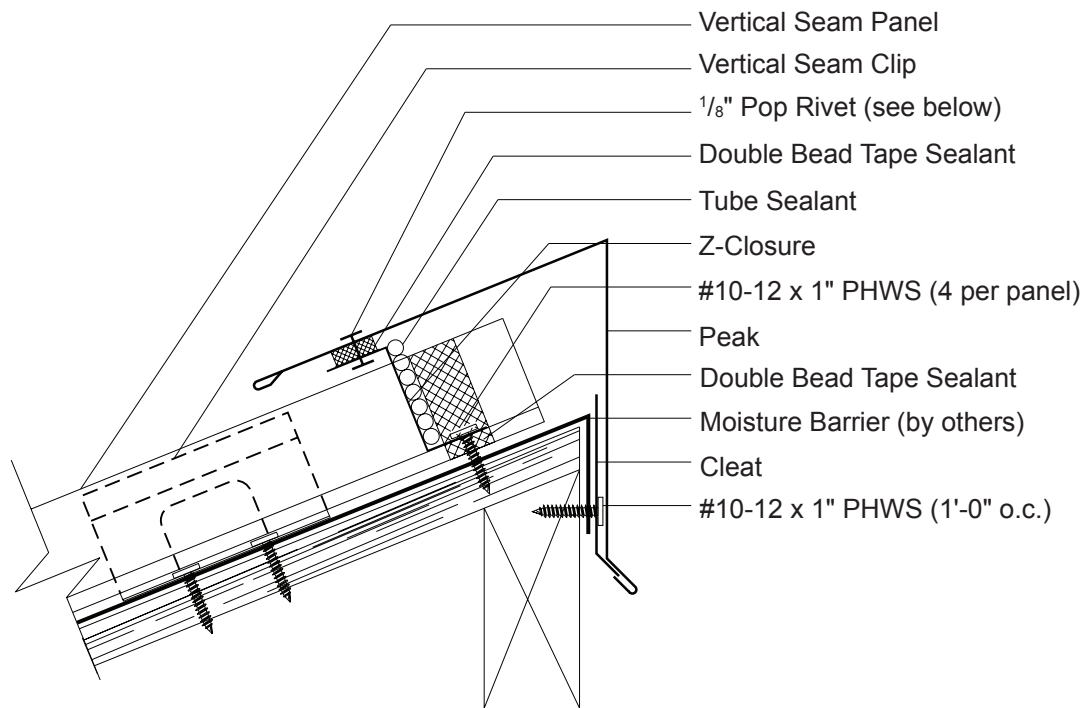
### INSTALLATION NOTES

1. Once panels have been installed, field cut the Z-Closure (see page 57) to fit between the panel ribs.
2. Place a row of Double Bead Tape Sealant across panel and over each panel rib approximately 2" from panel end. Before proceeding, make sure Z-Closure location will accommodate Vented Ridge cover.
3. Install field-cut Z-Closure (see page 57).
4. Fasten Z-Closure through panel with (4) #10-12 x 1" Pancake Head Wood Screws per panel.
5. Apply a row of Double Bead Tape Sealant across top leg of Z-Closure filling any gaps or openings around panel ribs.
6. Install Vent Drip, Vent Material and Offset Cleat, as shown above with #14-13 Deck Screws, 1'-0" o.c. and apply a row of Double Bead Tape Sealant to the top leg of the Offset Cleat.
7. Install Vented Ridge Cover to Offset Cleat with 1/8" Pop Rivets, 1'-0" o.c.
8. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

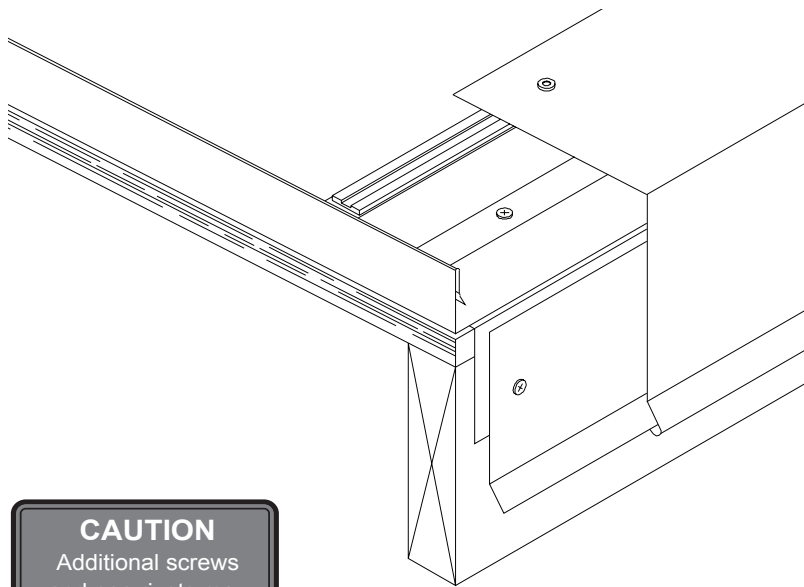


# VERTICAL SEAM PEAK OVER DECKING

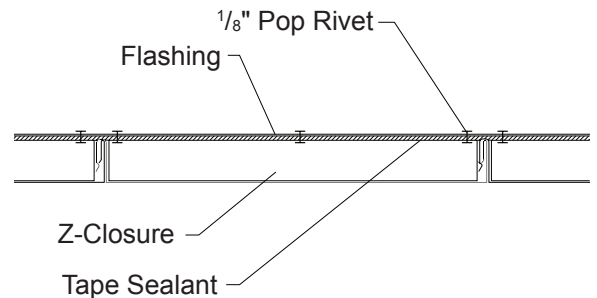
**1:12 Slope  
Minimum  
over Solid  
Decking**



**Note:**  
The low end of the panels must not be direct fastened to the decking.



**CAUTION**  
Additional screws and pop rivets may be required for high snow / wind loading and steep slopes.

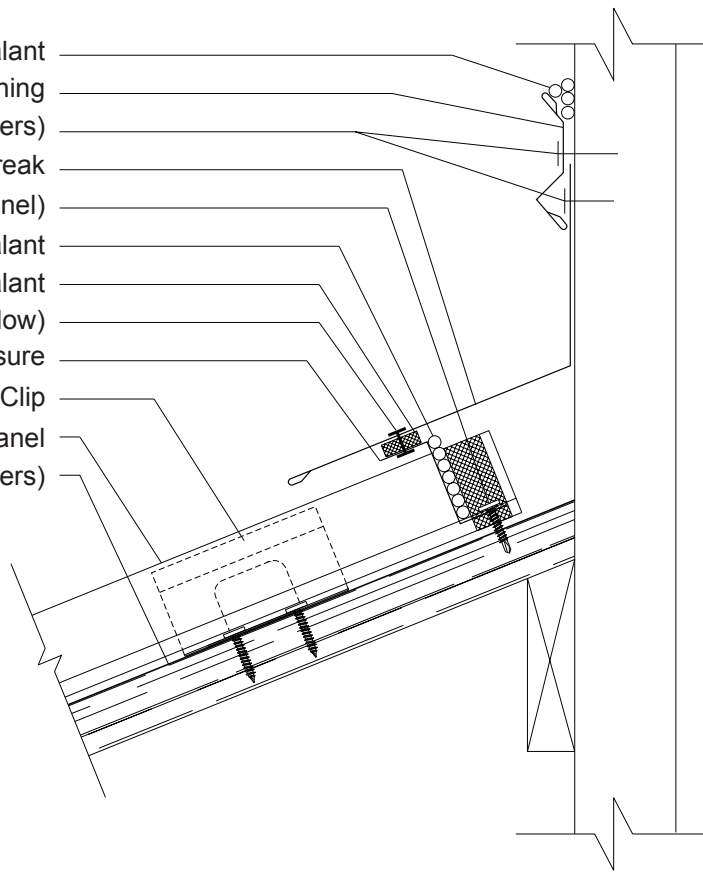


## INSTALLATION NOTES

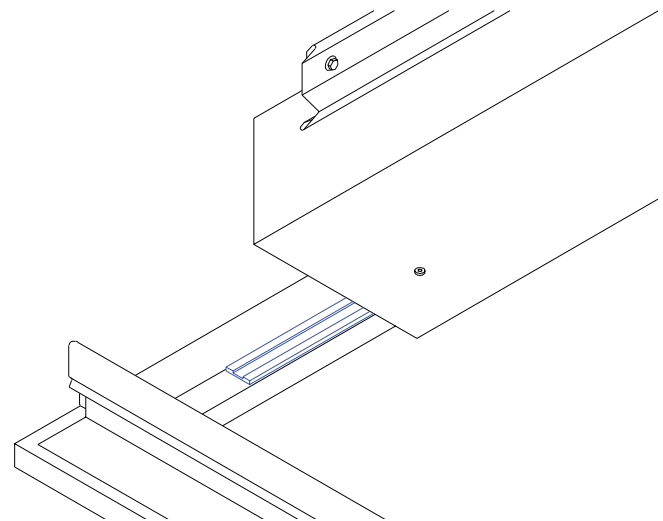
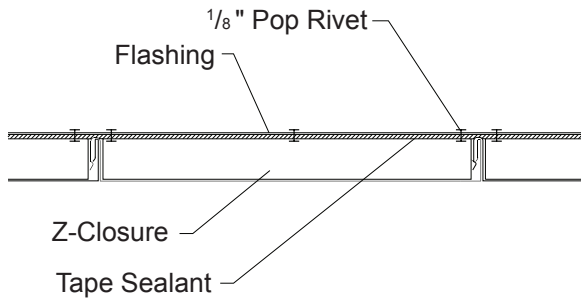
1. Once panels have been installed, field cut the Z-Closure (see page 57) to fit between the panel ribs.
2. Place a row of Double Bead Tape Sealant across panel and over each panel rib approximately 2" from panel end. Before proceeding make sure Z-Closure location will accommodate Peak trim.
3. Install field-cut Z-Closure (see page 57).
4. Fasten Z-Closure through panel with (4) #10-12 x 1" Pancake Head Wood Screws per panel.
5. Apply a row of Double Bead Tape Sealant across top leg of Z-Closure filling any gaps or openings around panel ribs.
6. Position and install Cleat to the wall with the appropriate fastener, 1'-0" o.c. Make sure Cleat allows for proper Peak attachment.
7. Install Peak flashing by sliding the open hem onto the Cleat and then attaching to the Z-Closure with 1/8" Pop Rivets, at the spacing shown above.
8. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**1:12 Slope  
Minimum  
over Solid  
Decking**

Tube Sealant  
Counter Flashing  
Fasteners (by others)  
Pitch Break  
#10-12 x 1" PHWS (4 per panel)  
Tube Sealant  
Double Bead Tape Sealant  
1/8" Pop Rivet (see below)  
Z-Closure  
Vertical Seam Clip  
Vertical Seam Panel  
Moisture Barrier (by others)



**Note:**  
The low end of the panels must not be direct fastened to the decking.



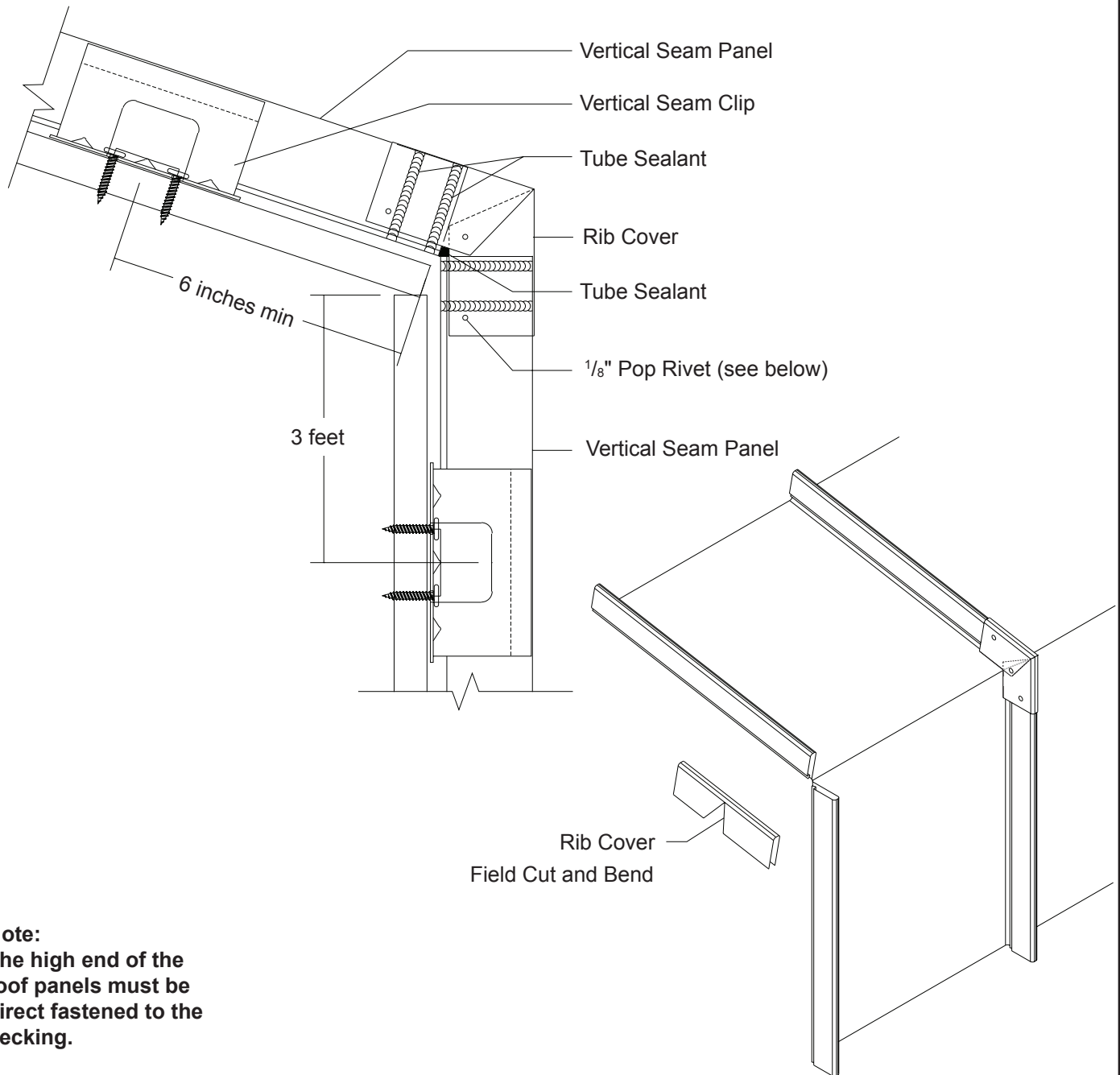
## CAUTION

Additional screws and pop rivets may be required for high snow / wind loading and steep slopes.

## INSTALLATION NOTES

1. Once panels have been installed, field cut the Z-Closure (see page 57) to fit between the panel ribs.
2. Place a row of Double Bead Tape Sealant across panel and over each panel rib approximately 2" from panel end. Before proceeding make sure Z-Closure location will accommodate Pitch Break flashing.
3. Install field-cut Z-Closure (see page 57).
4. Fasten Z-Closure through panel with (4) #10-12 x 1" Pancake Head Wood Screws per panel.
5. Apply a continuous bead of Tube Sealant across top leg of Z-Closure filling any gaps or openings around panel ribs. Position and install Pitch Break flashing to Z-Closure with 1/8" Pop Rivets (as shown).
6. Fasten vertical leg of Pitch Break to the parapet wall with the appropriate fastener, 1'-0" o.c.
7. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
8. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**1:12 Slope  
Minimum over  
Solid Decking**



**Note:**  
The high end of the roof panels must be direct fastened to the decking.

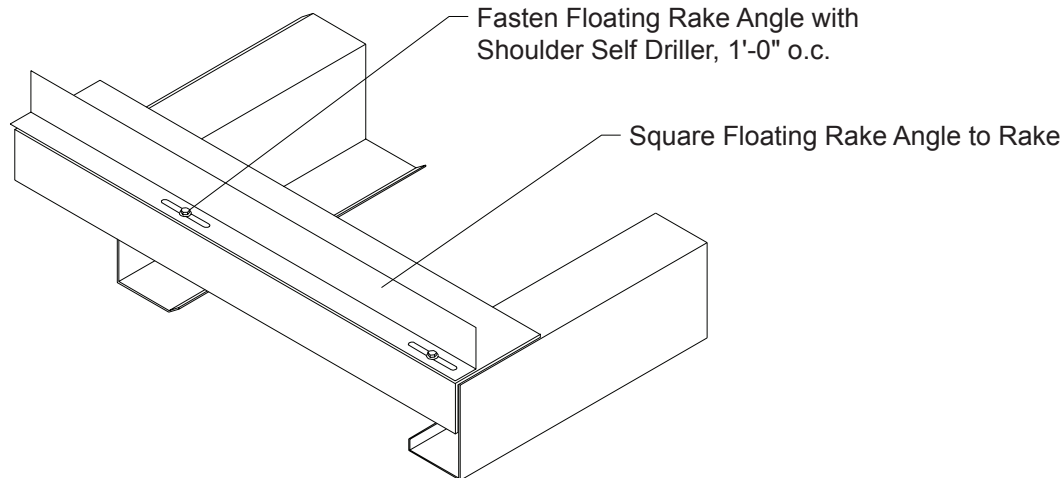
### INSTALLATION NOTES

1. ms-HT underlayment is recommended shingled up the wall and at least one run on the roof.
2. Cut panel ribs square across the width of the panel at the proper location along the length and bend the panel flat at the cut ribs.
3. Install panel with a Vertical Seam clip on the roof section of within 6" of the eave. In the wall section, install Vertical Seam clip 3' from the roof to permit thermal expansion of the roof panels. Use Panel Starter (not shown) at the bottom end of the wall panels by cutting a slot at the bottom of the panel ribs and inserting the panel flat into the Panel Starter hem.
4. For long roof panels, a gap between the panel and the top of the wall may be required to allow for thermal contraction of the roof panel.
5. Cut the Rib Cover and bend as shown so that it fits on the panel ribs across the transition and has room for  $\frac{1}{8}$ " Pop Rivets. The roof legs of the Rib Cover must overlap the wall legs of the Rib Cover.
6. Prior to installing the Rib Cover, apply Tube Sealant as shown across panel ribs and at the base of each side of the ribs.
7. Install  $\frac{1}{8}$ " Pop Rivets on each side of the Rib Cover to the roof panel rib, the wall panel rib and at the Rib Cover leg lap.

### INSTALLING FLOATING RAKE ANGLE

# STEP 1

1. Install Floating Rake Angle at all rake and rake parapet conditions. Square Floating Rake Angle to rake condition. **It is critical that Floating Rake Angle be square to building as this will control alignment of panels (see page 25 to check building square).**
2. Fasten to framing with 1/4"-14 x 1 1/4" Shoulder Self Driller screws, 1'-0" o.c. **Do not over tighten screws for it is imperative that the Vertical Seam roof system be allowed to float.**
3. If two or more Floating Rake Angles are required, butt ends. **Do not overlap Floating Rake Angles.**

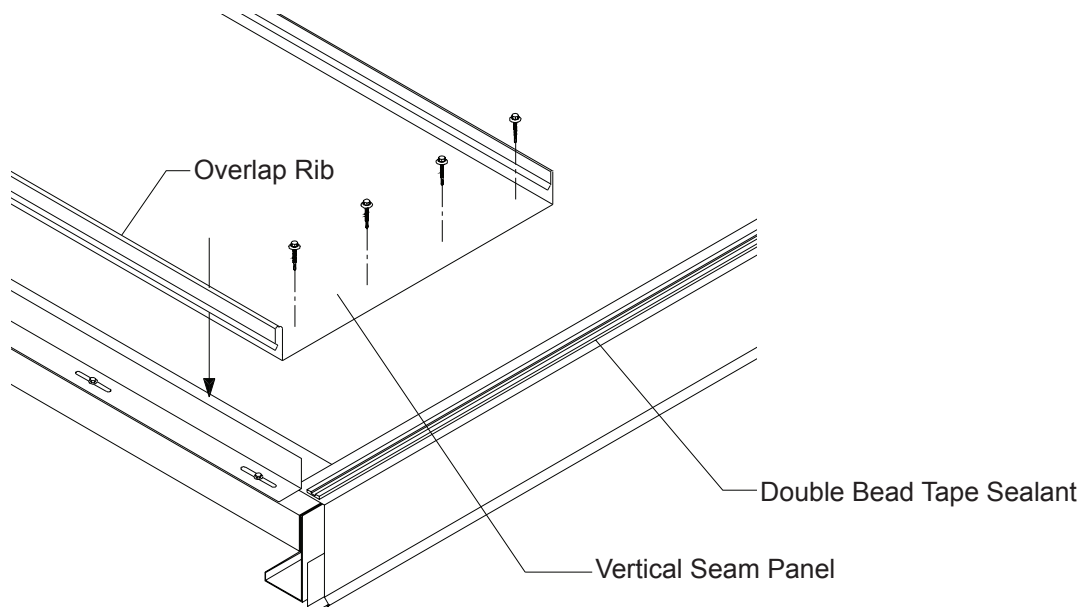


### INSTALLING FIRST PANEL

# STEP 2

**Note: Insulation, Eave, Box Gutter and Valley flashings must first be installed before panel installation can begin (see pages 46 to 49). Vertical Seam panels must be installed going from left to right when looking from eave to peak.**

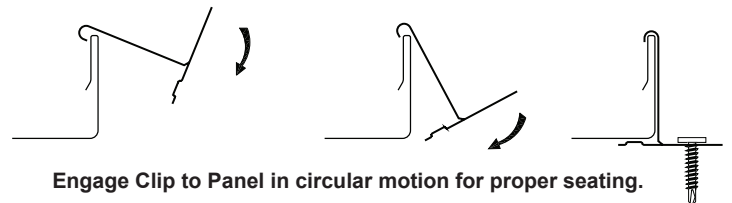
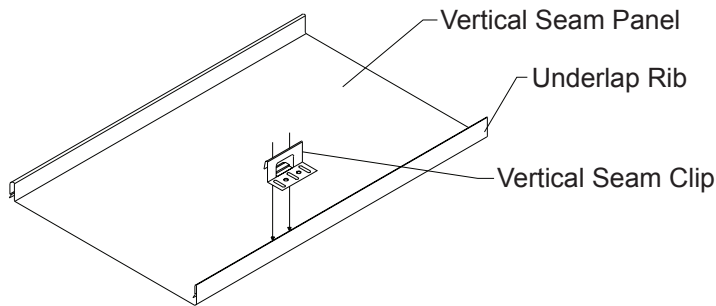
1. Apply a row of Double Bead Tape Sealant along the top segment of the Eave, Extended Eave or Box Gutter flashing.
2. Install the first panel so that the overlap rib is on top of the Floating Rake Angle and has the proper overhang. Make sure that the panel is square to the eave and rake.
3. Fasten Vertical Seam panel with (4) #12-14 x 1 1/4" Self Driller XL per panel through the Double Bead Tape Sealant, flashing and into the framing (as shown below).



### INSTALLING VERTICAL SEAM CLIP

#### STEP 3

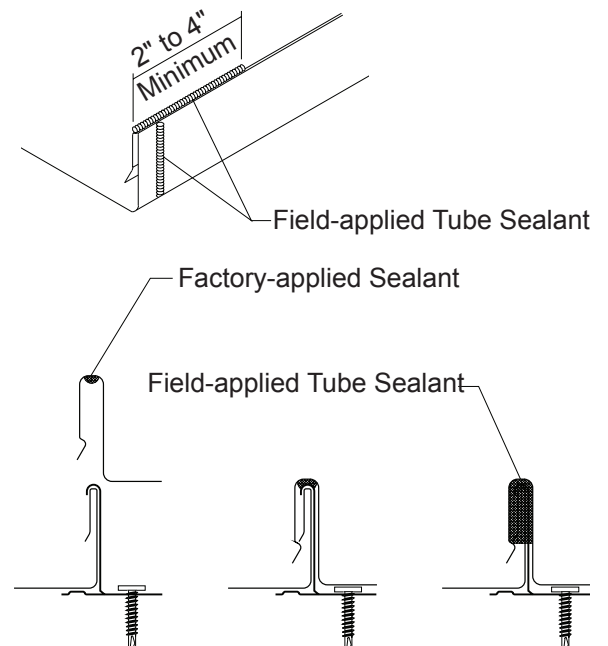
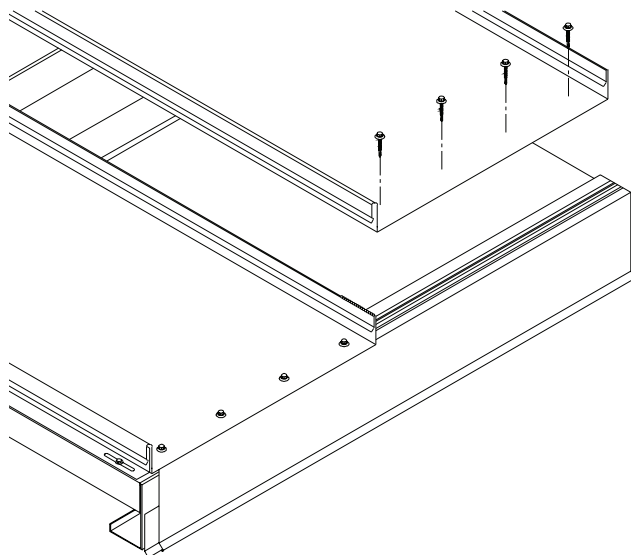
1. Once the first panel has been installed, roll the first clip into lock position over the underlap rib of the panel (see below).
2. Fasten the Vertical Seam clip to the framing with the proper type and number of fasteners (see chart on page 27). If a fastener strips out, remove the clip and reposition it so the fastener can drill a new hole at least  $\frac{3}{8}$ " from the stripped hole or install an oversized fastener into the stripped hole. Failure to do so will impact the system to resist the applied loads.
3. Repeat steps 1 and 2 to install clips along the underlap rib of the panel from eave to peak at every framing member. For certain building codes and state or county specifications, special clip spacing may be required. Please contact Metal Sales for specific clip and fastener spacing.



### INSTALLING SECOND PANEL

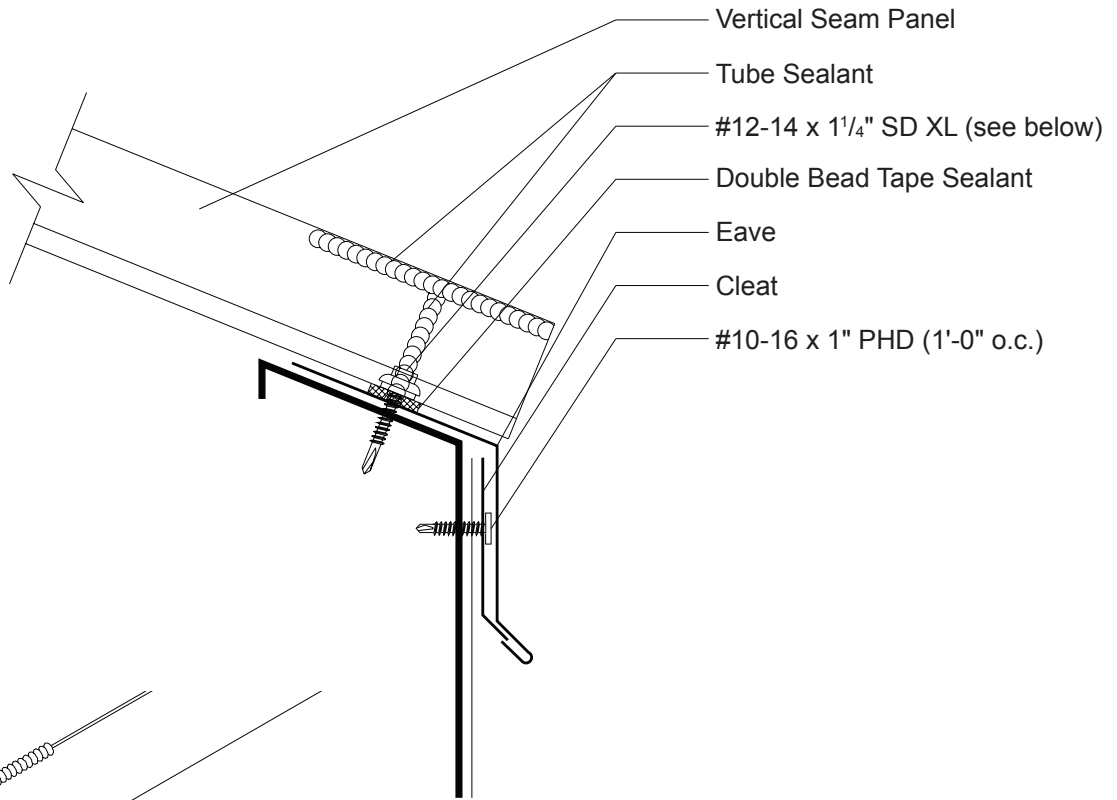
#### STEP 4

1. Prior to installing the second Vertical Seam panel, Tube Sealant must be placed on the underlap rib of the first panel (see below).
2. Snap the second panel in place making sure panel ends at eave are properly aligned. **It is critical that panels only be snapped in one direction.**
3. Fasten Vertical Seam panel with (4) #12-14 x  $1\frac{1}{4}$ " Self Driller XL per panel through the Double Bead Tape Sealant, flashing and into the framing, as shown below.
4. Repeat steps 2 and 3 for remaining panels.
5. Make sure all panels are properly snapped into place. Also clean any debris and excess sealant before continuing to the next section of the roof.
6. Once installation is complete, fill the end of each panel rib with Tube Sealant (as shown below).

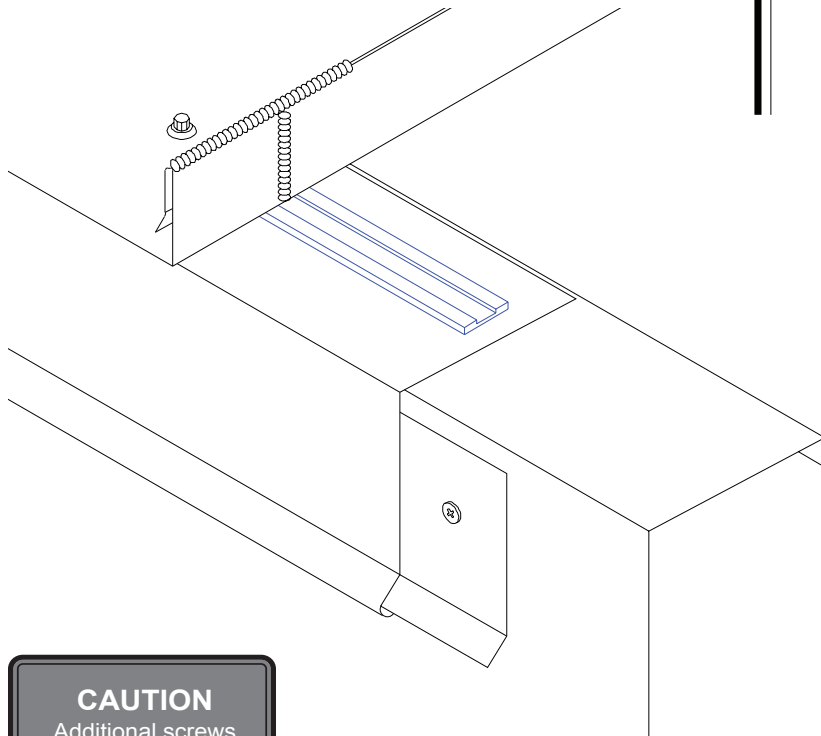


# VERTICAL SEAM EAVE OVER OPEN FRAMING

**3:12 Slope  
Minimum**



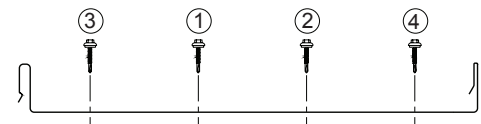
- Vertical Seam Panel
- Tube Sealant
- #12-14 x 1 1/4" SD XL (see below)
- Double Bead Tape Sealant
- Eave
- Cleat
- #10-16 x 1" PHD (1'-0" o.c.)



**Note:**  
The high end of the panels must not be direct fastened to the framing.

## CAUTION

Additional screws may be required for high snow loading and steep slopes.



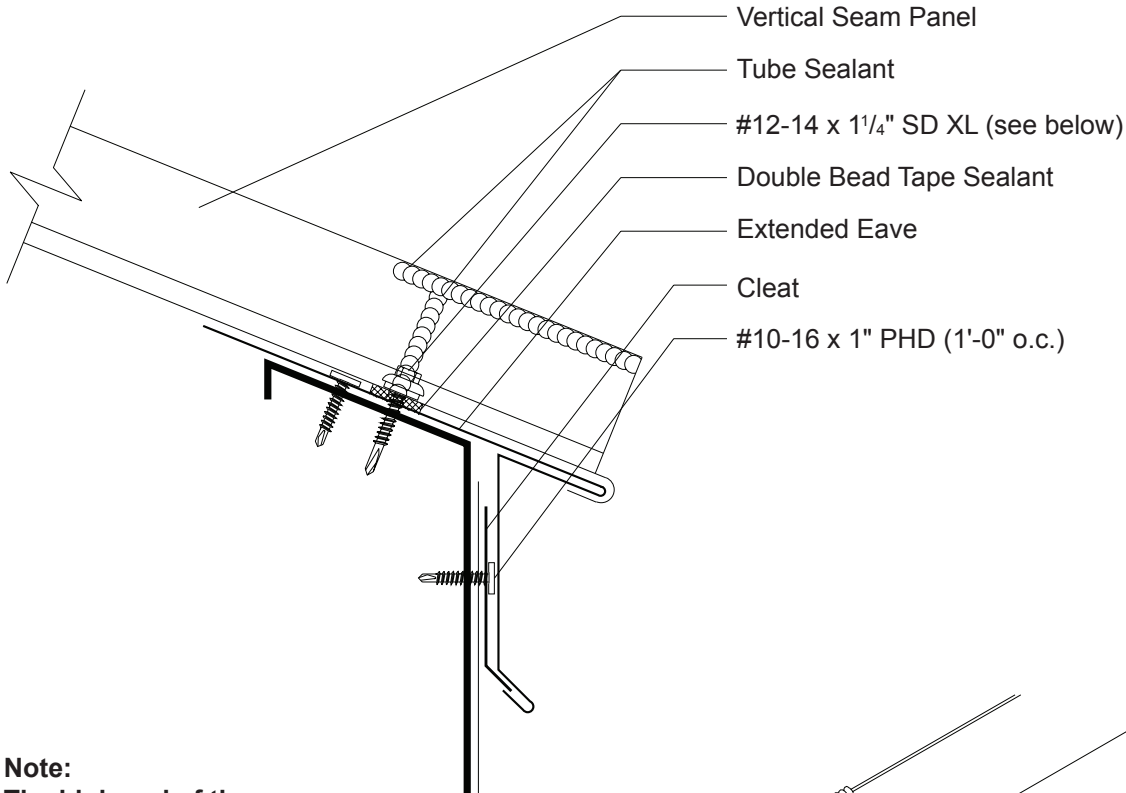
**Vertical Seam Fastening Pattern**

## INSTALLATION NOTES

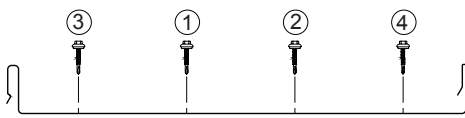
**All Eave flashings must be installed prior to panel installation.**

1. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows proper Eave attachment.
2. Install Eave flashing by sliding open hem onto Cleat and resting the Eave flashing against the framing and fasten with #10-16 x 1" Pancake Head Driller, 4'-0" o.c. to hold the Eave flashing in place during installation.
3. Apply a row of Double Bead Tape Sealant along the top leg of the Eave flashing about 2" from the end.
4. Install panel by fastening through with #12-14 x 1 1/4" Self Driller XL screws (see pages 44 and 45 for panel installation).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**3:12 Slope  
Minimum**

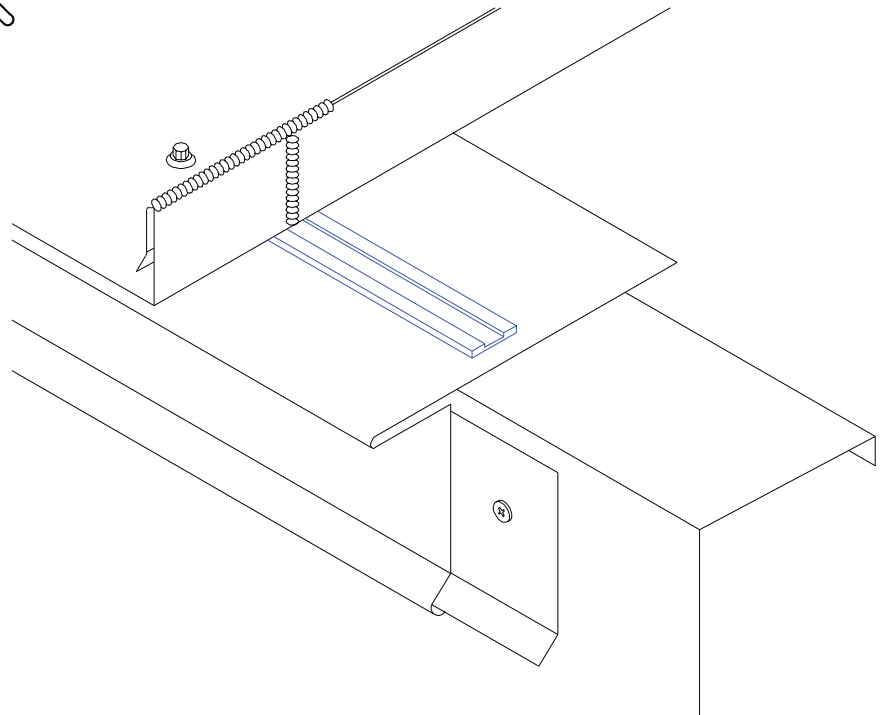


**Note:**  
The high end of the panels must not be direct fastened to the framing.



**Vertical Seam Fastening Pattern**

**CAUTION**  
Additional screws may be required for high snow loading and steep slopes.

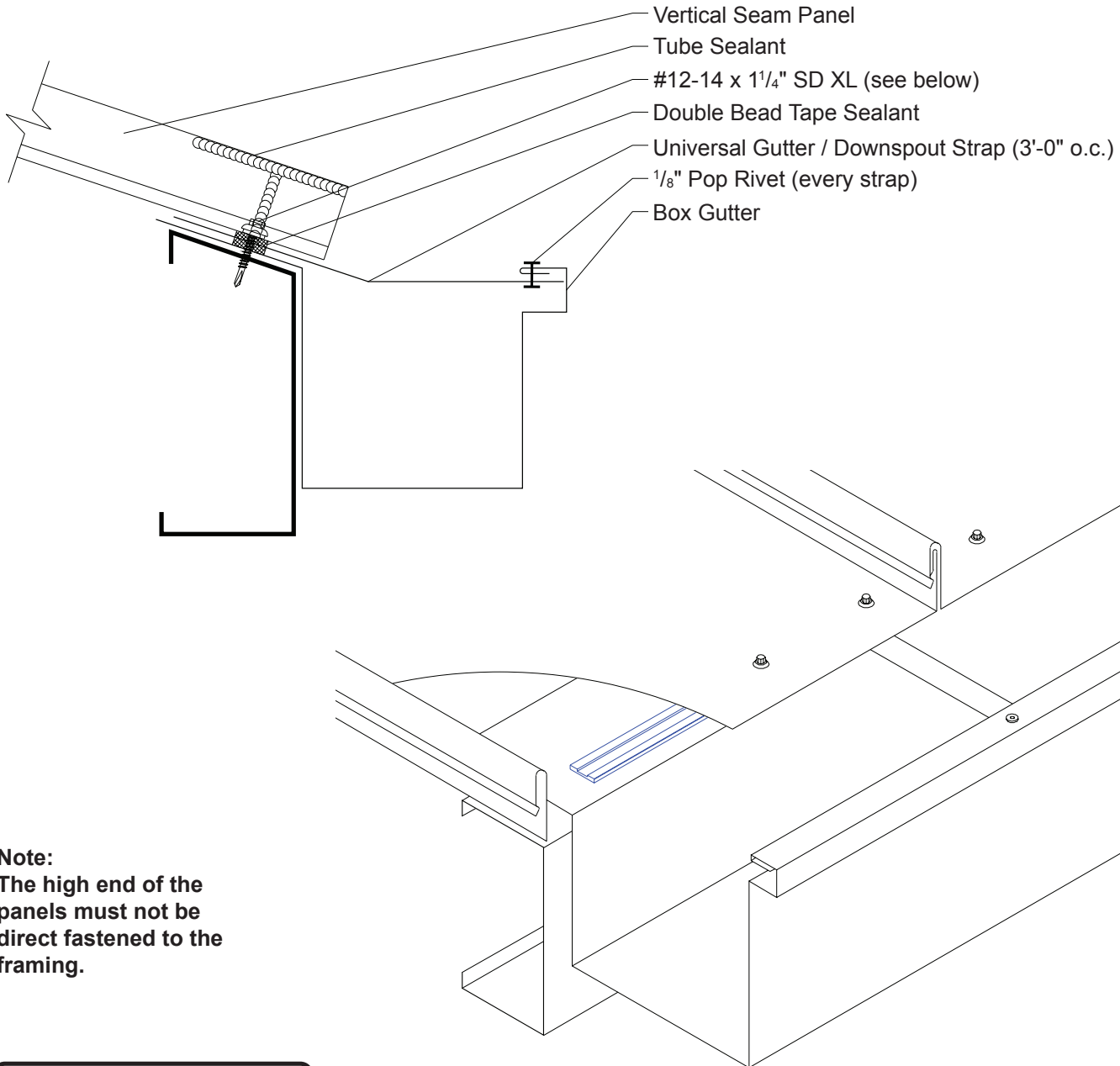


### INSTALLATION NOTES

**All Extended Eave flashings must be installed prior to panel installation.**

1. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Extended Eave attachment.
2. Install Extended Eave flashing by sliding open hem onto Cleat and resting Extended Eave flashing back against framing. Fasten to framing with #10-16 x 1" Pancake Head Driller, 4'-0" o.c. to hold Extended Eave flashing in place during installation.
3. Apply a row of Double Bead of Tape Sealant to the Extended Eave flashing.
4. Install panel by fastening through with #12-14 x 1 1/4" Self Drillers XL Screws (see pages 44 and 45 for panel installation).
5. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**3:12 Slope  
Minimum**

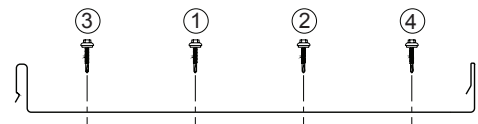


**Note:**  
The high end of the panels must not be direct fastened to the framing.

**CAUTION**

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

**Note:**  
Expansion Joint spacing for Box Gutter should be no more than 50'. Down Spout spacing should be no more than 50'.



**Vertical Seam Fastening Pattern**

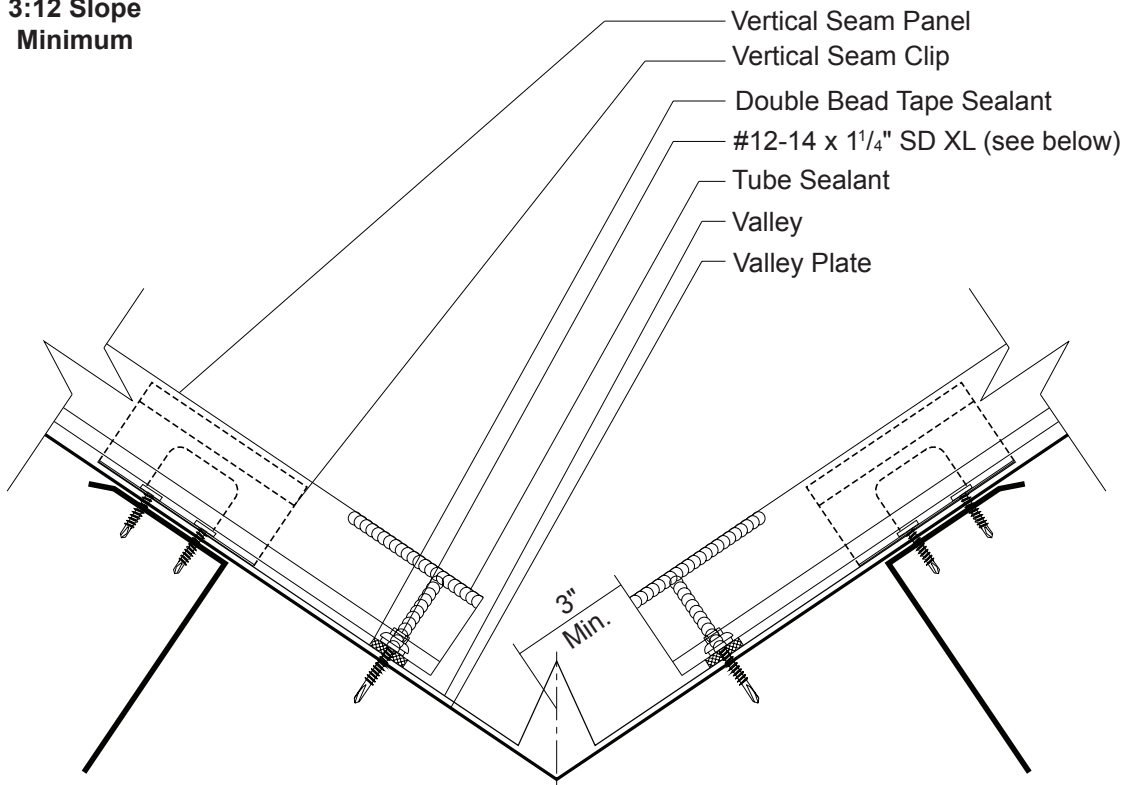
**INSTALLATION NOTES**

**All Box Gutter flashings must be installed prior to panel installation.**

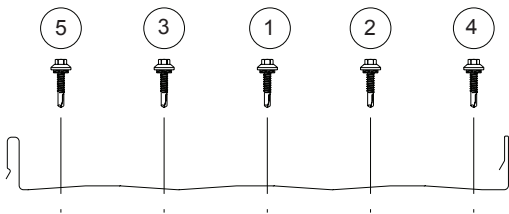
1. Install Box Gutter flashing against the eave framing. To hold Box Gutter flashing in place, fasten to framing with #10-16 x 1" Pancake Head Drillers, 4'-0" o.c.
2. Install Universal Gutter/Downspout Straps every 3'-0" of gutter length to framing with #10-16 x 1" Pancake Head Drillers and fasten to Box Gutter with (1) 1/8" Pop Rivet per strap.
3. Install panel by fastening through with #12-14 x 1 1/4" Self Driller XL screws (see pages 44 and 45 for panel installation).
4. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.



**3:12 Slope  
Minimum**

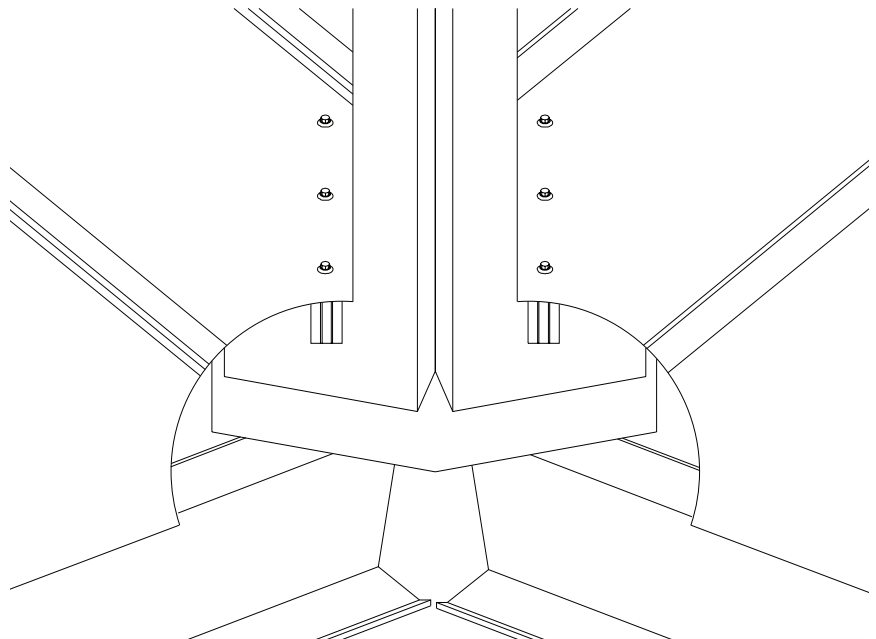


**Note:**  
The high end of the panels must not be direct fastened to the framing.



**Vertical Seam Fastening Pattern**

**CAUTION**  
Additional screws may be required for high snow loading and steep slopes.

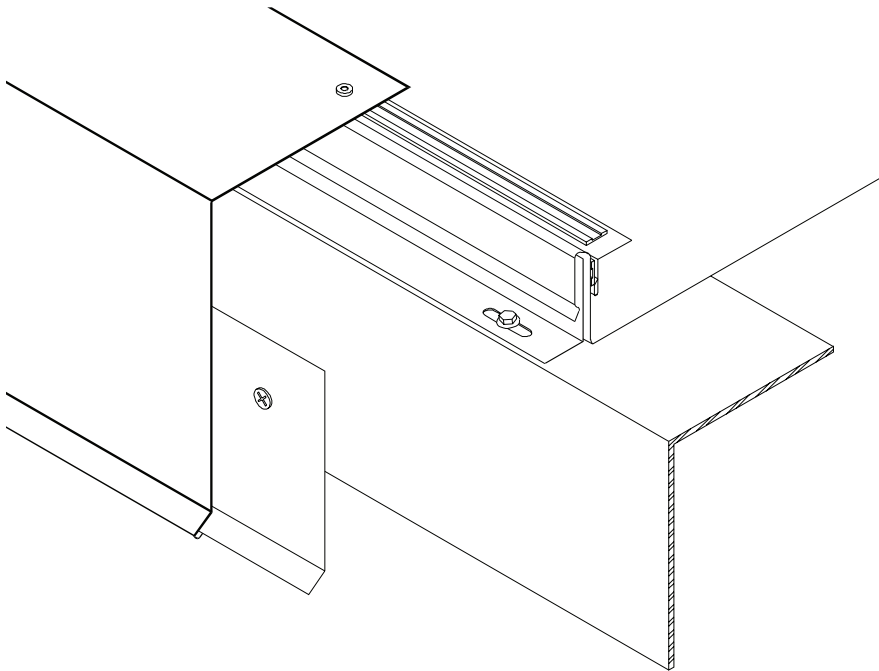
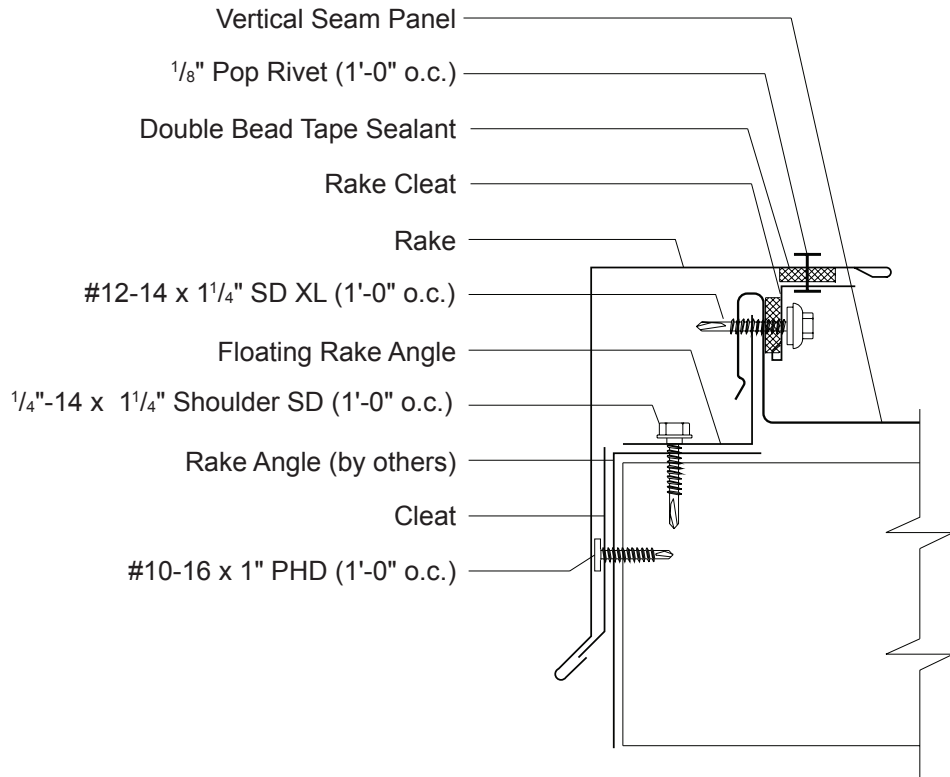


## INSTALLATION NOTES

All Valley flashings must be installed prior to panel installation. If two or more Valley flashings are required, Valley flashing must be installed working from eave to peak.

1. Install Valley flashing back against framing and fasten with #10-16 x 1" Pancake Head Driller, 4'-0" o.c. to hold flashing place during installation.
2. Apply a row of Double Bead Tape Sealant across both sides of Valley flashing about 3" from the center of the valley.
3. Field cut the Vertical Seam panel to the appropriate angle and install over the Valley flashing, with (5) #12-14 x 1 1/4" Self Driller XL screws, as shown above (see pages 44 and 45 for panel installation).
4. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with (2) 1/8" Pop Rivets in the 2" water diverter.

**3:12 Slope  
Minimum**

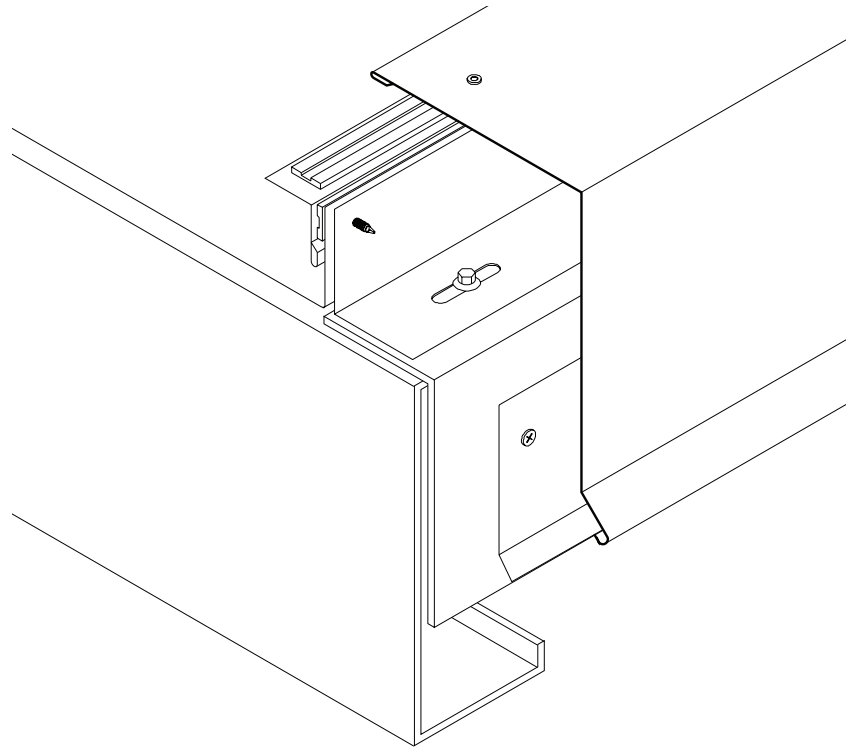
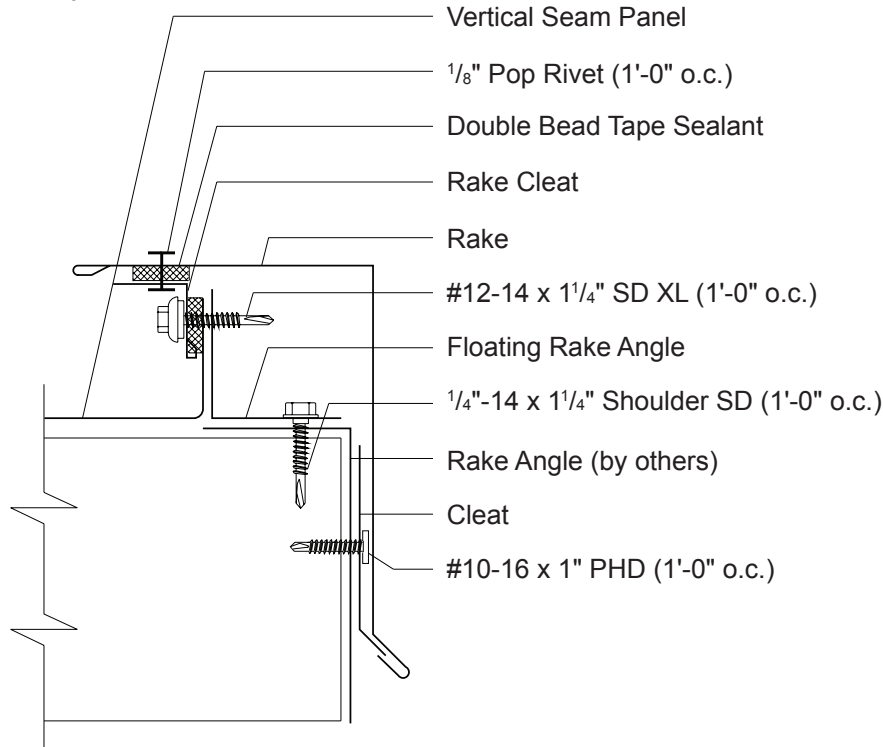


## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rake installation (see pages 44 and 45).**

1. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
2. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x 1 1/4" Self-Driller XL, 1'-0" o.c.
3. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Rake attachment.
4. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
5. Install Rake by sliding the open hem onto the Cleat and then attaching to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
6. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**3:12 Slope  
Minimum**

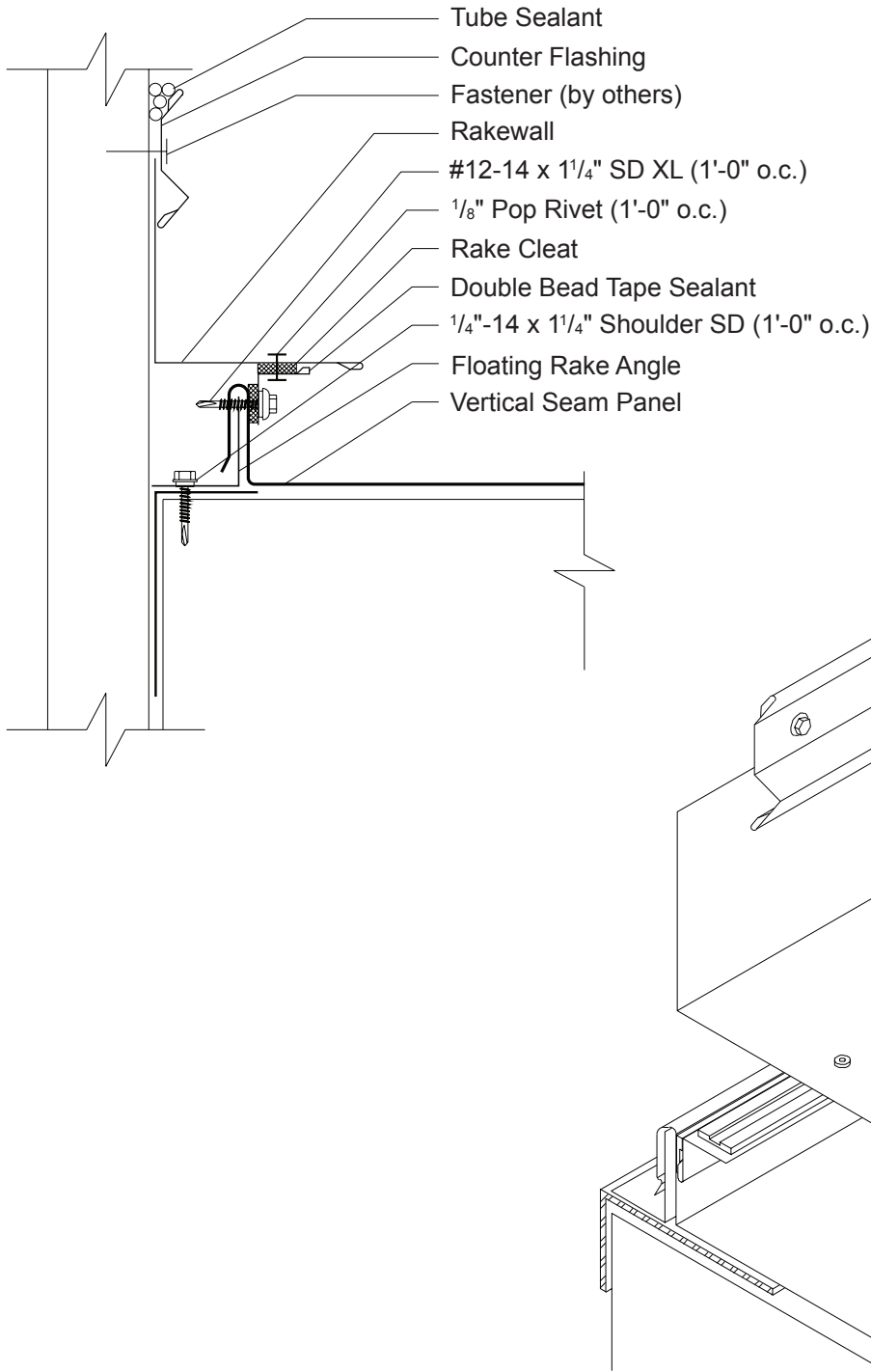


## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rake installation (see pages 44 and 45).**

1. Field cut and bend off module panel up 1 3/4".
2. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
3. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x 1 1/4" Self-Driller XL, 1'-0" o.c.
4. Position and install Cleat to wall with appropriate fastener, 1'-0" o.c. Make sure Cleat location allows for proper Rake attachment.
5. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
6. Install Rake by sliding the open hem onto the Cleat and then attaching to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

3:12 Slope  
Minimum

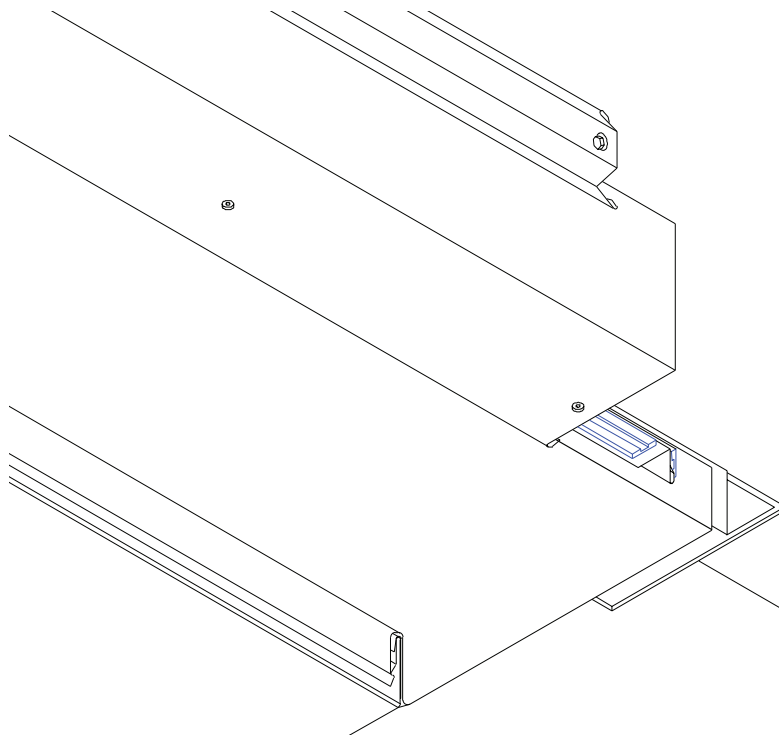
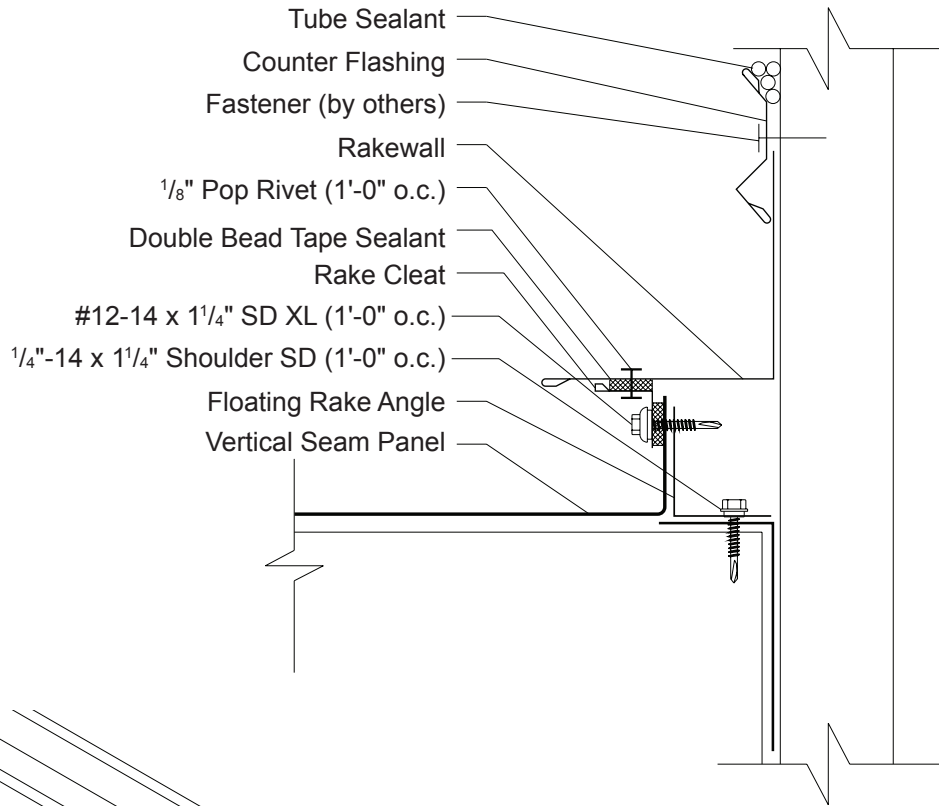


## INSTALLATION NOTES

**Vertical Seam panels and Floating Rake Angles must be installed prior to Rakewall installation (see pages 44 and 45).**

1. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
2. Position and install Rake Cleat through panel and into Floating Rake Angle with #12-14 x 1 1/4" Self Driller XL, 1'-0" o.c.
3. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
4. Install Rakewall to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c.
5. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
6. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

3:12 Slope  
Minimum



• Field bend Panel rib up 1<sup>3</sup>/<sub>4</sub>"

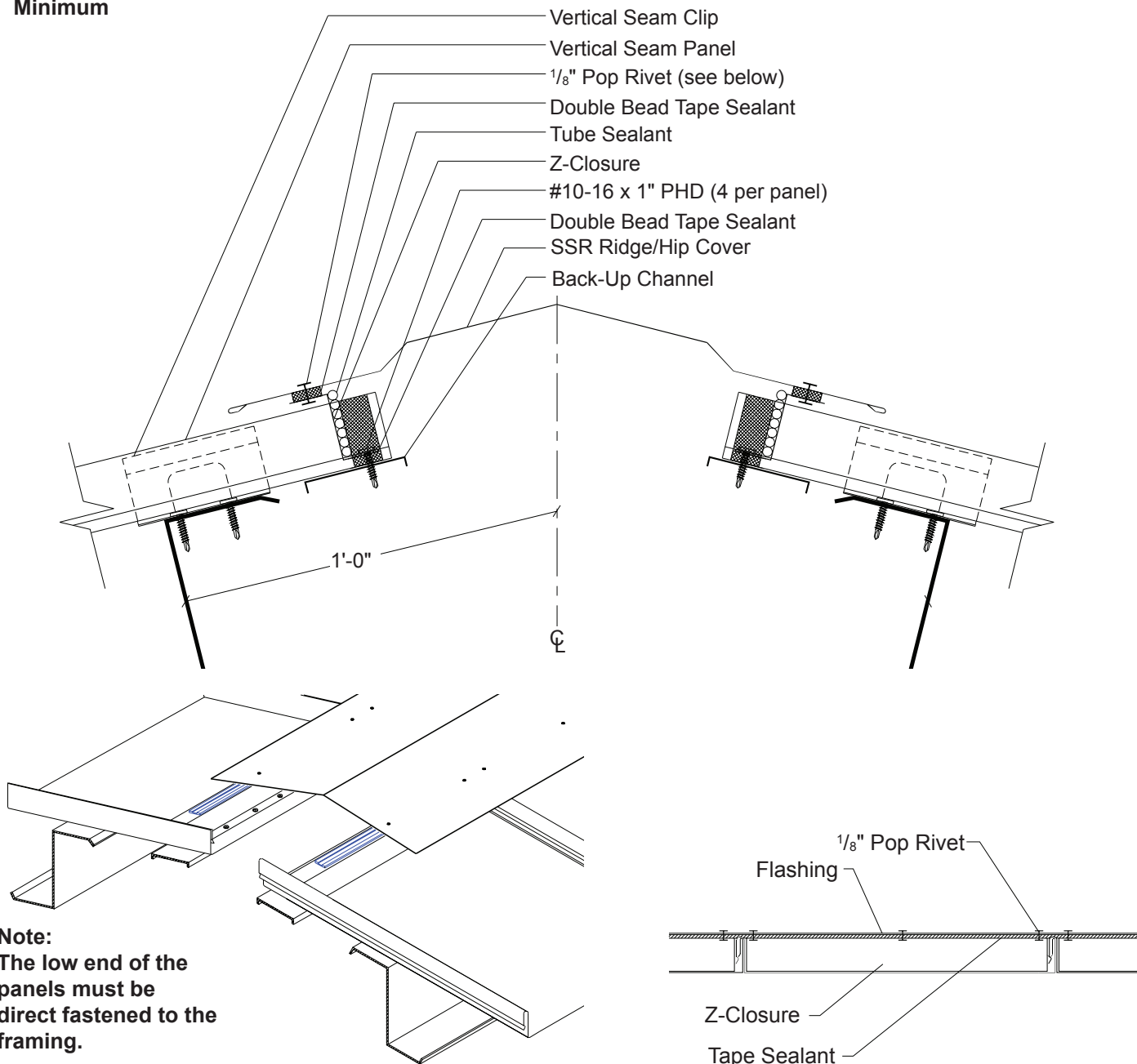
## INSTALLATION NOTES

**Vertical Seam panels must be installed prior to Rake installation (see pages 44 and 45).**

1. Field cut and bend off module panel up 1<sup>3</sup>/<sub>4</sub>".
2. Apply a row of Double Bead of Tape Sealant to vertical leg of Vertical Seam panel.
3. Position and install Rake Cleat through panel and into the Floating Rake Angle with #12-14 x 1<sup>1</sup>/<sub>4</sub>" Self Driller XL, 1'-0" o.c.
4. Apply a row of Double Bead Tape Sealant to top leg of Rake Cleat.
5. Install Rakewall to the Rake Cleat with 1/8" Pop Rivets, 1'-0" o.c. Do **NOT** fasten Rakewall to parapet wall.
6. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2<sup>1</sup>/<sub>2</sub>" o.c.

# VERTICAL SEAM SSR RIDGE/HIP OVER OPEN FRAMING

3:12 Slope  
Minimum

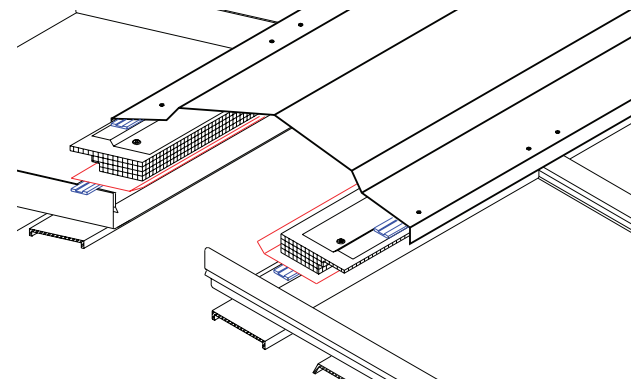
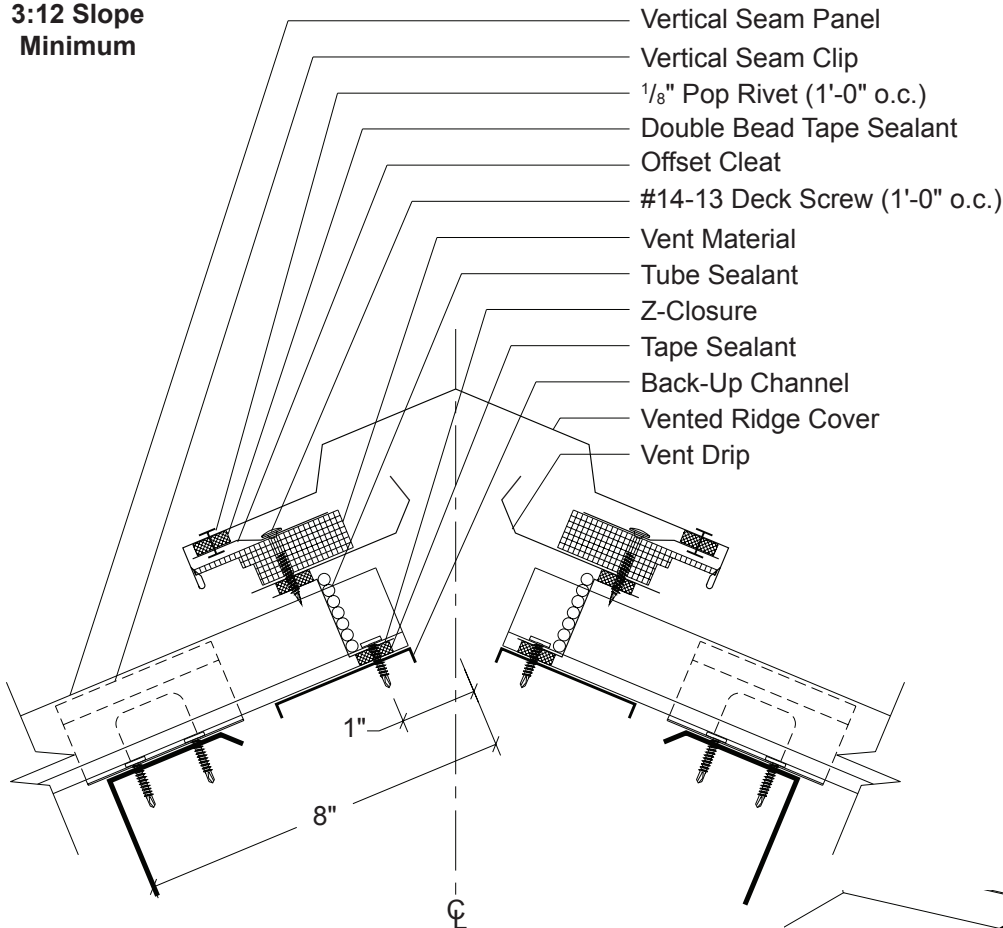


**Note:**  
The low end of the panels must be direct fastened to the framing.

## INSTALLATION NOTES

1. Once panels have been installed, slide Back-Up Channel under upper edge of panels. Locate Back-Up Channel to allow proper installation of Ridge/Hip assembly. Use C-Clamps to hold Back-Up Channel in place.
2. Apply a row of Double Bead Tape Sealant across panel, up and over all ribs approximately 2" from panel end on both sides of Ridge/Hip.
3. Install Z-Closures over Double Bead Tape Sealant. Before continuing make sure Z-Closure location will accommodate SSR Ridge/Hip Cover (see page 57).
4. Once Z-Closure is set in Double Bead Tape Sealant, fasten through Z-Closure, Double Bead Tape Sealant, Vertical Seam panel and into Back-Up Channel with (4) #10-16 x 1" PHD per panel. C-Clamps may be removed once Z-Closures have been fastened.
5. Once all Z-Closures have been installed, place a row of Double Bead Tape Sealant across top of the Z-Closure on both sides of the Ridge/Hip. Tube Sealant must be used to fill any and all gaps left around the Z-Closures.
6. Install SSR Ridge/Hip Cover and secure to top leg of Z-Closure with 1/8" Pop Rivets as shown above.
7. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**3:12 Slope  
Minimum**



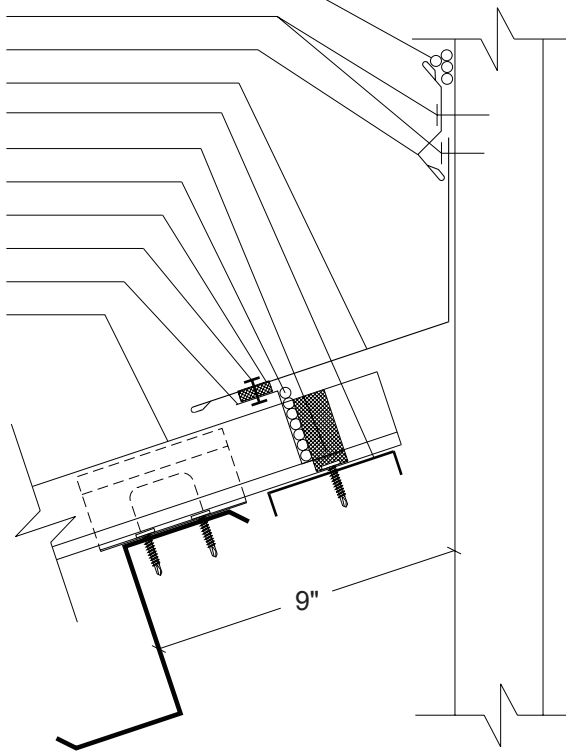
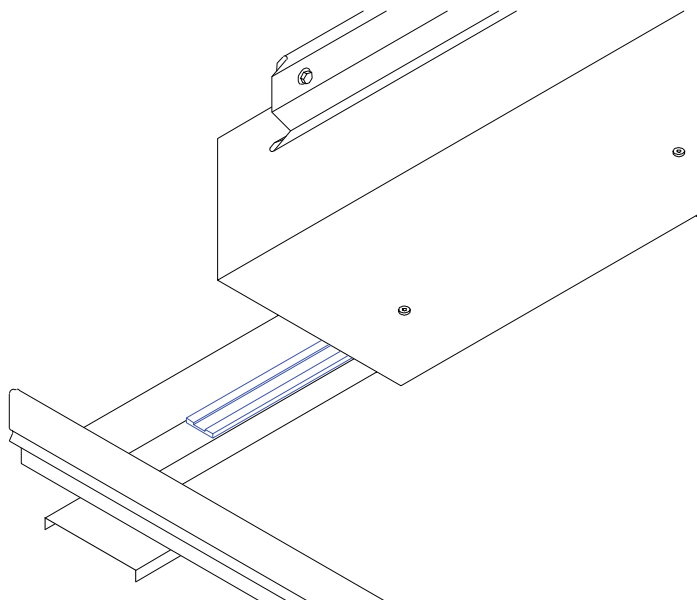
**Note:**  
The low end of the panels must be direct fastened to the framing.

## INSTALLATION NOTES

1. Once panels have been installed, slide Back-Up Channel under upper edge of panels. Locate Back-Up Channel to allow proper installation of Vented Ridge assembly. Use C-Clamps to hold Back-Up Channel in place.
2. Apply a row of Double Bead Tape Sealant across panel, up and over all ribs approximately 2" from panel end on both sides of ridge.
3. Install Z-Closures over Double Bead Tape Sealant. Before continuing make sure Z-Closure location will accommodate Vented Ridge Cover (see page 57).
4. Once Z-Closure is set in Double Bead Tape Sealant, fasten through Z-Closure, Double Bead Tape Sealant, Vertical Seam panel and into Back-Up Channel with (4) #10-16 x 1" PHD per panel. C-Clamps may be removed once Z-Closures have been fastened.
5. Once all Z-Closures have been installed, place a row of Double Bead Tape Sealant across top of the Z-Closure on both sides of the ridge. Tube Sealant must be used to fill any and all gaps left around the Z-Closures.
6. Install Vent Drip, Vent Material and Offset Cleat and fasten to top leg of Z-Closure with #14-13 Deck Screws, 1'-0" o.c.
7. Apply a row of Double Bead Tape Sealant across outer leg of Offset Cleat.
8. Install Vented Ridge Cover and secure to outer leg of Offset Cleat with 1/8" Pop Rivets as shown above.
9. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

**3:12 Slope  
Minimum**

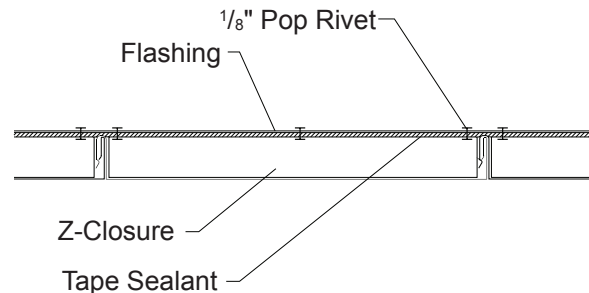
Tube Sealant  
 Fasteners (by others)  
 Counter Flashing  
 Pitch Break  
 Back-Up Channel  
 #10-16 x 1" PHD (4 per panel)  
 Tube Sealant  
 Double Bead Tape Sealant  
 1/8" Pop Rivet (see below)  
 Z-Closure  
 Vertical Seam Panel



**Note:**  
The low end of the panels must be direct fastened to the framing.

### CAUTION

Additional screws may be required for high snow loading and steep slopes.



### INSTALLATION NOTES

1. Once panels have been installed, slide Back-Up Channel under upper edge of panels. Locate Back-Up Channel to allow proper installation of Endwall assembly. Use C-Clamps to hold Back-Up Channel in place.
2. Place a row of Double Bead Tape Sealant across panel and over each panel rib approximately 2" from panel end.
3. Install field-cut Z-Closure over Double Bead Tape Sealant. Before continuing, make sure Z-Closure location will accommodate Pitch Break flashing (see page 57).
4. Once Z-Closure is set in Double Bead Tape Sealant, fasten through Z-Closure, and into Back-Up Channel with (4) #10-16 x 1" Pancake Head Drillers per panel. C-Clamps may be removed once Z-Closures have been fastened.
5. Apply a continuous bead of Tube Sealant across top leg of Z-Closure filling any gaps or openings or openings around panel ribs. Position and install Pitch Break flashing to Z-Closure with 1/8" Pop Rivets as shown.
6. Fasten vertical leg of Pitch Break to the parapet wall with the appropriate fastener, 1'-0" o.c.
7. Install Counter Flashing, Reglet or wall panel and fasten to parapet wall with appropriate fastener, 1'-0" o.c. If Counter Flashing or Reglet is used, seal to parapet wall with Tube Sealant. Do **NOT** fasten Rakewall to wall.
8. If two or more flashings are required, lap the flashing over the previously installed flashing by a minimum of 2" placing a bead of Tube Sealant between the flashings and securing with 1/8" Pop Rivets spaced 2 1/2" o.c.

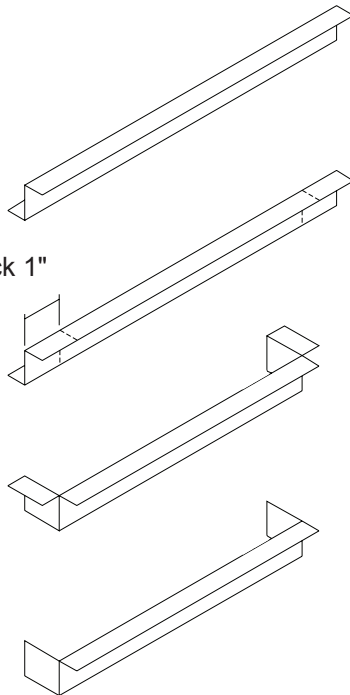
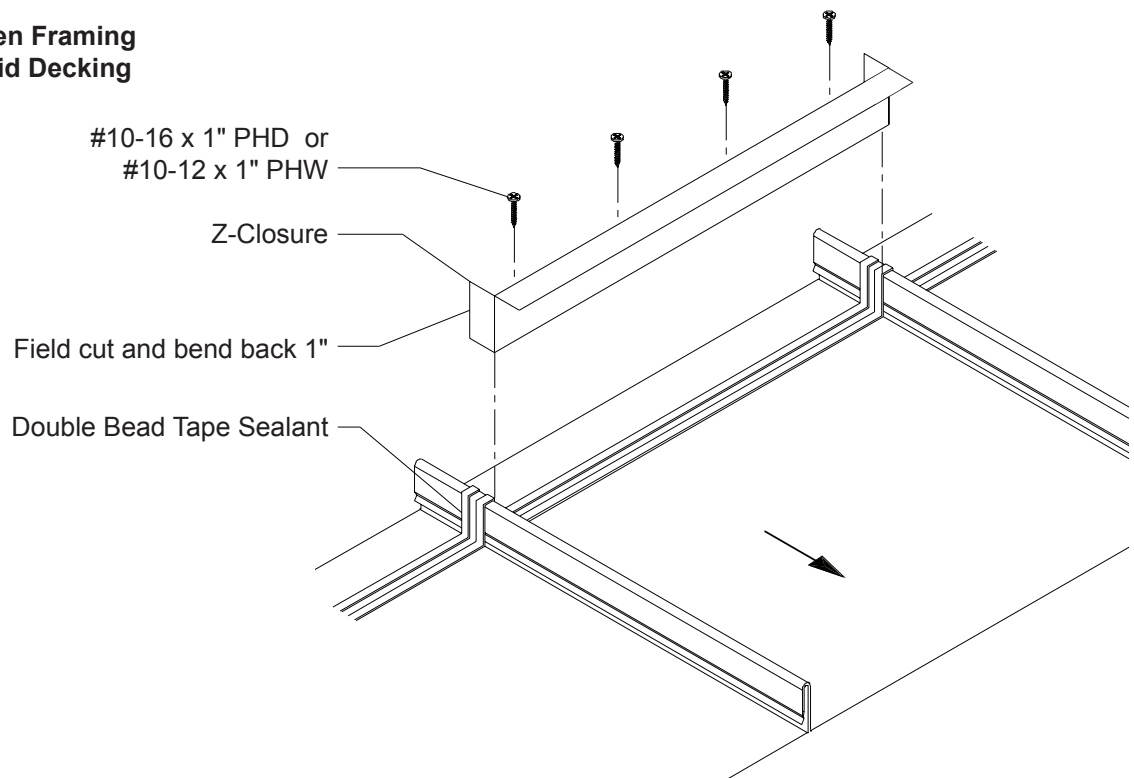


# VERTICAL SEAM Z-CLOSURE INSTALLATION

## Minimum Slope:

3:12 over Open Framing

1:12 over Solid Decking



Field cut and bend back 1"

## INSTALLATION NOTES

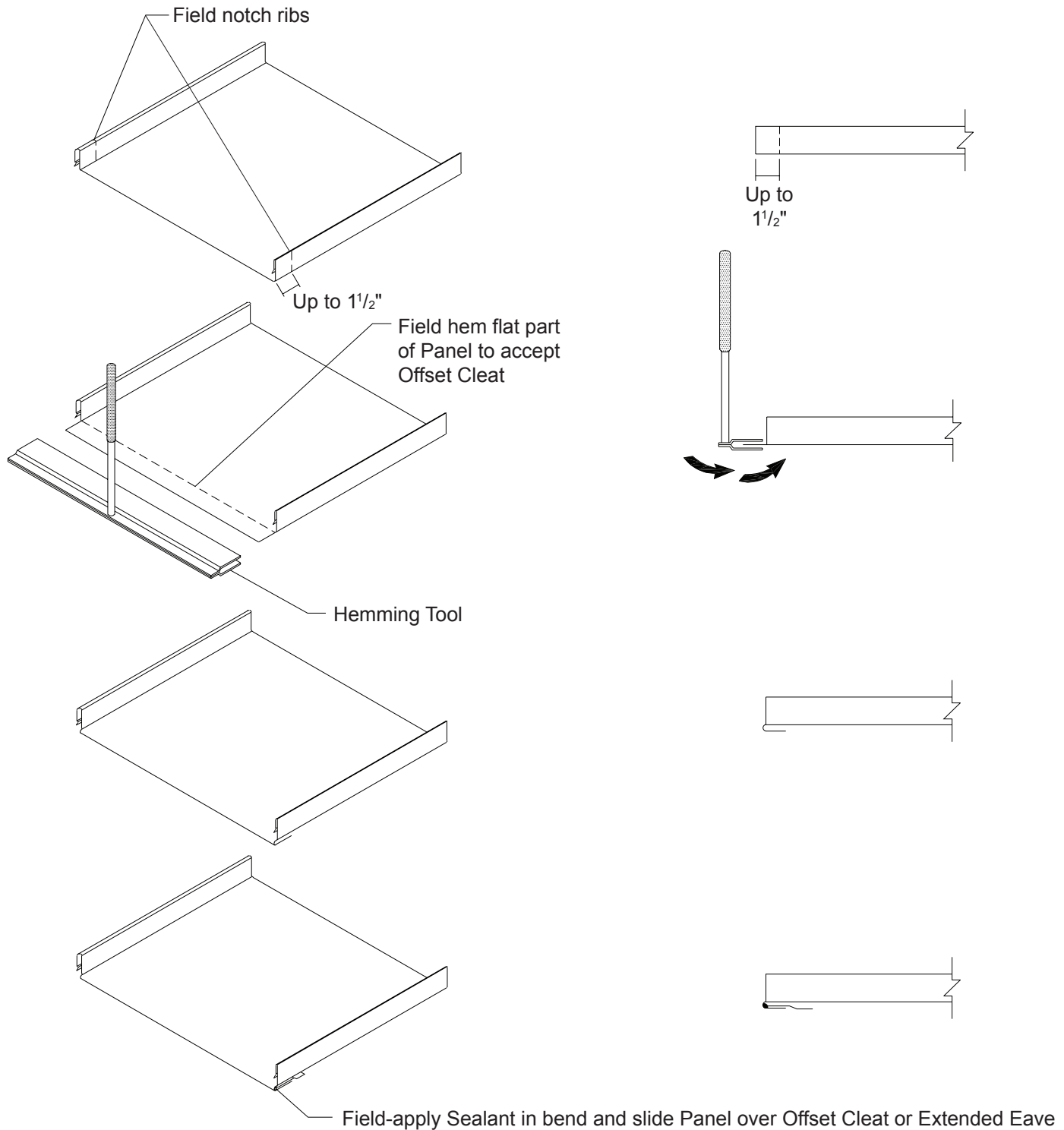
1. Place a row of Double Bead Tape Sealant across panel and over each rib approximately 4" from panel end. Before proceeding, make sure Z-Closure placement will accommodate flashing.
2. Field cut the Z-Closure 2" longer than the clear width between ribs. Snip the top and bottom leg of the Z-Closure and bend both sides back, as shown above.
3. Fasten through the Z-Closure, Tape Sealant, Vertical Seam panel and support material with (4) #10-12 x 1" PHWS per panel for solid decking or (4) #10-16 x 1" PHD per panel for open framing.

**Note: For open framing, the support is a Back-Up Channel as shown in the details.**

4. Apply a row of Double Bead Tape Sealant across the top of the Z-Closure filling any gaps or openings around the panel ribs with Tube Sealant. This will be fastened through when the flashing is installed.

### PANEL HEMMING

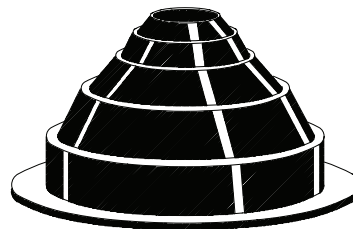
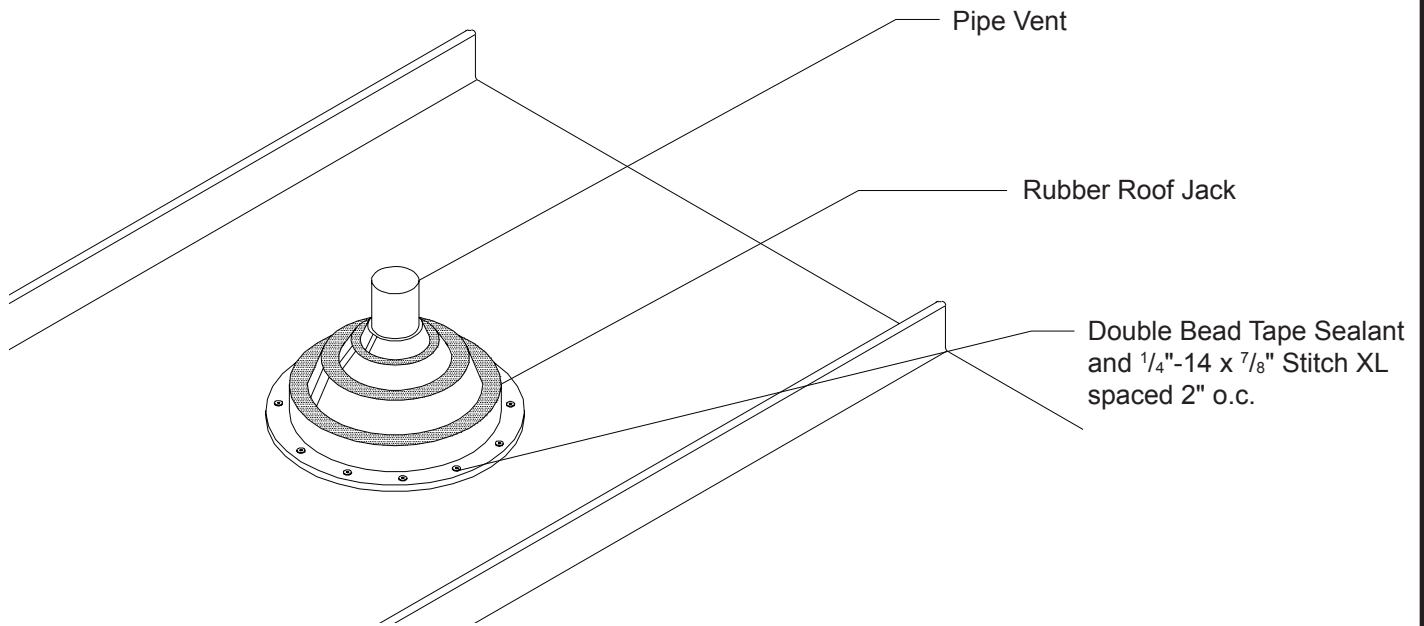
Panels must be field notched and hemmed when using an Offset Cleat or Extended Eave.



### FIELD HEMMING STEPS

1. Field notch underlap and overlap ribs of panel up to 1 1/2" from end of panel.
2. Place the hemming tool onto the protruding pan of the panel and bend down to form an open hem.
3. Place a continuous bead of Tube Sealant inside the open hem.
4. Engage Offset Cleat or Extended Eave into open hem at the end of the panel to start panel installation.

# VERTICAL SEAM ROOF PENETRATION



#2 (1 3/4" 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)  
Temp Range: -30° to +250°

## GENERAL NOTES

Size and location of all roof penetrations should be an important consideration. Areas around roof vents or rooftop units may show that corrosive fumes are emitted from a process within the building.

## INSTALLATION NOTES

**Note: The following procedures are for vent pipes 6" or less and not transmitting extremely hot or caustic materials. When installing vent pipes abide by the local plumbing codes.**

1. Determine the size and length of the vent pipe to be raised.
2. Take the appropriate measurements for the vent location and mark them on the Vertical Seam panel. The vent pipe must extend through the flat of the roof panel. If the vent pipe extension cannot be raised directly into the flat of the new roof panel, elbows should be used to offset the pipe. Cut the panel to fit the vent pipe properly.
3. Use a light gauge angle to secure and plumb the vent pipe to the framing system.
4. Flash the vent pipe with a Rubber Roof Jack or similar pipe flashing.
5. Apply Tube Sealant between the panel and the base of the Rubber Roof Jack as well as the top where the boot meets the pipe.
6. Attach the base of the Rubber Roof Jack to the panel using 1/4"-14 x 7/8" Stitch XL fasteners spaced 2" o.c.

## VERTICAL SEAM CARE AND MAINTENANCE

Though factory applied pre-painted finishes are very durable and will last many years, eventually it may be desirable to thoroughly clean or repaint them.

Dirt pickup may cause apparent discoloration of the paint when it has been exposed in some dirt laded atmospheres for long periods of time. In areas of strong sunlight, slight chalking may cause some change in appearance. A good cleaning will often restore the appearance of these buildings and render repainting unnecessary. An occasional light cleaning will help maintain a good appearance.

In many cases, simply washing the building with plain water using a hose or pressure sprayer will be adequate. In areas where heavy dirt deposits dull the surface, a cloth or soft bristle brush and solution of water and detergent ( $\frac{1}{3}$  cup of laundry detergent per gallon of water for example) may be used. This should be followed by an adequate rinse of water. Do not use wire brushes, abrasives, or cleaning tools which will damage the coating surface.

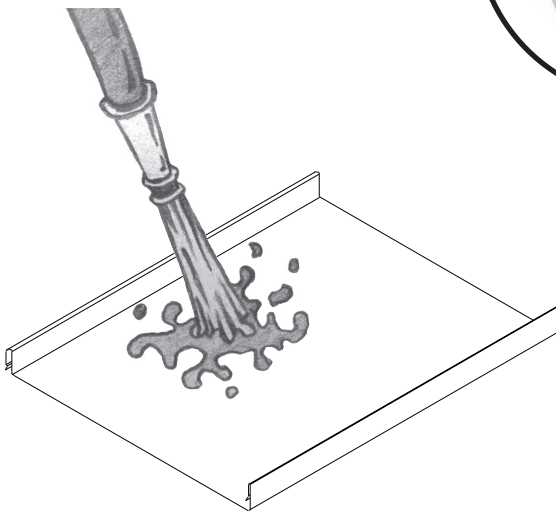
Mildew may occur in areas subject to high humidity but is not normally a problem due to the high inherent mildew resistance of the baked finish that is used. However, mildew can grow on dirt and spore deposits in some cases. To remove mildew along with the dirt, the following solution is recommended.

- $\frac{1}{3}$  cup detergent (Tide® or equivalent)
- $\frac{2}{3}$  cup trisodium phosphate (Solex® or equivalent)
- 1 quart of 5% sodium hypochlorite solution (Clorox® or equivalent)
- 3 quarts of water

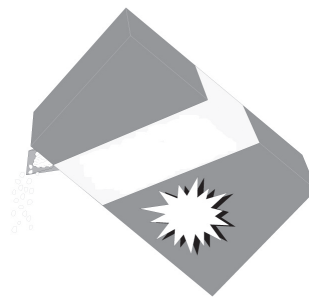
Strong solvents and abrasive type cleaners should be avoided. Most organic solvents are flammable and toxic and must be handled accordingly. When using a solvent, consult maintenance professionals and label instructions for proper handling and disposal of washings. If required, a mild solvent such as mineral spirits can be used to remove caulking compounds, oil, grease, tars, wax, and similar substances. Use a cloth dampened with mineral spirits and apply only to areas which are contaminated. Follow up the use of this mild solvent with detergent cleaning and rinsing.



**DO NOT USE A  
WIRE BRUSH**



**HOSE OR PRESSURE SPRAY  
FOR ADEQUATE CLEANING**



**USE MILD DETERGENT AND WATER  
FOR HEAVY DIRT DEPOSITS**

