



Installation Guide  
**APEX SERIES**

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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 wall 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 actual erection drawings, the 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 these Concealed Fastened Wall Panel systems should be directed to your local Metal Sales representative (see pages 2 and 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, improper material handling, width, gauge, length, color of panels and improper installation (reference Metal Construction Association "Oil Canning Position Paper"- Appendix A).

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

This manual is designed to be utilized as a guide when installing a Concealed Fastened Wall Panel system. It is the responsibility of the erector to ensure the safe installation of this product system.

## **SAFETY**

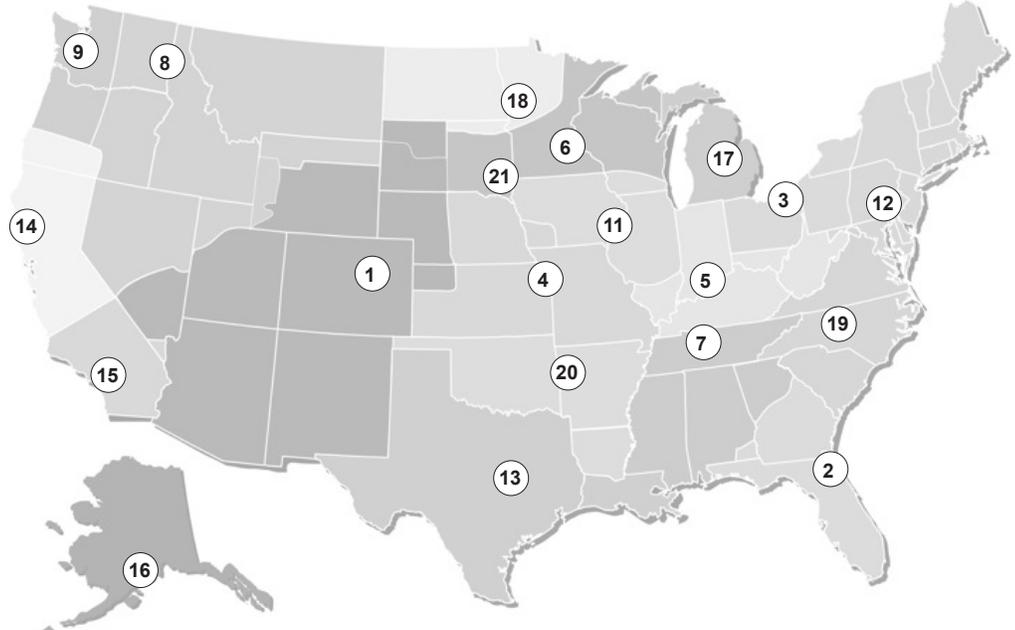
**STUDY APPLICABLE OSHA AND OTHER SAFETY REQUIREMENTS BEFORE FOLLOWING THESE INSTRUCTIONS.**

The installation of metal wall systems is a dangerous procedure and should be supervised by trained knowledgeable erectors. **USE EXTREME CARE WHILE INSTALLING WALL 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 wall system is responsible for reading these instructions and determining the safest way to install the wall system.

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

Fall protection for workers installing wall panels must be provided.

# ms Metal Sales™



*NOTE: Shaded areas represent territories served by each location.*

**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  
800.413.3292 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 Highway 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  
800.419.4372 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

**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  
907.646.7663  
866.640.7663  
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  
888.594.1454 Fax

**19. MOCKSVILLE**

188 Quality Drive  
Mocksville, NC 27028  
336.751.6381  
800.228.6119  
336.751.6301 Fax  
800.228.7916 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 3rd Street, Suite 4  
Sioux Falls, SD 57104  
605.335.2745  
888.299.0024

**TECHNICAL SUPPORT****TECHNICAL SERVICES**

7800 Highway 60  
Sellersburg, IN 47172  
502.855.4300  
800.406.7387  
800.944.6884 Fax

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*'H' indicates horizontal panels, 'V' indicates vertical panels*

**Safety** Use proper safety gear, safe equipment and safe processes. Safety gear includes gloves, arm guards, safety goggles and fall protection. Safe equipment includes maintained screw gun, saw, snips and folder. Safe processes include being aware of dangers and taking appropriate measures to avoid them.

**Material Availability** Panels are available in 24 ga, 22 ga and 20 ga steel and 0.032" and 0.040" aluminum. Flashings are available in 24 ga and 22 ga steel and 0.032" aluminum. Only 24 ga panel and flashing materials, in standard colors, are stocked. Custom 24 ga colors, all 22 ga, all 20 ga, all 0.032" and all 0.040" materials are secured per project and require minimum order quantities. Not all materials are available at all producing branches.

**Material Receipt** Upon receipt of material, confirm all parts have been delivered and that there is no damage. Any shortages should be reported to the Metal Sales contact. Transit damage must be noted on the bill of lading.

**Material Storage** Material not used right away, should be stored inside, out of the elements. If inside storage is not available, cover the materials with a tarp such that air can circulate. Elevate the crates off the ground and slope so that water will run off.

**Handling** Transport panels in the crates to the installation site. Adequate support for individual panels every 6' to 8' is necessary. When carrying a panel, grasp the panel by one side and let the other side hang down. Handling panels with care can avoid a cause of oil-canning.

**Wall Condition** Before installing panels, ensure the wall support material is plumb, square and true. Variance from in-plane should not exceed 1/4" in 10'.

**Wall Assembly** Cover building envelope sheathing with a moisture barrier, such as peel-and-stick underlayment or synthetic building wrap for resistance to air and water penetration through the wall assembly. Install the moisture barrier horizontally from the bottom upward, overlapping each run over the previous, lower run.

**Spacers** Spacers with a minimum depth of 1/4" are recommended at clips and trims to hold the wall assembly off of the wall line and allow water to drain. Spacers may be shims, hat channels or furring strips installed to not hold water.

**Plan the Work** Before installing panels on a wall section, plan for alignment with panels on adjacent wall sections. Consider the locations of wall penetrations and openings and how the panels will align. Decide if the first panel will be a full or partial panel.

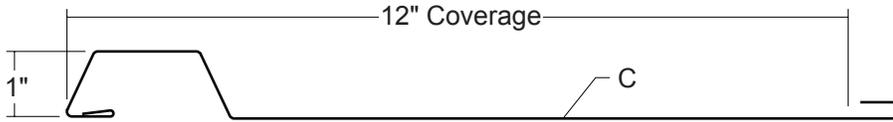
**Clip Fasteners** Do not overtighten the panel clip fasteners. The fasteners should be brought just to firm contact between the clip, panel and support material. The panel must be capable of sliding along its length after the clips are installed. A clip must be installed within 6" of each end of the panels.

**Installation Practice** For horizontal panels, start at the bottom of the wall and work up the wall toward the top. Always 'shingle' panels and trims so that water will run down off of one member on to the next. Ensure every surface has adequate slope to permit water to run off and not collect on any surface. When installing panels, give effort to stay on module by checking the coverage of each panel.

**Strippable Film** Panels and trim are typically provided with strippable film as protection against minor fabrication, transit and handling damage. The strippable film must be removed just before installation. Waiting until after panel installation to remove the strippable film or after significant exposure to sunlight or heat can make removal very difficult.

**Cutting Material** When panel and trim parts must be cut, Metal Sales recommends the use of shears, such as power shears or double-cut shears. Saw cutting is not recommended as it tends to damage the paint film near the cut and leave a rough edge that is prone to excessive red rusting on steel panels. When materials are saw-cut, it is recommended to conceal such cuts by the use of hems or cutting the end that will be concealed by covering at a lap or by covering with a piece of trim, such as at the top of wall condition.

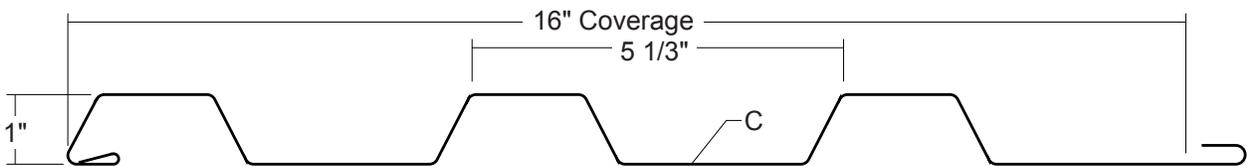
**AP1-1212 Symmetrical Rib**



Panel can be produced in lengths from 6' to 30'.

Product No.	Coverage	Description	Thick	Finish
2773041	12"	1 rib	24 ga	Galvalume® (ACG)
27730XX	12"	1 rib	24 ga	PVDF
2973041	12"	1 rib	22 ga	Galvalume® (ACG)
29730XX	12"	1 rib	22 ga	PVDF
30730XX	12"	1 rib	20 ga	PVDF
27730XXA	12"	1 rib	0.032"	PVDF Aluminum
29730XXA	12"	1 rib	0.040"	PVDF Aluminum

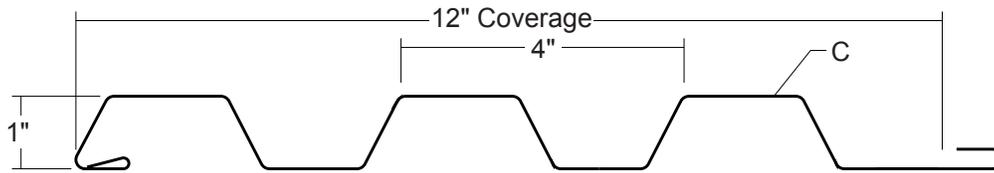
**AP1-1653 Symmetrical Rib**



Panel can be produced in lengths from 6' to 30'.

Product No.	Coverage	Description	Thick	Finish
2773541	16"	3 ribs	24 ga	Galvalume® (ACG)
27735XX	16"	3 ribs	24 ga	PVDF
2973541	16"	3 ribs	22 ga	Galvalume® (ACG)
29735XX	16"	3 ribs	22 ga	PVDF
30735XX	16"	3 ribs	20 ga	PVDF
27735XXA	16"	3 ribs	0.032"	PVDF Aluminum
29735XXA	16"	3 ribs	0.040"	PVDF Aluminum

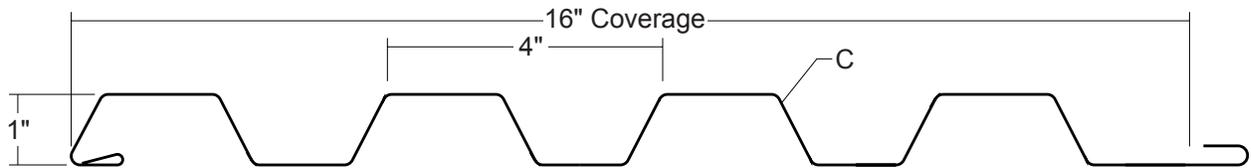
**AP1-124 Symmetrical Rib**



Panel can be produced in lengths from 6' to 30'.

Product No.	Coverage	Description	Thick	Finish
2773641	12"	3 ribs	24 ga	Galvalume® (ACG)
27736XX	12"	3 ribs	24 ga	PVDF Painted
2973641	12"	3 ribs	22 ga	Galvalume® (ACG)
29736XX	12"	3 ribs	22 ga	PVDF
30736XX	12"	3 ribs	20 ga	PVDF
27736XXA	12"	3 ribs	0.032"	PVDF Aluminum
29736XXA	12"	3 ribs	0.040"	PVDF Aluminum

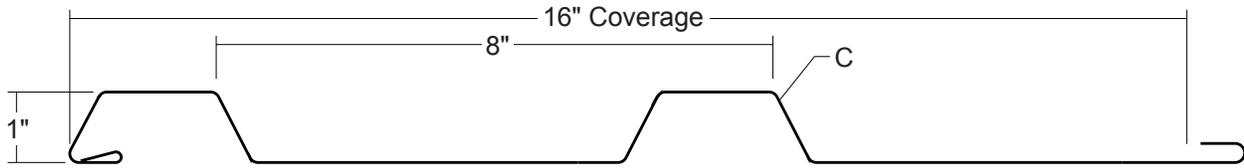
**AP1-164 Symmetrical Rib**



Panel can be produced in lengths from 6' to 30'.

Product No.	Coverage	Description	Thick	Finish
2773841	16"	4 ribs	24 ga	Galvalume® (ACG)
27738XX	16"	4 ribs	24 ga	PVDF
2973841	16"	4 ribs	22 ga	Galvalume® (ACG)
29738XX	16"	4 ribs	22 ga	PVDF
30738XX	16"	4 ribs	20 ga	PVDF
27738XXA	16"	4 ribs	0.032"	PVDF Aluminum
29738XXA	16"	4 ribs	0.040"	PVDF Aluminum

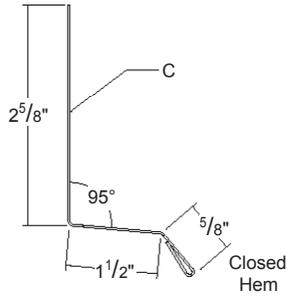
AP1-168 Symmetrical Rib



Panel can be produced in lengths from 6' to 30'.

Product No.	Coverage	Description	Thick	Finish
2773741	16"	2 ribs	24 ga	Galvalume® (ACG)
27737XX	16"	2 ribs	24 ga	PVDF
2973741	16"	2 ribs	22 ga	Galvalume® (ACG)
29737XX	16"	2 ribs	22 ga	PVDF
30737XX	16"	2 ribs	20 ga	PVDF
27737XXA	16"	2 ribs	0.032"	PVDF Aluminum
29737XXA	16"	2 ribs	0.040"	PVDF Aluminum

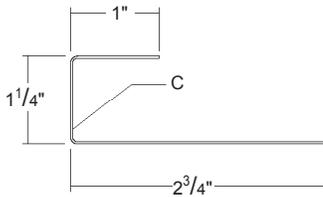
## BASE TRIM 1"



Product No.	Length	Thick	Finish
5870741	10'-2"	24 ga	Galvalume® (ACG)
58707XX	10'-2"	24 ga	PVDF Painted
6070741	10'-2"	22 ga	Galvalume® (ACG)
60707XX	10'-2"	22 ga	PVDF Painted
58707XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 5 1/4"

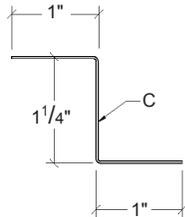
## C-CLOSURE 1"



Product No.	Length	Thick	Finish
5871141	10'-2"	24 ga	Galvalume® (ACG)
58711XX	10'-2"	24 ga	PVDF Painted
6071141	10'-2"	22 ga	Galvalume® (ACG)
60711XX	10'-2"	22 ga	PVDF Painted
58711XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 5"

## Z-CLOSURE 1"

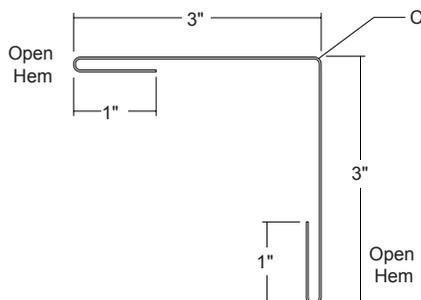


Product No.	Length	Thick	Finish
5872741	10'-2"	24 ga	Galvalume® (ACG)
58727XX	10'-2"	24 ga	PVDF Painted
6072741	10'-2"	22 ga	Galvalume® (ACG)
60727XX	10'-2"	22 ga	PVDF Painted
58727XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 3 1/4"

This Flashing can be used as an alternate to C-Closure.

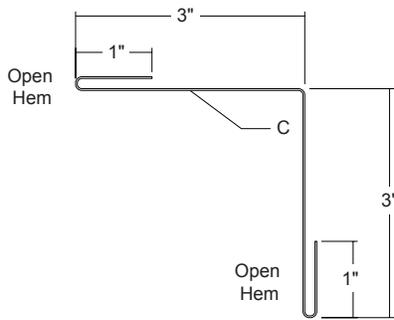
## OUTSIDE CORNER



Product No.	Length	Thick	Finish
5872441	10'-2"	24 ga	Galvalume® (ACG)
58724XX	10'-2"	24 ga	PVDF Painted
6072441	10'-2"	22 ga	Galvalume® (ACG)
60724XX	10'-2"	22 ga	PVDF Painted
58724XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 8 1/8"

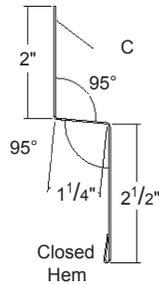
**INSIDE CORNER**



Product No.	Length	Thick	Finish
5872641	10'-2"	24 ga	Galvalume® (ACG)
58726XX	10'-2"	24 ga	PVDF Painted
6072641	10'-2"	22 ga	Galvalume® (ACG)
60726XX	10'-2"	22 ga	PVDF Painted
58726XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 8<sup>1</sup>/<sub>8</sub>"

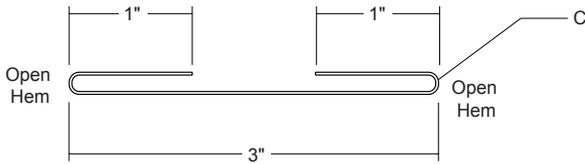
**TRANSITION 1"**



Product No.	Length	Thick	Finish
5873741	10'-2"	24 ga	Galvalume® (ACG)
58737XX	10'-2"	24 ga	PVDF Painted
6073741	10'-2"	22 ga	Galvalume® (ACG)
60737XX	10'-2"	22 ga	PVDF Painted
58737XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 6<sup>1</sup>/<sub>4</sub>"

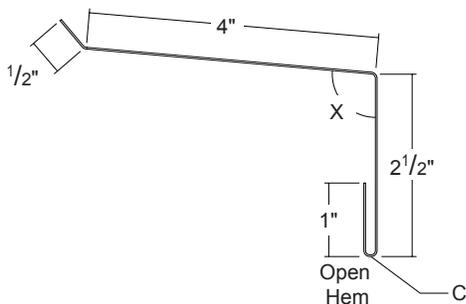
**REVEAL**



Product No.	Length	Thick	Finish
5874041	10'-2"	24 ga	Galvalume® (ACG)
58740XX	10'-2"	24 ga	PVDF Painted
6074041	10'-2"	22 ga	Galvalume® (ACG)
60740XX	10'-2"	22 ga	PVDF Painted
58740XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 5<sup>1</sup>/<sub>8</sub>"

**SILL/JAMB TRIM**

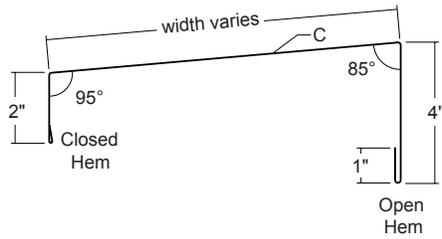


Product No.	Length	Thick	Finish
5871841	10'-2"	24 ga	Galvalume® (ACG)
58718XX	10'-2"	24 ga	PVDF Painted
6071841	10'-2"	22 ga	Galvalume® (ACG)
60718XX	10'-2"	22 ga	PVDF Painted
58718XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 8"

X= 95° for Sill or 90° for Jamb

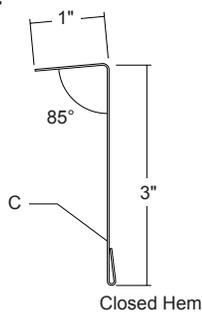
**COPING**



Width	Product No.	Length	Thick	Finish
8"	58714XX	10'-2"	24 ga	PVDF Painted
10"	58715XX	10'-2"	24 ga	PVDF Painted
12"	58716XX	10'-2"	24 ga	PVDF Painted
8"	60714XX	10'-2"	22 ga	PVDF Painted
10"	60715XX	10'-2"	22 ga	PVDF Painted
12"	60716XX	10'-2"	22 ga	PVDF Painted
8"	58714XXA	10'-2"	0.032"	PVDF Aluminum
10"	58715XXA	10'-2"	0.032"	PVDF Aluminum
12"	58716XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 15 1/2" for 8" Coping

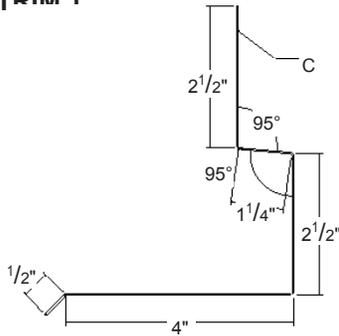
**COPING CLEAT**



Product No.	Length	Thick	Finish
5873441	10'-2"	24 ga	Galvalume® (ACG)
58734XX	10'-2"	24 ga	PVDF Painted
6073441	10'-2"	22 ga	Galvalume® (ACG)
60734XX	10'-2"	22 ga	PVDF Painted
58734XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 4 1/2"

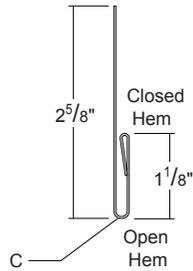
**HEAD TRIM 1"**



Product No.	Length	Thick	Finish
5872141	10'-2"	24 ga	Galvalume® (ACG)
58721XX	10'-2"	24 ga	PVDF Painted
6072141	10'-2"	22 ga	Galvalume® (ACG)
60721XX	10'-2"	22 ga	PVDF Painted
58721XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 10 3/4"

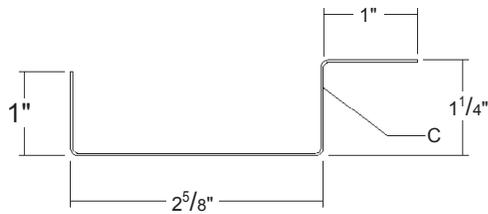
## PANEL STARTER



Product No.	Length	Thick	Finish
5872841	10'-2"	24 ga	Galvalume® (ACG)
58728XX	10'-2"	24 ga	PVDF Painted
6072841	10'-2"	22 ga	Galvalume® (ACG)
60728XX	10'-2"	22 ga	PVDF Painted
58728XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 4<sup>3</sup>/<sub>8</sub>"

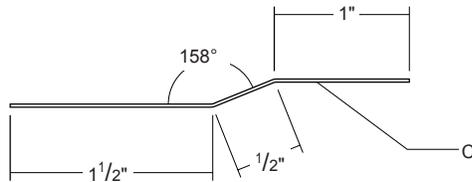
## PANEL END CLOSURE 1"



Product No.	Length	Thick	Finish
5873141	10'-2"	24 ga	Galvalume® (ACG)
58731XX	10'-2"	24 ga	PVDF Painted
6073141	10'-2"	22 ga	Galvalume® (ACG)
60731XX	10'-2"	22 ga	PVDF Painted
58731XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 5<sup>7</sup>/<sub>8</sub>"

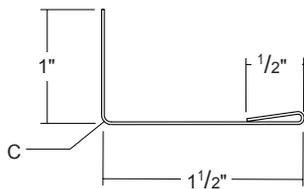
## OFFSET CLEAT



Product No.	Length	Thick	Finish
5806499	10'-2"	24 ga	PVDF Painted

Flashing Stretch Out = 3"

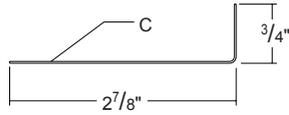
## MITER TRIM



Product No.	Length	Thick	Finish
5865441	10'-2"	24 ga	Galvalume® (ACG)
58654XX	10'-2"	24 ga	PVDF
6065441	10'-2"	22 ga	Galvalume® (ACG)
60654XX	10'-2"	22 ga	PVDF
58654XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 3"  
See pages 33, 41, 44 and 46.

## JAMB SUPPORT

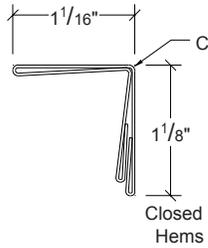


Product No.	Length	Thick	Finish
5735241	10'-2"	24 ga	Galvalume® (ACG)
57352XX	10'-2"	24 ga	PVDF Painted
5935441	10'-2"	22 ga	Galvalume® (ACG)
59354XX	10'-2"	22 ga	PVDF Painted
59655XX	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 3<sup>5</sup>/<sub>8</sub>"

See Page 47.

## OPENING TRIM 1"

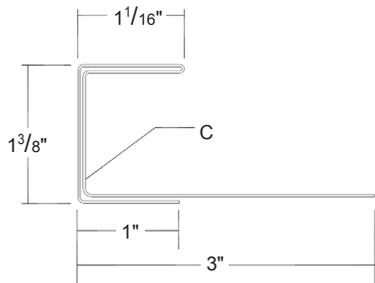


Product No.	Length	Thick	Finish
5837441	10'-2"	24 ga	Galvalume® (ACG)
58374XX	10'-2"	24 ga	PVDF Painted
5837541	10'-2"	22 ga	Galvalume® (ACG)
58375XX	10'-2"	22 ga	PVDF Painted
58376XX	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 5<sup>1</sup>/<sub>4</sub>"

See page 47.

## WINDOW CLOSURE 1"



Product No.	Length	Thick	Finish
5874341	10'-2"	24 ga	Galvalume® (ACG)
58743XX	10'-2"	24 ga	PVDF Painted
6074341	10'-2"	22 ga	Galvalume® (ACG)
60743XX	10'-2"	22 ga	PVDF Painted
58743XXA	10'-2"	0.032"	PVDF Aluminum

Flashing Stretch Out = 8<sup>7</sup>/<sub>8</sub>"

See page 47.

## CONCEALED WALL CLIP - 4" LOW



Product No.	Size	WT/100	Finish
4934600	1 <sup>3</sup> / <sub>4</sub> " x 4" x 3 <sup>1</sup> / <sub>8</sub> "	16 lbs	G90 Galv
49346F01	1 <sup>3</sup> / <sub>4</sub> " x 4" x 3 <sup>1</sup> / <sub>8</sub> "	16 lbs	Stainless

## UNIVERSAL CLOSURE



Product No.	Description	WT/Each	Type
6411100	1" x 1 <sup>1</sup> / <sub>2</sub> " x 50'	4.00 lbs	Foam
6411199	1" x 1 <sup>1</sup> / <sub>2</sub> " x 10'	0.80 lbs	Foam

## DOUBLE BEAD TAPE SEALANT



Product No.	Description	WT/Ctn.	Type
6403899	7 <sup>7</sup> / <sub>8</sub> " x 3 <sup>3</sup> / <sub>16</sub> " x 25' 20 Rolls per Carton	40.00 lbs	Butyl

## TUBE SEALANT



Product No.	Description	WT/Each	Color
6402800	Acrylic Tube Sealant	3.31 lbs	Clear
64028XX	Tube Sealant	3.31 lbs	Color Match

## POP RIVET



Product No.	Description	WT/250	Finish
8240201	1/8" x 3/8" Pop Rivet	0.75 lbs	Bare
82402XX	1/8" x 3/8" Pop Rivet	0.75 lbs	Painted

Used to attach trim to trim or trim to panel.

## PANCAKE HEAD WOOD SCREW



Product No.	Description	WT/250	Finish
8243100	#10-12 x 1" Pancake Head Wood Screw	1.90 lbs	Plated

Used to attach trim to wood supports.

## PANCAKE HEAD DRILLER



Product No.	Description	WT/250	Finish
8242100	#10-16 x 1" Pancake Head Driller	1.90 lbs	Plated

Used to attach trim or panel clip to steel framing supports.

## LOW PROFILE WOOD SCREW



Product No.	Description	WT/250	Finish
8244100	#12-11 x 1 1/2" Low Profile Wood Screw	2.75 lbs	Plated

Used to attach panel clip to wood supports.

## WOOD SCREW XL



Product No.	Description	WT/250	Finish
8212300	#10-14 x 1 1/2" Wood Screw XL	3.75 lbs	Plated
82123XX	#10-14 x 1 1/2" Wood Screw XL	3.75 lbs	Painted

Used to attach a vertical panel to wood supports.

## SELF DRILLER XL

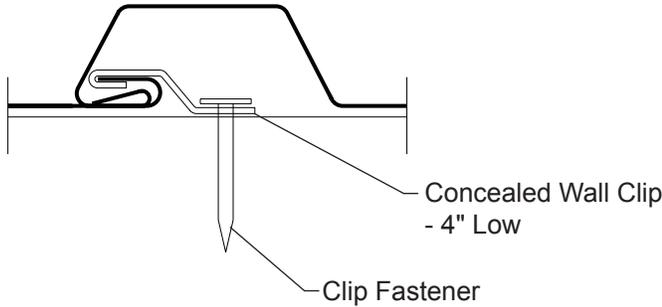


Product No.	Description	WT/250	Finish
8235300	#12-14 x 1 1/4" Self Driller XL	3.75 lbs	Plated
82353XX	#12-14 x 1 1/4" Self Driller XL	3.75 lbs	Painted

Used to attach a vertical panel to steel framing supports.

# AP1-1212 Symmetrical Rib

**PANEL ATTACHMENT**



**FASTENING INFORMATION**

- Concealed Wall Clip - 4" Low is 1<sup>3</sup>/<sub>4</sub>" x 4" x 3/<sub>8</sub>", from 16 ga, G90 material with 2 fastener holes.
- Clip Fastener(s) should be driven just to contact between fastener head / clip / support. Over-driven fasteners can cause panel distortions.
- Fasteners should extend 1/2" or more past the inside face of the support material for steel and wood sheathing support materials.
- Clip Fasteners:
  - Attaching to Wood:
    - #12-11 x 1<sup>1</sup>/<sub>2</sub>" Low Profile Wood Screw
  - Attaching to Steel:
    - < 18 ga: 1/4"-13 Deck Screw
    - ≥ 18 ga, ≤ 12 ga: #10-16 Pancake Head Driller
    - > 12 ga: 1/4"-14 Self Driller, No Washer

**INSTALLATION DIRECTION**

Horizontally-oriented panels must be installed from the bottom to the top.

Vertically-oriented panels may be installed from the right-to-left or left-to-right.

**STEEL SECTION PROPERTIES**

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

Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression		Inward Load					Outward Load				
				I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	2'	3'	4'	5'	6'	2'	3'	4'	5'	6'
24	12	50	1.21	0.0260	0.0329	0.0207	0.0388	117	60	38	27	21	100	60	42	31	21
22	12	50	1.58	0.0375	0.0482	0.0290	0.0516	117	60	38	27	21	100	60	42	31	21
20	12	33	1.91	0.0527	0.0691	0.0394	0.0648	117	60	38	27	21	100	60	42	31	21

1. Theoretical section properties have been calculated per AISI S100 2016(20) 'North American Specification for the Design of Cold-Formed Steel Structural Members'. I<sub>xx</sub> and S<sub>xx</sub> are effective section properties for deflection and bending.
2. Allowable load is calculated in accordance with AISI S100 specification considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable load does not address web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal spans condition.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

**ALUMINUM SECTION PROPERTIES**

**ALLOWABLE UNIFORM LOADS, psf  
for various clip spacings**

Thick in	Width in	Yield ksi	Weight psf	I in <sup>4</sup> /ft	S <sub>Top</sub> in <sup>3</sup> /ft	S <sub>Bottom</sub> in <sup>3</sup> /ft	Z in <sup>3</sup> /ft	Inward Load						Outward Load					
								2'	2.5'	3'	4'	5'	6'	2'	2.5'	3'	4'	5'	6'
0.032	12	17	0.58	0.0480	0.0639	0.2604	0.088	98	63	45	26	14	-	59	42	32	22	14	-
0.040	12	17	0.72	0.0600	0.0787	0.3154	0.110	98	63	45	26	14	-	59	42	32	22	14	-

1. Theoretical section properties have been calculated per 2015 Aluminum Design Manual. I, S and Z are section properties for deflection and bending.
2. Allowable load is calculated in accordance with 2015 Aluminum Design Manual considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable loads do not consider other support conditions, including: web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal span case.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

# AP1-1212 on 16 ga Girts

## Wall Clip Spacing (feet)

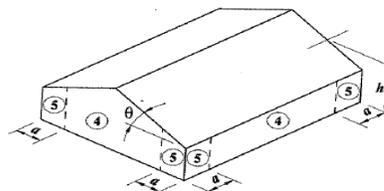
Wind Speed (mph) Exposure Category	20 ft, Mean Roof Height			40 ft, Mean Roof Height			60 ft, Mean Roof Height		
	Thickness	Field	Edge	Thickness	Field	Edge	Thickness	Field	Edge
100C	24 ga	-25.1 psf	-31 psf	24 ga	-29.1 psf	-35.9 psf	24 ga	-31.7 psf	-39.1 psf
	22 ga	6.0	6.0	22 ga	6.0	5.5	22 ga	6.0	5.5
	20 ga	6.0	6.0	20 ga	6.0	5.5	20 ga	6.0	5.5
	0.032"	4.5	4.0	0.032"	4.5	4.0	0.032"	4.0	3.5
110C	24 ga	-30.4 psf	-37.5 psf	24 ga	-35.2 psf	-43.4 psf	24 ga	-38.3 psf	-47.3 psf
	22 ga	6.0	5.5	22 ga	6.0	5.0	22 ga	5.5	5.0
	20 ga	6.0	5.5	20 ga	6.0	5.0	20 ga	5.5	5.0
	0.032"	4.5	3.5	0.032"	4.0	3.5	0.032"	3.5	3.0
120C	24 ga	-36.2 psf	-44.7 psf	24 ga	-41.9 psf	-51.7 psf	24 ga	-45.6 psf	-56.3 psf
	22 ga	5.5	5.0	22 ga	5.5	4.5	22 ga	5.0	4.5
	20 ga	5.5	5.0	20 ga	5.5	4.5	20 ga	5.0	4.5
	0.032"	4.0	3.0	0.032"	3.5	3.0	0.032"	3.0	2.5
130C	24 ga	-42.5 psf	-52.4 psf	24 ga	-49.1 psf	-60.6 psf	24 ga	-53.5 psf	-66 psf
	22 ga	5.0	4.5	22 ga	5.0	4.5	22 ga	4.5	4.0
	20 ga	5.0	4.5	20 ga	5.0	4.5	20 ga	4.5	4.0
	0.032"	3.5	3.0	0.032"	3.0	2.5	0.032"	3.0	2.5
140C	24 ga	-49.2 psf	-60.8 psf	24 ga	-57 psf	-70.3 psf	24 ga	-62 psf	-76.6 psf
	22 ga	5.0	4.5	22 ga	4.5	3.5	22 ga	4.0	3.5
	20 ga	5.0	4.5	20 ga	4.5	3.5	20 ga	4.0	3.5
	0.032"	3.0	2.5	0.032"	2.5	2.0	0.032"	2.5	2.0
150C	24 ga	-56.5 psf	-69.8 psf	24 ga	-65.4 psf	-80.7 psf	24 ga	-71.2 psf	-87.9 psf
	22 ga	4.5	4.0	22 ga	4.0	3.5	22 ga	3.5	3.0
	20 ga	4.5	4.0	20 ga	4.0	3.5	20 ga	3.5	3.0
	0.032"	2.5	2.5	0.032"	2.5	2.0	0.032"	2.0	2.0
160C	24 ga	-64.3 psf	-79.4 psf	24 ga	-74.4 psf	-91.9 psf	24 ga	-81 psf	-100 psf
	22 ga	4.0	3.5	22 ga	3.5	3.0	22 ga	3.5	2.5
	20 ga	4.0	3.5	20 ga	3.5	3.0	20 ga	3.5	2.5
	0.032"	2.5	2.0	0.032"	2.0	2.0	0.032"	-	-
170C	24 ga	-72.6 psf	-89.6 psf	24 ga	-84 psf	-103.7 psf	24 ga	-91.5 psf	-112.9 psf
	22 ga	3.5	3.0	22 ga	3.0	2.5	22 ga	3.0	2.5
	20 ga	3.5	3.0	20 ga	3.0	2.5	20 ga	3.0	2.5
	0.032"	2.0	2.0	0.032"	-	-	0.032"	-	-

**Notes:**

- Allowable spacing is based on capacities determined in AISI 2016, North American Specification for the Design of Cold-Structural Members and ADM 2015, Aluminum Design Manual.
- Allowable spacing is based on an applied load determined using ASCE 7-16 for the wind speeds and Wind Exposures tabulated. Assumptions include a tributary area of 10 square feet, an Enclosed building, a Topographic Factor of 1.0 and panel bearing length of 2.5 inches.
- Allowable spacing is determined using IBC 2018 combinations. For wind suction and pressure, the combination is 0.6W. The arrangement is 3 or more equal spans.
- Testing is the basis for the load carrying capacity.

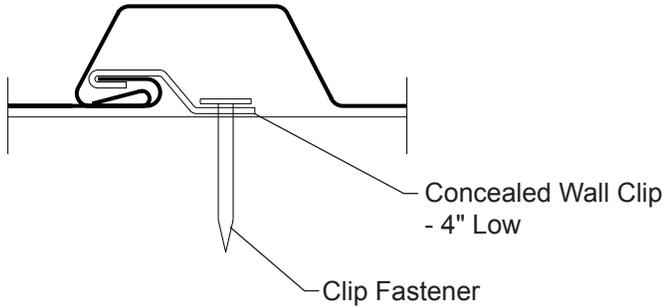
- ④ - FIELD
- ⑤ - EDGE

a - LEAST OF 10% MINIMUM BUILDING WIDTH OR 40% OF MEAN ROOF HEIGHT BUT NOT LESS THAN 3'.



# AP1-1653 Symmetrical Rib

**PANEL ATTACHMENT**



**FASTENING INFORMATION**

- Concealed Wall Clip - 4" Low is 1<sup>3</sup>/<sub>4</sub>" x 4" x 3/<sub>8</sub>", from 16 ga, G90 material with 2 fastener holes.
- Clip Fastener(s) should be driven just to contact between fastener head / clip / support. Over-driven fasteners can cause panel distortions.
- Fasteners should extend 1/2" or more past the inside face of the support material for steel and wood sheathing support materials.
- Clip Fasteners:
  - Attaching to Wood:
    - #12-11 x 1<sup>1</sup>/<sub>2</sub>" Low Profile Wood Screw
  - Attaching to Steel:
    - < 18 ga: 1/4"-13 Deck Screw
    - ≥ 18 ga, ≤ 12 ga: #10-16 Pancake Head Driller
    - > 12 ga: 1/4"-14 Self Driller, No Washer

**INSTALLATION DIRECTION**

Horizontally-oriented panels must be installed from the bottom to the top.

Vertically-oriented panels may be installed from the right-to-left or left-to-right.

**STEEL SECTION PROPERTIES**

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

Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression		Inward Load					Outward Load				
				I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	2'	3'	4'	5'	6'	2'	3'	4'	5'	6'
24	16	50	1.25	0.0428	0.0671	0.0383	0.0801	117	60	38	27	21	87	52	37	28	23
22	16	50	1.64	0.0615	0.0986	0.0548	0.1121	117	60	38	27	21	87	52	37	28	23
20	16	33	2.00	0.0840	0.1422	0.0758	0.1412	117	60	38	27	21	87	52	37	28	23

1. Theoretical section properties have been calculated per AISI S100 2016(20) 'North American Specification for the Design of Cold-Formed Steel Structural Members'. I<sub>xx</sub> and S<sub>xx</sub> are effective section properties for deflection and bending.
2. Allowable load is calculated in accordance with AISI S100 specification considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable load does not address web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal spans condition.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

**ALUMINUM SECTION PROPERTIES**

**ALLOWABLE UNIFORM LOADS, psf  
for various clip spacings**

Thick in	Width in	Yield ksi	Weight psf	I in <sup>4</sup> /ft	S <sub>Top</sub> in <sup>3</sup> /ft	S <sub>Bottom</sub> in <sup>3</sup> /ft	Z in <sup>3</sup> /ft	Inward Load						Outward Load					
								2'	2.5'	3'	4'	5'	6'	2'	2.5'	3'	4'	5'	6'
0.032	16	17	0.60	0.0773	0.1314	0.2147	0.174	98	63	45	26	17	12	62	49	40	30	24	20
0.040	16	17	0.75	0.0953	0.1617	0.2627	0.215	98	63	45	26	17	12	62	49	40	30	24	20

1. Theoretical section properties have been calculated per 2015 Aluminum Design Manual. I, S and Z are section properties for deflection and bending.
2. Allowable load is calculated in accordance with 2015 Aluminum Design Manual considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable loads do not consider other support conditions, including: web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal span case.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

# AP1-1653 on 16 ga Girts

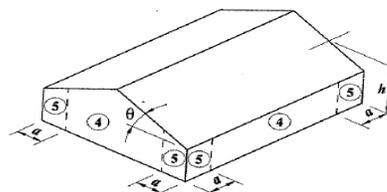
## Wall Clip Spacing (feet)

Wind Speed (mph) Exposure Category	20 ft. Mean Roof Height			40 ft. Mean Roof Height			60 ft. Mean Roof Height		
	Thickness	Field	Edge	Thickness	Field	Edge	Thickness	Field	Edge
100C	24 ga	-25.1 psf	-31 psf	24 ga	-29.1 psf	-35.9 psf	24 ga	-31.7 psf	-39.1 psf
	22 ga	6.0	6.0	22 ga	6.0	6.0	22 ga	6.0	5.5
	20 ga	6.0	6.0	20 ga	6.0	6.0	20 ga	6.0	5.5
	0.032"	6.0	6.0	0.032"	6.0	5.5	0.032"	6.0	5.0
110C	24 ga	-30.4 psf	-37.5 psf	24 ga	-35.2 psf	-43.4 psf	24 ga	-38.3 psf	-47.3 psf
	22 ga	6.0	5.5	22 ga	6.0	5.0	22 ga	5.5	4.5
	20 ga	6.0	5.5	20 ga	6.0	5.0	20 ga	5.5	4.5
	0.032"	6.0	5.0	0.032"	5.0	4.5	0.032"	5.0	4.0
120C	24 ga	-36.2 psf	-44.7 psf	24 ga	-41.9 psf	-51.7 psf	24 ga	-45.6 psf	-56.3 psf
	22 ga	6.0	5.0	22 ga	5.5	4.5	22 ga	5.0	4.0
	20 ga	6.0	5.0	20 ga	5.5	4.5	20 ga	5.0	4.0
	0.032"	5.0	4.0	0.032"	4.5	3.5	0.032"	4.0	3.5
130C	24 ga	-42.5 psf	-52.4 psf	24 ga	-49.1 psf	-60.6 psf	24 ga	-53.5 psf	-66 psf
	22 ga	5.0	4.5	22 ga	4.5	4.0	22 ga	4.0	3.5
	20 ga	5.0	4.5	20 ga	4.5	4.0	20 ga	4.0	3.5
	0.032"	4.5	3.5	0.032"	4.0	3.0	0.032"	3.5	3.0
140C	24 ga	-49.2 psf	-60.8 psf	24 ga	-57 psf	-70.3 psf	24 ga	-62 psf	-76.6 psf
	22 ga	4.5	4.0	22 ga	4.0	3.5	22 ga	3.5	3.0
	20 ga	4.5	4.0	20 ga	4.0	3.5	20 ga	3.5	3.0
	0.032"	4.0	3.0	0.032"	3.5	2.5	0.032"	3.0	2.5
150C	24 ga	-56.5 psf	-69.8 psf	24 ga	-65.4 psf	-80.7 psf	24 ga	-71.2 psf	-87.9 psf
	22 ga	4.0	3.5	22 ga	3.5	3.0	22 ga	3.5	2.5
	20 ga	4.0	3.5	20 ga	3.5	3.0	20 ga	3.5	2.5
	0.032"	3.5	2.5	0.032"	3.0	2.5	0.032"	2.5	2.0
160C	24 ga	-64.3 psf	-79.4 psf	24 ga	-74.4 psf	-91.9 psf	24 ga	-81 psf	-100 psf
	22 ga	3.5	3.0	22 ga	3.0	2.5	22 ga	3.0	2.5
	20 ga	3.5	3.0	20 ga	3.0	2.5	20 ga	3.0	2.5
	0.032"	3.0	2.5	0.032"	2.5	2.0	0.032"	2.5	2.0
170C	24 ga	-72.6 psf	-89.6 psf	24 ga	-84 psf	-103.7 psf	24 ga	-91.5 psf	-112.9 psf
	22 ga	3.0	2.5	22 ga	3.0	2.5	22 ga	2.5	2.0
	20 ga	3.0	2.5	20 ga	3.0	2.5	20 ga	2.5	2.0
	0.032"	2.5	2.0	0.032"	-	-	0.032"	-	-

**Notes:**

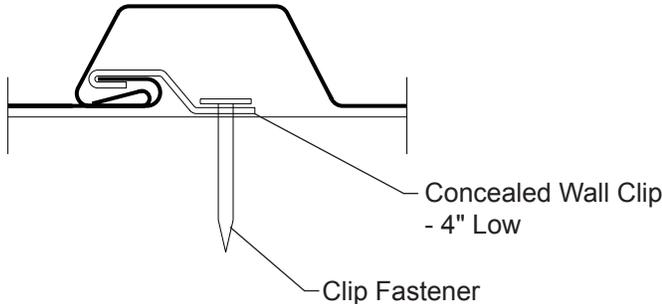
1. Allowable spacing is based on capacities determined in AISI 2016, North American Specification for the Design of Cold-Structural Members and ADM 2015, Aluminum Design Manual.
2. Allowable spacing is based on an applied load determined using ASCE 7-16 for the wind speeds and Wind Exposures tabulated. Assumptions include a tributary area of 10 square feet, an Enclosed building, a Topographic Factor of 1.0 and panel bearing length of 2.5 inches.
3. Allowable spacing is determined using IBC 2018 combinations. For wind suction and pressure, the combination is 0.6W. The arrangement is 3 or more equal spans.
4. Testing is the basis for the load carrying capacity.

- ④ - FIELD
  - ⑤ - EDGE
- a* - LEAST OF 10% MINIMUM BUILDING WIDTH OR 40% OF MEAN ROOF HEIGHT BUT NOT LESS THAN 3'.



# AP1-124 Symmetrical Rib

## PANEL ATTACHMENT



## FASTENING INFORMATION

- Concealed Wall Clip - 4" Low is 1<sup>3</sup>/<sub>4</sub>" x 4" x 3/<sub>8</sub>", from 16 ga, G90 material with 2 fastener holes.
- Clip Fastener(s) should be driven just to contact between fastener head / clip / support. Over-driven fasteners can cause panel distortions.
- Fasteners should extend 1/2" or more past the inside face of the support material for steel and wood sheathing support materials.
- Clip Fasteners:
  - Attaching to Wood:
    - #12-11 x 1<sup>1</sup>/<sub>2</sub>" Low Profile Wood Screw
  - Attaching to Steel:
    - < 18 ga: 1/4"-13 Deck Screw
    - ≥ 18 ga, ≤ 12 ga: #10-16 Pancake Head Driller
    - > 12 ga: 1/4"-14 Self Driller, No Washer

## INSTALLATION DIRECTION

Horizontally-oriented panels must be installed from the bottom to the top.

Vertically-oriented panels may be installed from the right-to-left or left-to-right.

STEEL SECTION PROPERTIES								ALLOWABLE UNIFORM LOADS, psf For various clip spacings									
Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression		Inward Load					Outward Load				
				I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	2'	3'	4'	5'	6'	2'	3'	4'	5'	6'
24	12	50	1.37	0.0479	0.0843	0.0503	0.1028	117	60	38	27	21	88	47	31	22	18
22	12	50	1.79	0.0679	0.1241	0.0698	0.1473	117	60	38	27	21	88	47	31	22	18
20	12	33	2.18	0.0920	0.1789	0.0910	0.1825	117	60	38	27	21	88	47	31	22	18

1. Theoretical section properties have been calculated per AISI S100 2016(20) 'North American Specification for the Design of Cold-Formed Steel Structural Members'. I<sub>xx</sub> and S<sub>xx</sub> are effective section properties for deflection and bending.
2. Allowable load is calculated in accordance with AISI S100 specification considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable load does not address web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal spans condition.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

ALUMINUM SECTION PROPERTIES								ALLOWABLE UNIFORM LOADS, psf for various clip spacings											
Thick in	Width in	Yield ksi	Weight psf	I in <sup>4</sup> /ft	S <sub>Top</sub> in <sup>3</sup> /ft	S <sub>Bottom</sub> in <sup>3</sup> /ft	Z in <sup>3</sup> /ft	Inward Load						Outward Load					
								2'	2.5'	3'	4'	5'	6'	2'	2.5'	3'	4'	5'	6'
0.032	12	17	0.66	0.0843	0.1651	0.1936	0.201	98	63	45	26	17	12	56	43	36	26	21	17
0.040	12	17	0.82	0.1040	0.2032	0.2367	0.249	98	63	45	26	17	12	56	43	36	26	21	17

1. Theoretical section properties have been calculated per 2015 Aluminum Design Manual. I, S and Z are section properties for deflection and bending.
2. Allowable load is calculated in accordance with 2015 Aluminum Design Manual considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable loads do not consider other support conditions, including: web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal span case.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

# AP1-124 on 16 ga Girts

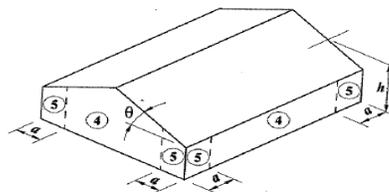
## Wall Clip Spacing (feet)

Wind Speed (mph) Exposure Category	20 ft. Mean Roof Height			40 ft. Mean Roof Height			60 ft. Mean Roof Height		
	Thickness	Field	Edge	Thickness	Field	Edge	Thickness	Field	Edge
100C	24 ga	-25.1 psf	-31 psf	24 ga	-29.1 psf	-35.9 psf	24 ga	-31.7 psf	-39.1 psf
	22 ga	6.0	5.5	22 ga	6.0	5.0	22 ga	5.5	4.5
	20 ga	6.0	5.5	20 ga	6.0	5.0	20 ga	5.5	4.5
	0.032"	6.0	5.5	0.032"	5.5	4.5	0.032"	5.0	4.0
110C	24 ga	-30.4 psf	-37.5 psf	24 ga	-35.2 psf	-43.4 psf	24 ga	-38.3 psf	-47.3 psf
	22 ga	5.5	4.5	22 ga	5.0	4.0	22 ga	4.5	4.0
	20 ga	5.5	4.5	20 ga	5.0	4.0	20 ga	4.5	4.0
	0.032"	5.5	4.5	0.032"	4.5	4.0	0.032"	4.5	3.5
120C	24 ga	-36.2 psf	-44.7 psf	24 ga	-41.9 psf	-51.7 psf	24 ga	-45.6 psf	-56.3 psf
	22 ga	5.0	4.0	22 ga	4.5	3.5	22 ga	4.0	3.5
	20 ga	5.0	4.0	20 ga	4.5	3.5	20 ga	4.0	3.5
	0.032"	4.5	3.5	0.032"	4.0	3.0	0.032"	3.5	3.0
130C	24 ga	-42.5 psf	-52.4 psf	24 ga	-49.1 psf	-60.6 psf	24 ga	-53.5 psf	-66 psf
	22 ga	4.5	3.5	22 ga	4.0	3.5	22 ga	3.5	3.0
	20 ga	4.5	3.5	20 ga	4.0	3.5	20 ga	3.5	3.0
	0.032"	4.0	3.0	0.032"	3.5	2.5	0.032"	3.0	2.5
140C	24 ga	-49.2 psf	-60.8 psf	24 ga	-57 psf	-70.3 psf	24 ga	-62 psf	-76.6 psf
	22 ga	4.0	3.5	22 ga	3.5	3.0	22 ga	3.5	3.0
	20 ga	4.0	3.5	20 ga	3.5	3.0	20 ga	3.5	3.0
	0.032"	3.5	2.5	0.032"	3.0	2.5	0.032"	2.5	2.0
150C	24 ga	-56.5 psf	-69.8 psf	24 ga	-65.4 psf	-80.7 psf	24 ga	-71.2 psf	-87.9 psf
	22 ga	3.5	3.0	22 ga	3.0	2.5	22 ga	3.0	2.5
	20 ga	3.5	3.0	20 ga	3.0	2.5	20 ga	3.0	2.5
	0.032"	3.0	2.5	0.032"	2.5	2.0	0.032"	2.5	2.0
160C	24 ga	-64.3 psf	-79.4 psf	24 ga	-74.4 psf	-91.9 psf	24 ga	-81 psf	-100 psf
	22 ga	3.0	2.5	22 ga	3.0	2.5	22 ga	2.5	2.5
	20 ga	3.0	2.5	20 ga	3.0	2.5	20 ga	2.5	2.5
	0.032"	2.5	2.0	0.032"	2.0	2.0	0.032"	-	-
170C	24 ga	-72.6 psf	-89.6 psf	24 ga	-84 psf	-103.7 psf	24 ga	-91.5 psf	-112.9 psf
	22 ga	3.0	2.5	22 ga	2.5	2.0	22 ga	2.5	2.0
	20 ga	3.0	2.5	20 ga	2.5	2.0	20 ga	2.5	2.0
	0.032"	2.0	2.0	0.032"	-	-	0.032"	-	-

**Notes:**

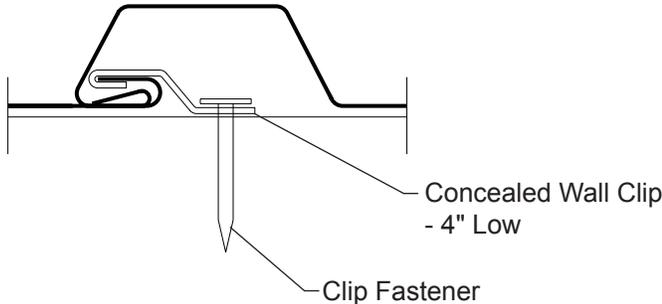
1. Allowable spacing is based on capacities determined in AISI 2016, North American Specification for the Design of Cold-Structural Members and ADM 2015, Aluminum Design Manual.
2. Allowable spacing is based on an applied load determined using ASCE 7-16 for the wind speeds and Wind Exposures tabulated. Assumptions include a tributary area of 10 square feet, an Enclosed building, a Topographic Factor of 1.0 and panel bearing length of 2.5 inches.
3. Allowable spacing is determined using IBC 2018 combinations. For wind suction and pressure, the combination is 0.6W. The arrangement is 3 or more equal spans.
4. Testing is the basis for the load carrying capacity.

- ④ - FIELD
- ⑤ - EDGE
- a - LEAST OF 10% MINIMUM BUILDING WIDTH OR 40% OF MEAN ROOF HEIGHT BUT NOT LESS THAN 3'.



# AP1-164 Symmetrical Rib

**PANEL ATTACHMENT**



**FASTENING INFORMATION**

- Concealed Wall Clip - 4" Low is 1<sup>3</sup>/<sub>4</sub>" x 4" x 3/<sub>8</sub>", from 16 ga, G90 material with 2 fastener holes.
- Clip Fastener(s) should be driven just to contact between fastener head / clip / support. Over-driven fasteners can cause panel distortions.
- Fasteners should extend 1/2" or more past the inside face of the support material for steel and wood sheathing support materials.
- Clip Fasteners:
  - Attaching to Wood:
    - #12-11 x 1<sup>1</sup>/<sub>2</sub>" Low Profile Wood Screw
  - Attaching to Steel:
    - < 18 ga: 1/<sub>4</sub>"-13 Deck Screw
    - ≥ 18 ga, ≤ 12 ga: #10-16 Pancake Head Driller
    - > 12 ga: 1/<sub>4</sub>"-14 Self Driller, No Washer

**INSTALLATION DIRECTION**

Horizontally-oriented panels must be installed from the bottom to the top.  
 Vertically-oriented panels may be installed from the right-to-left or left-to-right.

STEEL SECTION PROPERTIES								ALLOWABLE UNIFORM LOADS, psf For various clip spacings									
Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression		Inward Load					Outward Load				
				I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	2'	3'	4'	5'	6'	2'	3'	4'	5'	6'
24	16	50	1.31	0.0465	0.0838	0.0488	0.0977	117	60	38	27	21	88	47	31	22	18
22	16	50	1.72	0.0660	0.1234	0.0683	0.1412	117	60	38	27	21	88	47	31	22	18
20	16	33	2.09	0.0893	0.1779	0.0893	0.1816	117	60	38	27	21	88	47	31	22	18

1. Theoretical section properties have been calculated per AISI S100 2016(20) 'North American Specification for the Design of Cold-Formed Steel Structural Members'. I<sub>xx</sub> and S<sub>xx</sub> are effective section properties for deflection and bending.
2. Allowable load is calculated in accordance with AISI S100 specification considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable load does not address web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal spans condition.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

ALUMINUM SECTION PROPERTIES								ALLOWABLE UNIFORM LOADS, psf for various clip spacings											
Thick in	Width in	Yield ksi	Weight psf	I in <sup>4</sup> /ft	S <sub>Top</sub> in <sup>3</sup> /ft	S <sub>Bottom</sub> in <sup>3</sup> /ft	Z in <sup>3</sup> /ft	Inward Load						Outward Load					
								2'	2.5'	3'	4'	5'	6'	2'	2.5'	3'	4'	5'	6'
0.032	16	17	0.63	0.0818	0.1644	0.1822	0.196	98	63	45	26	17	12	56	43	36	26	21	17
0.040	16	17	0.78	0.1005	0.2020	0.2229	0.243	98	63	45	26	17	12	56	43	36	26	21	17

1. Theoretical section properties have been calculated per 2015 Aluminum Design Manual. I, S and Z are section properties for deflection and bending.
2. Allowable load is calculated in accordance with 2015 Aluminum Design Manual considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable loads do not consider other support conditions, including: web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal span case.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

# AP1-164 on 16 ga Girts

## Wall Clip Spacing (feet)

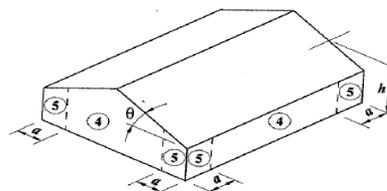
Wind Speed (mph) Exposure Category	20 ft, Mean Roof Height			40 ft, Mean Roof Height			60 ft, Mean Roof Height		
	Thickness	Field	Edge	Thickness	Field	Edge	Thickness	Field	Edge
100C		-25.1 psf	-31 psf		-29.1 psf	-35.9 psf		-31.7 psf	-39.1 psf
	24 ga	6.0	5.5	24 ga	6.0	5.0	24 ga	5.5	4.5
	22 ga	6.0	5.5	22 ga	6.0	5.0	22 ga	5.5	4.5
	20 ga	6.0	5.5	20 ga	6.0	5.0	20 ga	5.5	4.5
	0.032"	6.0	5.5	0.032"	5.5	4.5	0.032"	5.0	4.0
110C		-30.4 psf	-37.5 psf		-35.2 psf	-43.4 psf		-38.3 psf	-47.3 psf
	24 ga	5.5	4.5	24 ga	5.0	4.0	24 ga	4.5	4.0
	22 ga	5.5	4.5	22 ga	5.0	4.0	22 ga	4.5	4.0
	20 ga	5.5	4.5	20 ga	5.0	4.0	20 ga	4.5	4.0
	0.032"	5.5	4.5	0.032"	4.5	4.0	0.032"	4.5	3.5
120C		-36.2 psf	-44.7 psf		-41.9 psf	-51.7 psf		-45.6 psf	-56.3 psf
	24 ga	5.0	4.0	24 ga	4.5	3.5	24 ga	4.0	3.5
	22 ga	5.0	4.0	22 ga	4.5	3.5	22 ga	4.0	3.5
	20 ga	5.0	4.0	20 ga	4.5	3.5	20 ga	4.0	3.5
	0.032"	4.5	3.5	0.032"	4.0	3.0	0.032"	3.5	3.0
130C		-42.5 psf	-52.4 psf		-49.1 psf	-60.6 psf		-53.5 psf	-66 psf
	24 ga	4.5	3.5	24 ga	4.0	3.5	24 ga	3.5	3.0
	22 ga	4.5	3.5	22 ga	4.0	3.5	22 ga	3.5	3.0
	20 ga	4.5	3.5	20 ga	4.0	3.5	20 ga	3.5	3.0
	0.032"	4.0	3.0	0.032"	3.5	2.5	0.032"	3.0	2.5
140C		-49.2 psf	-60.8 psf		-57 psf	-70.3 psf		-62 psf	-76.6 psf
	24 ga	4.0	3.5	24 ga	3.5	3.0	24 ga	3.5	3.0
	22 ga	4.0	3.5	22 ga	3.5	3.0	22 ga	3.5	3.0
	20 ga	4.0	3.5	20 ga	3.5	3.0	20 ga	3.5	3.0
	0.032"	3.5	2.5	0.032"	3.0	2.5	0.032"	2.5	2.0
150C		-56.5 psf	-69.8 psf		-65.4 psf	-80.7 psf		-71.2 psf	-87.9 psf
	24 ga	3.5	3.0	24 ga	3.0	2.5	24 ga	3.0	2.5
	22 ga	3.5	3.0	22 ga	3.0	2.5	22 ga	3.0	2.5
	20 ga	3.5	3.0	20 ga	3.0	2.5	20 ga	3.0	2.5
	0.032"	3.0	2.5	0.032"	2.5	2.0	0.032"	2.5	2.0
160C		-64.3 psf	-79.4 psf		-74.4 psf	-91.9 psf		-81 psf	-100 psf
	24 ga	3.0	2.5	24 ga	3.0	2.5	24 ga	2.5	2.5
	22 ga	3.0	2.5	22 ga	3.0	2.5	22 ga	2.5	2.5
	20 ga	3.0	2.5	20 ga	3.0	2.5	20 ga	2.5	2.5
	0.032"	2.5	2.0	0.032"	2.0	2.0	0.032"	-	-
170C		-72.6 psf	-89.6 psf		-84 psf	-103.7 psf		-91.5 psf	-112.9 psf
	24 ga	3.0	2.5	24 ga	2.5	2.0	24 ga	2.5	2.0
	22 ga	3.0	2.5	22 ga	2.5	2.0	22 ga	2.5	2.0
	20 ga	3.0	2.5	20 ga	2.5	2.0	20 ga	2.5	2.0
	0.032"	2.0	2.0	0.032"	-	-	0.032"	-	-

**Notes:**

1. Allowable spacing is based on capacities determined in AISI 2016, North American Specification for the Design of Cold-Structural Members and ADM 2015, Aluminum Design Manual.
2. Allowable spacing is based on an applied load determined using ASCE 7-16 for the wind speeds and Wind Exposures tabulated. Assumptions include a tributary area of 10 square feet, an Enclosed building, a Topographic Factor of 1.0 and panel bearing length of 2.5 inches.
3. Allowable spacing is determined using IBC 2018 combinations. For wind suction and pressure, the combination is 0.6W. The arrangement is 3 or more equal spans.
4. Testing is the basis for the load carrying capacity.

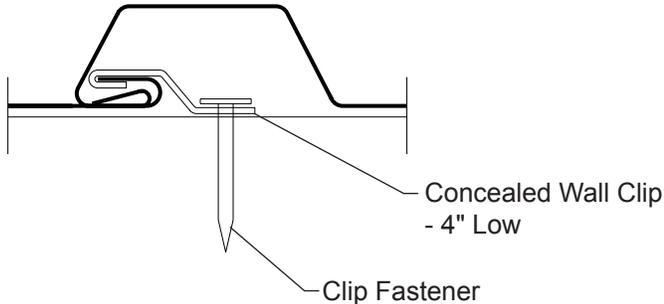
- ④ - FIELD
- ⑤ - EDGE

*a* - LEAST OF 10% MINIMUM BUILDING WIDTH OR 40% OF MEAN ROOF HEIGHT BUT NOT LESS THAN 3'.



# AP1-168 Symmetrical Rib

**PANEL ATTACHMENT**



**FASTENING INFORMATION**

- Concealed Wall Clip - 4" Low is 1<sup>3</sup>/<sub>4</sub>" x 4" x 3/<sub>8</sub>", from 16 ga, G90 material with 2 fastener holes.
- Clip Fastener(s) should be driven just to contact between fastener head / clip / support. Over-driven fasteners can cause panel distortions.
- Fasteners should extend 1/2" or more past the inside face of the support material for steel and wood sheathing support materials.
- Clip Fasteners:
  - Attaching to Wood:
    - #12-11 x 1<sup>1</sup>/<sub>2</sub>" Low Profile Wood Screw
  - Attaching to Steel:
    - < 18 ga: 1/4"-13 Deck Screw
    - ≥ 18 ga, ≤ 12 ga: #10-16 Pancake Head Driller
    - > 12 ga: 1/4"-14 Self Driller, No Washer

**INSTALLATION DIRECTION**

Horizontally-oriented panels must be installed from the bottom to the top.

Vertically-oriented panels may be installed from the right-to-left or left-to-right.

**STEEL SECTION PROPERTIES**

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

Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression		Inward Load					Outward Load				
				I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	I <sub>xx</sub> in <sup>4</sup> /ft	S <sub>xx</sub> in <sup>3</sup> /ft	2'	3'	4'	5'	6'	2'	3'	4'	5'	6'
24	16	50	1.19	0.0345	0.0472	0.0278	0.0569	117	60	38	27	21	88	47	31	22	18
22	16	50	1.56	0.0495	0.0693	0.0390	0.0758	117	60	38	27	21	88	47	31	22	18
20	16	33	1.91	0.0690	0.0998	0.0548	0.0958	117	60	38	27	21	88	47	31	22	18

1. Theoretical section properties have been calculated per AISI S100 2016(20) 'North American Specification for the Design of Cold-Formed Steel Structural Members'. I<sub>xx</sub> and S<sub>xx</sub> are effective section properties for deflection and bending.
2. Allowable load is calculated in accordance with AISI S100 specification considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable load does not address web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal spans condition.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

**ALUMINUM SECTION PROPERTIES**

**ALLOWABLE UNIFORM LOADS, psf**  
for various clip spacings

Thick in	Width in	Yield ksi	Weight psf	I in <sup>4</sup> /ft	S <sub>Top</sub> in <sup>3</sup> /ft	S <sub>Bottom</sub> in <sup>3</sup> /ft	Z in <sup>3</sup> /ft	Inward Load						Outward Load					
								2'	2.5'	3'	4'	5'	6'	2'	2.5'	3'	4'	5'	6'
0.032	16	17	0.57	0.0630	0.0923	0.2425	0.123	98	63	45	26	17	12	42	30	24	16	12	10
0.040	16	17	0.71	0.0780	0.1136	0.2957	0.153	98	63	45	26	17	12	42	30	24	16	12	10

1. Theoretical section properties have been calculated per 2015 Aluminum Design Manual. I, S and Z are section properties for deflection and bending.
2. Allowable load is calculated in accordance with 2015 Aluminum Design Manual considering bending, shear, combined bending & shear, deflection and load testing of comparable profiles on 16 ga girts. Allowable loads do not consider other support conditions, including: web crippling, fasteners or support material. Panel weight is not considered.
3. Allowable load considers the three or more equal span case.
4. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
5. Allowable loads do not include a 1/3 stress increase for wind.

# AP1-168 on 16 ga Girts

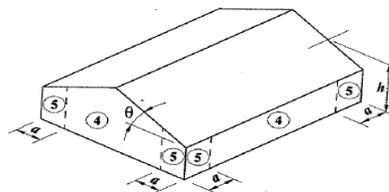
## Wall Clip Spacing (feet)

Wind Speed (mph) Exposure Category	20 ft. Mean Roof Height			40 ft. Mean Roof Height			60 ft. Mean Roof Height		
	Thickness	Field	Edge	Thickness	Field	Edge	Thickness	Field	Edge
100C	24 ga	-25.1 psf	-31 psf	24 ga	-29.1 psf	-35.9 psf	24 ga	-31.7 psf	-39.1 psf
	22 ga	6.0	5.5	22 ga	6.0	5.0	22 ga	5.5	4.5
	20 ga	6.0	5.5	20 ga	6.0	5.0	20 ga	5.5	4.5
	0.032"	6.0	5.5	0.032"	5.5	4.5	0.032"	5.0	4.0
110C	24 ga	-30.4 psf	-37.5 psf	24 ga	-35.2 psf	-43.4 psf	24 ga	-38.3 psf	-47.3 psf
	22 ga	5.5	4.5	22 ga	5.0	4.0	22 ga	4.5	4.0
	20 ga	5.5	4.5	20 ga	5.0	4.0	20 ga	4.5	4.0
	0.032"	5.5	4.5	0.032"	4.5	4.0	0.032"	4.5	3.5
120C	24 ga	-36.2 psf	-44.7 psf	24 ga	-41.9 psf	-51.7 psf	24 ga	-45.6 psf	-56.3 psf
	22 ga	5.0	4.0	22 ga	4.5	3.5	22 ga	4.0	3.5
	20 ga	5.0	4.0	20 ga	4.5	3.5	20 ga	4.0	3.5
	0.032"	4.5	3.5	0.032"	4.0	3.0	0.032"	3.5	3.0
130C	24 ga	-42.5 psf	-52.4 psf	24 ga	-49.1 psf	-60.6 psf	24 ga	-53.5 psf	-66 psf
	22 ga	4.5	3.5	22 ga	4.0	3.5	22 ga	3.5	3.0
	20 ga	4.5	3.5	20 ga	4.0	3.5	20 ga	3.5	3.0
	0.032"	4.0	3.0	0.032"	3.5	2.5	0.032"	3.0	2.5
140C	24 ga	-49.2 psf	-60.8 psf	24 ga	-57 psf	-70.3 psf	24 ga	-62 psf	-76.6 psf
	22 ga	4.0	3.5	22 ga	3.5	3.0	22 ga	3.5	3.0
	20 ga	4.0	3.5	20 ga	3.5	3.0	20 ga	3.5	3.0
	0.032"	3.5	2.5	0.032"	3.0	2.5	0.032"	2.5	2.0
150C	24 ga	-56.5 psf	-69.8 psf	24 ga	-65.4 psf	-80.7 psf	24 ga	-71.2 psf	-87.9 psf
	22 ga	3.5	3.0	22 ga	3.0	2.5	22 ga	3.0	2.5
	20 ga	3.5	3.0	20 ga	3.0	2.5	20 ga	3.0	2.5
	0.032"	3.0	2.5	0.032"	2.5	2.0	0.032"	2.5	2.0
160C	24 ga	-64.3 psf	-79.4 psf	24 ga	-74.4 psf	-91.9 psf	24 ga	-81 psf	-100 psf
	22 ga	3.0	2.5	22 ga	3.0	2.5	22 ga	2.5	2.5
	20 ga	3.0	2.5	20 ga	3.0	2.5	20 ga	2.5	2.5
	0.032"	2.5	2.0	0.032"	2.0	2.0	0.032"	-	-
170C	24 ga	-72.6 psf	-89.6 psf	24 ga	-84 psf	-103.7 psf	24 ga	-91.5 psf	-112.9 psf
	22 ga	3.0	2.5	22 ga	2.5	2.0	22 ga	2.5	2.0
	20 ga	3.0	2.5	20 ga	2.5	2.0	20 ga	2.5	2.0
	0.032"	2.0	2.0	0.032"	-	-	0.032"	-	-

**Notes:**

- Allowable spacing is based on capacities determined in AISI 2016, North American Specification for the Design of Cold-Structural Members and ADM 2015, Aluminum Design Manual.
- Allowable spacing is based on an applied load determined using ASCE 7-16 for the wind speeds and Wind Exposures tabulated. Assumptions include a tributary area of 10 square feet, an Enclosed building, a Topographic Factor of 1.0 and panel bearing length of 2.5 inches.
- Allowable spacing is determined using IBC 2018 combinations. For wind suction and pressure, the combination is 0.6W. The arrangement is 3 or more equal spans.
- Testing is the basis for the load carrying capacity.

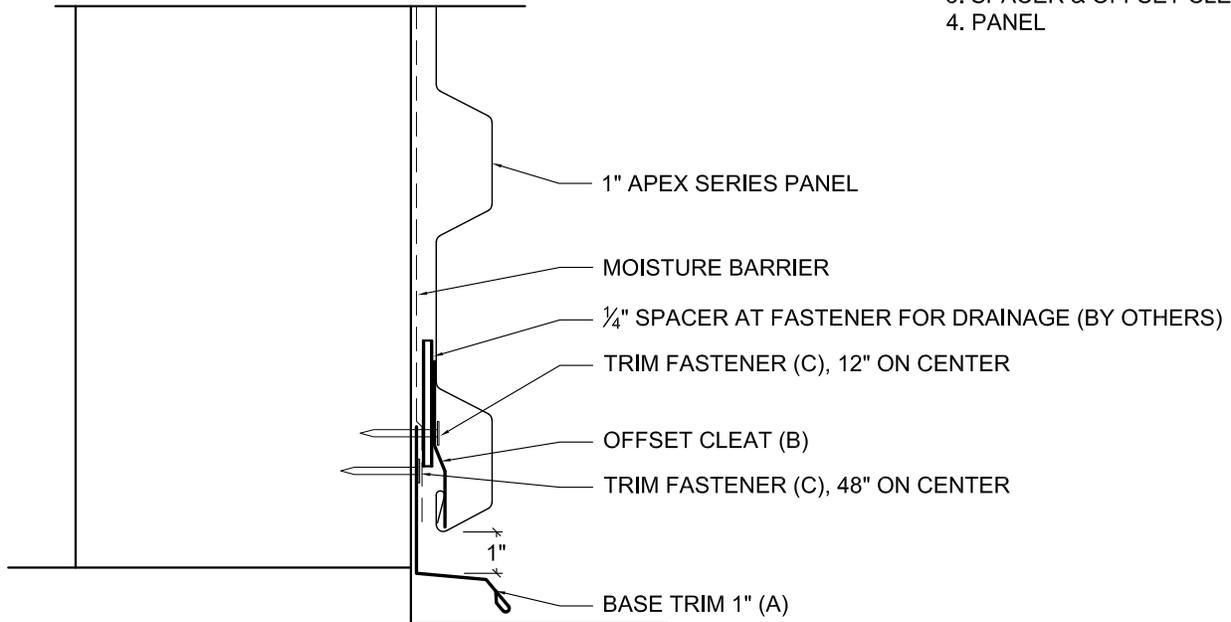
- ④ - FIELD
  - ⑤ - EDGE
- a - LEAST OF 10% MINIMUM BUILDING WIDTH OR 40% OF MEAN ROOF HEIGHT BUT NOT LESS THAN 3'.



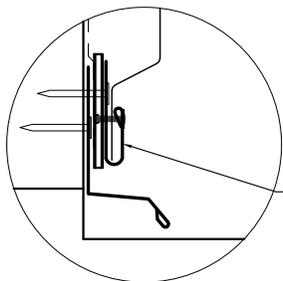
**INSTALL ORDER**

1. BASE TRIM 1"
2. MOISTURE BARRIER
3. SPACER & OFFSET CLEAT
4. PANEL

ELEVATION VIEW

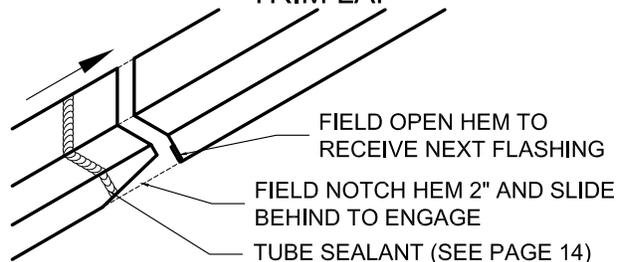


**AT LOW RIB**



PANEL STARTER  
(SEE PAGE 12)

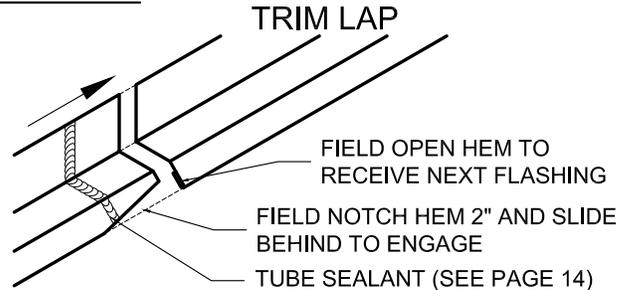
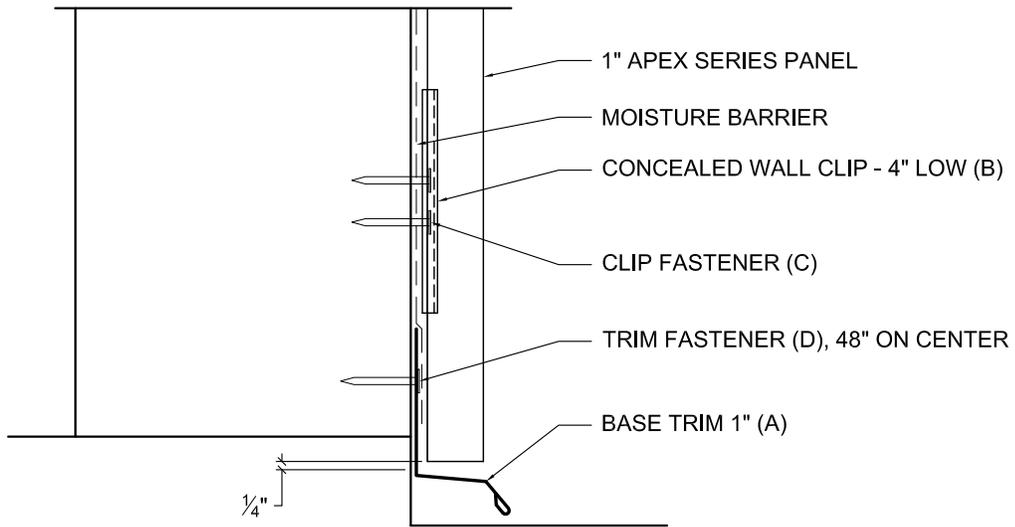
**TRIM LAP**



**NO FASTENERS THROUGH TRIM LAP**

Part	Description	Product #	Length	Installation Information
<p><b>(A)</b></p>	Base Trim 1", 24 Ga Base Trim 1", 22 Ga Base Trim 1", 0.032"	58707XX 60707XX 58707XXA	10'-2"	Install Moisture Barrier over top of Base Trim
<p><b>(B)</b></p>	Offset Cleat, 24 Ga	5806499	10'-2"	Install 2" x 2" x 1/4" spacer behind Offset Cleat. Hook panel onto 1" leg of Offset Cleat.
<p><b>(C)</b></p>	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
<p><b>(C)</b></p>	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing

ELEVATION VIEW

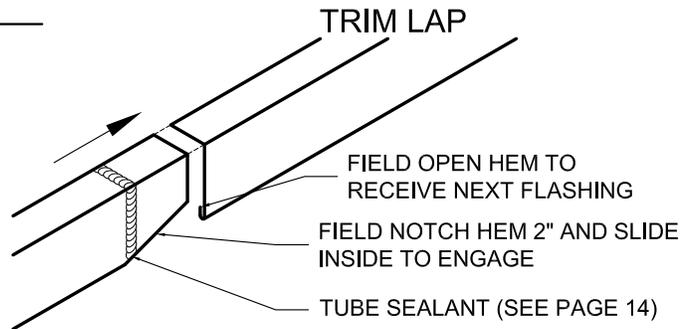
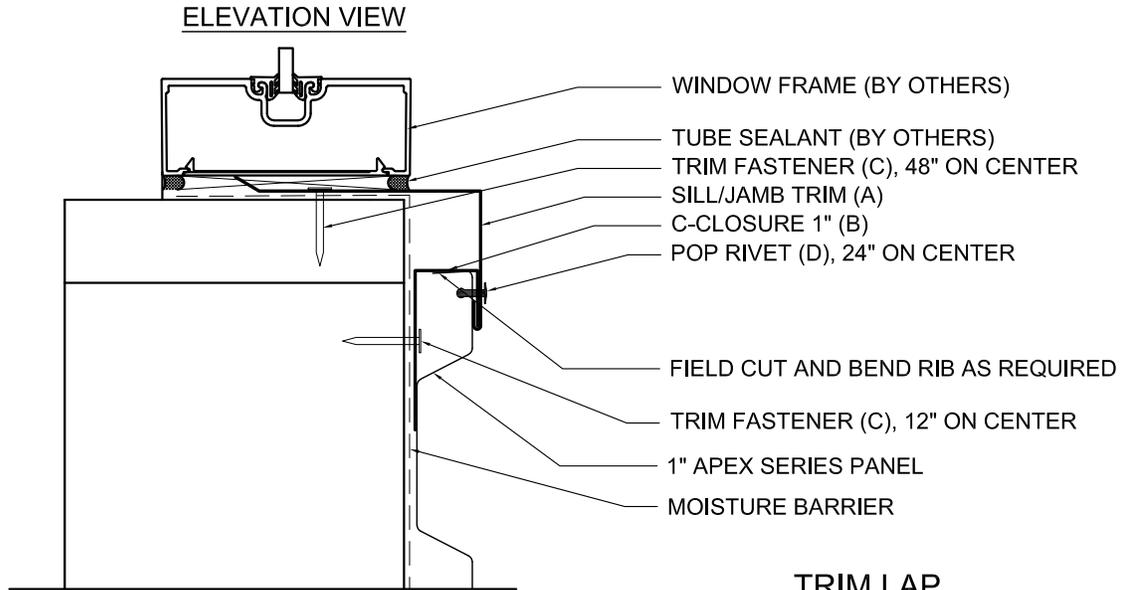


INSTALL ORDER

1. BASE TRIM 1"
2. MOISTURE BARRIER
3. PANEL

NO FASTENERS THROUGH TRIM LAP

Part	Description	Product #	Length	Installation Information
(A)	<p>Base Trim 1", 24 Ga Base Trim 1", 22 Ga Base Trim 1", 0.032"</p>	58707XX 60707XX 58707XXA	10'-2"	Install Moisture Barrier over top of Base Trim
(B)	<p>Concealed Wall Clip 4" Low 16 Ga Galv</p>	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(C)	<p>#12-11 x 1 1/2" Low Profile Wood Screw</p>	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(C), (D)	<p>#10-16 x 1" Pancake Head Driller</p>	8242100	1"	For clip / trim attachment to steel framing
(D)	<p>#10-12 x 1" Pancake Head Wood Screw</p>	8243100	1"	For trim attachment to wood sheathing or framing



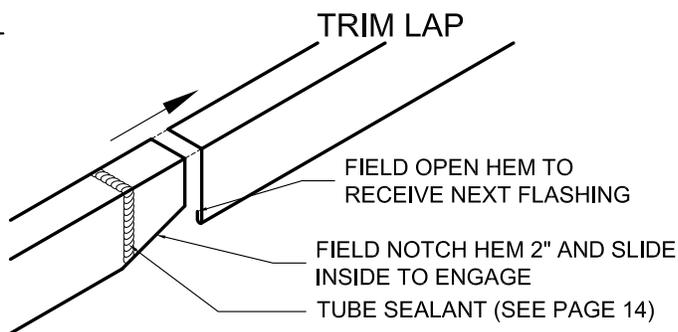
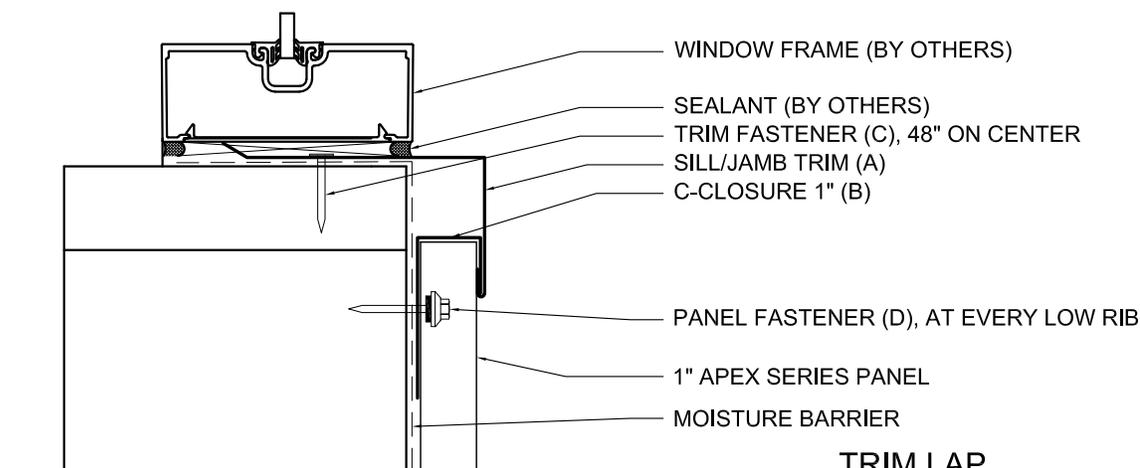
**INSTALL ORDER**

1. MOISTURE BARRIER
2. C-CLOSURE 1"
3. PANEL
4. SILL/JAMB TRIM
5. WINDOW FRAME

NO FASTENERS THROUGH TRIM LAP

Part	Description	Product #	Length	Installation Information
	Sill/Jamb Trim, 24 Ga Sill/Jamb Trim, 22 Ga Sill/Jamb Trim, 0.032"	58718XX 60718XX 58718XXA	10'-2"	Hook Sill/Jamb Trim onto C-Closure and fasten in place. Ensure Sill/Jamb Trim is installed with slope to allow for water drainage.
	C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure and hook Sill/Jamb Trim over 1" leg.
	#10-16 x 1" Pancake Head Drill	8242100	1"	For trim attachment to steel framing
	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
	1/8" x 3/8" Pop Rivet	82402XX		For Sill/Jamb attachment to C-Closure and panel.

ELEVATION VIEW

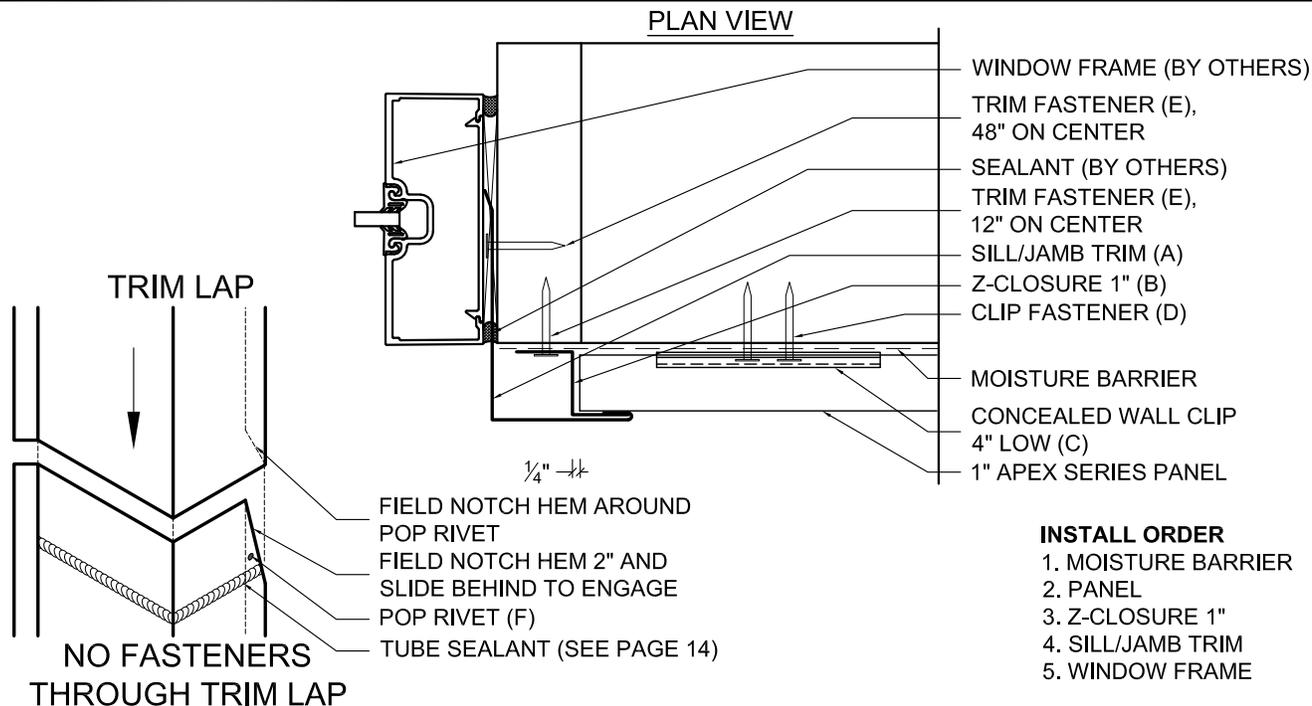


INSTALL ORDER

1. MOISTURE BARRIER
2. C-CLOSURE 1"
3. PANEL
4. SILL/JAMB TRIM
5. WINDOW FRAME

NO FASTENERS THROUGH TRIM LAP

Part	Description	Product #	Length	Installation Information
<p>(A)</p>	<p>Sill/Jamb Trim, 24 Ga Sill/Jamb Trim, 22 Ga Sill/Jamb Trim, 0.032"</p>	<p>58718XX 60718XX 58718XXA</p>	<p>10'-2"</p>	<p>Hook Sill/Jamb Trim onto C-Closure and fasten in place. Ensure Sill/Jamb Trim is installed with slope to allow for water drainage.</p>
<p>(B)</p>	<p>C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"</p>	<p>58711XX 60711XX 58711XXA</p>	<p>10'-2"</p>	<p>Install C-Closure and hook Sill/Jamb Trim over 1" leg.</p>
<p>(C)</p>	<p>#10-16 x 1" Pancake Head Driller</p>	<p>8242100</p>	<p>1"</p>	<p>For trim attachment to steel framing</p>
<p>(C)</p>	<p>#10-12 x 1" Pancake Head Wood Screw</p>	<p>8243100</p>	<p>1"</p>	<p>For trim attachment to wood sheathing or framing</p>
<p>(D)</p>	<p>#12-14 x 1 1/4" Self Driller XL</p>	<p>82353XX</p>	<p>1 1/4"</p>	<p>For panel attachment to steel framing</p>
<p>(D)</p>	<p>#10-14 x 1 1/2" Wood Screw XL</p>	<p>82123XX</p>	<p>1 1/2"</p>	<p>For panel attachment to wood sheathing or framing</p>

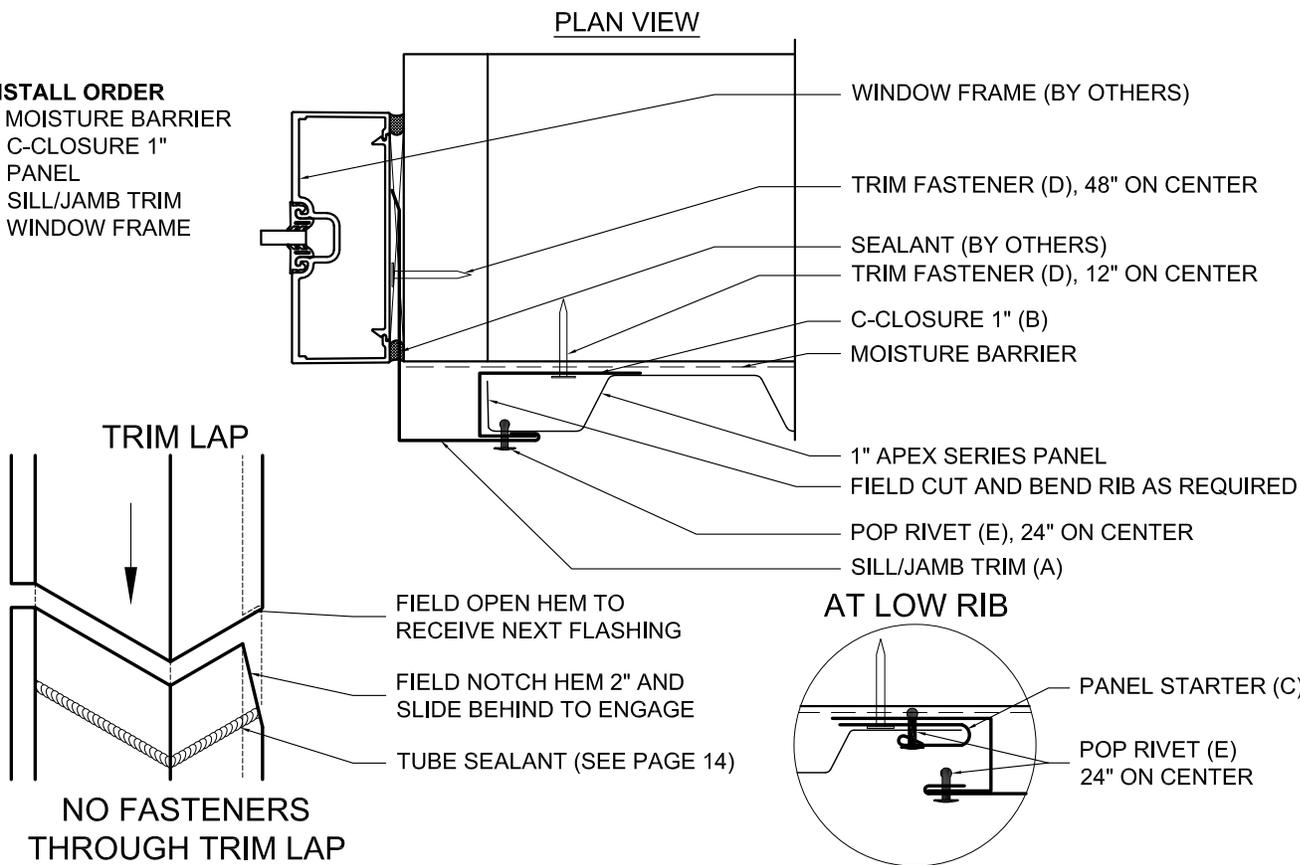


- INSTALL ORDER**
1. MOISTURE BARRIER
  2. PANEL
  3. Z-CLOSURE 1"
  4. SILL/JAMB TRIM
  5. WINDOW FRAME

Part	Description	Product #	Length	Installation Information
(A)	<p>Sill/Jamb Trim, 24 Ga Sill/Jamb Trim, 22 Ga Sill/Jamb Trim, 0.032"</p>	58718XX 60718XX 58718XXA	10'-2"	Hook Sill/Jamb Trim onto Z-Closure and fasten into place.
(B)	<p>Z-Closure 1", 24 Ga Z-Closure 1", 22 Ga Z-Closure 1", 0.032"</p>	58727XX 60727XX 58727XXA	10'-2"	Install Z-Closure and hook Sill/Jamb Trim over 1" leg.
(C)	<p>Concealed Wall Clip 4" Low 16 Ga Galv</p>	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(D)	<p>#12-11 x 1 1/2" Low Profile Wood Screw</p>	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E)	<p>#10-16 x 1" Pancake Head Driller</p>	8242100	1"	For clip / trim attachment to steel framing
(E)	<p>#10-12 x 1" Pancake Head Wood Screw</p>	8243100	1"	For trim attachment to wood sheathing or framing
(F)	<p>1/8" x 3/8" Pop Rivet</p>	82402XX		For Sill/Jamb Trim attachment to Z-Closure

### INSTALL ORDER

1. MOISTURE BARRIER
2. C-CLOSURE 1"
3. PANEL
4. SILL/JAMB TRIM
5. WINDOW FRAME

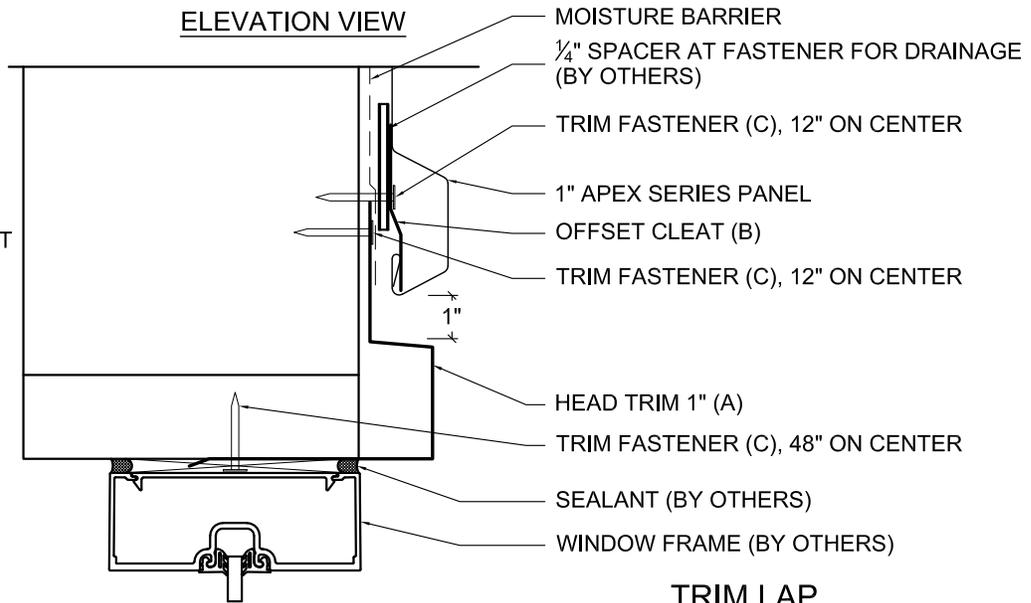


**NO FASTENERS THROUGH TRIM LAP**

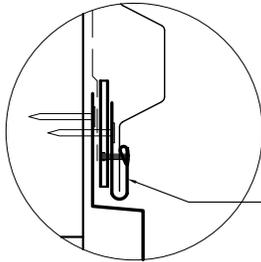
Part	Description	Product #	Length	Installation Information	
(A)		Sill/Jamb Trim, 24 Ga Sill/Jamb Trim, 22 Ga Sill/Jamb Trim, 0.032"	58718XX 60718XX 58718XXA	10'-2"	Hook Sill/Jamb Trim onto C-Closure and fasten into place.
(B)		C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure and hook Sill/Jamb Trim over 1" leg.
(C)		Panel Starter, 24 Ga Panel Starter, 22 Ga Panel Starter, 0.032"	58728XX 60728XX 58728XXA	10'-2"	Fasten to face of C-Closure, slide low rib of panel into open hem.
(D)		#10-16 x 1" Pancake Head Drill	8242100	1"	For trim attachment to steel framing
(D)		#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(E)		1/8" x 3/8" Pop Rivet	82402XX		For Sill/Jamb attachment to C-Closure and panel.

**INSTALL ORDER**

1. HEAD TRIM 1"
2. MOISTURE BARRIER
2. SPACER & OFFSET CLEAT
3. PANEL
4. WINDOW FRAME

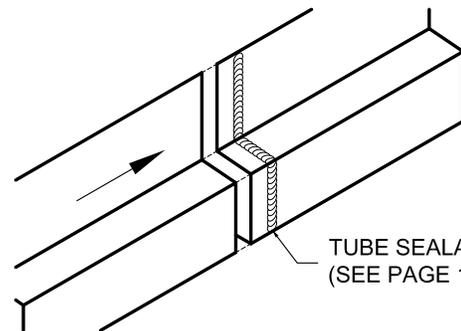


**AT LOW RIB**



PANEL STARTER  
(SEE PAGE 12)

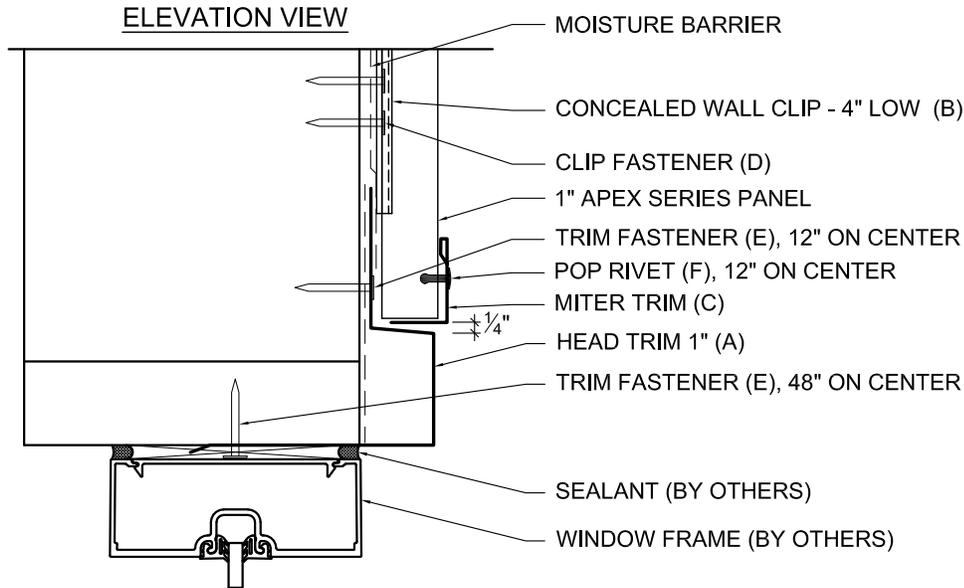
**TRIM LAP**



TUBE SEALANT  
(SEE PAGE 14)

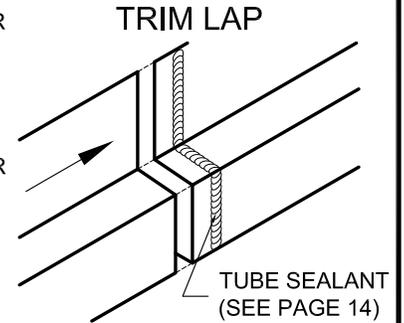
**NO FASTENERS THROUGH TRIM LAP**

Part	Description	Product #	Length	Installation Information	
(A)		Head Trim 1", 24 Ga Head Trim 1", 22 Ga Head Trim 1", 0.032"	58721XX 60721XX 58721XXA	10'-2"	Install Moisture Barrier over top of Head Trim and fasten in place. Ensure Head Trim is installed with slope to allow for water drainage.
(B)		Offset Cleat, 24 Ga	5806499	10'-2"	Install 2" x 2" x 1/4" spacer behind Offset Cleat. Hook panel onto 1" leg of Offset Cleat.
(C)		#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
(C)		#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing



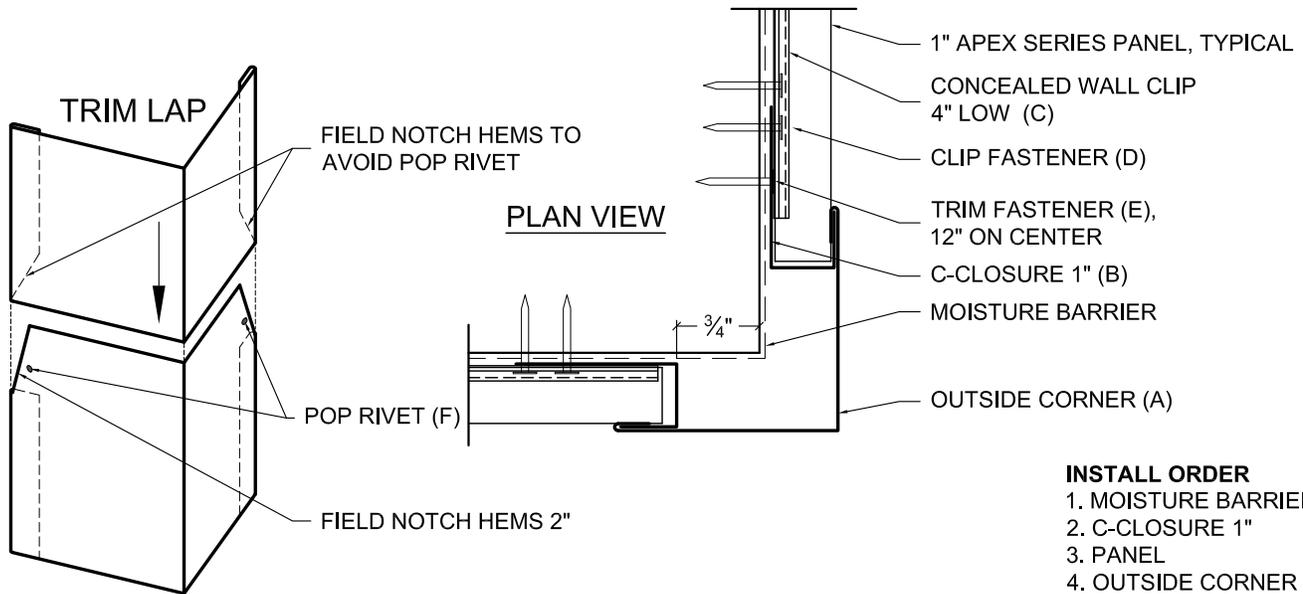
### INSTALL ORDER

1. HEAD TRIM 1"
2. MOISTURE BARRIER
3. PANEL
4. WINDOW FRAME



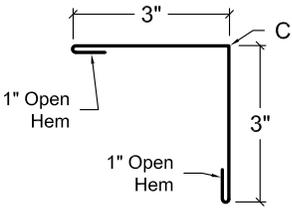
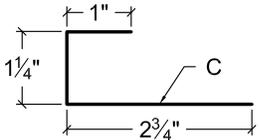
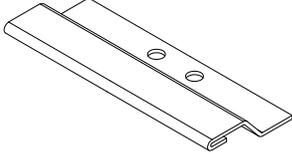
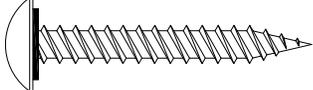
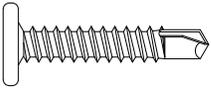
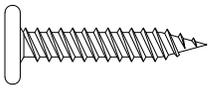
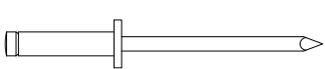
**NO FASTENERS THROUGH TRIM LAP**

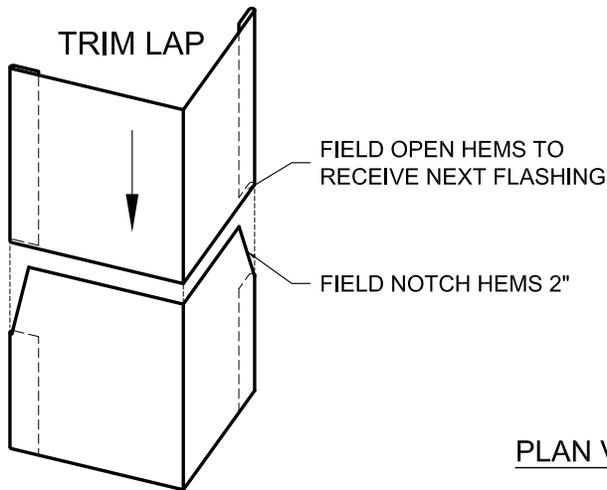
Part	Description	Product #	Length	Installation Information	
(A)		Head Trim 1", 24 Ga Head Trim 1", 22 Ga Head Trim 1", 0.032"	58721XX 60721XX 58721XXA	10'-2"	Install Head Trim and fasten in place with Moisture Barrier over the top of the Head Trim. Ensure Head Trim is installed with slope to allow for water drainage.
(B)		Concealed Wall Clip 4" Low 16 Ga Galv	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(C)		Miter Trim, 24 Ga Miter Trim, 22 Ga Miter Trim, 0.032"	58654XX 60654XX 58654XXA	10'-2"	Install at bottom of panels above header, attach with Pop Rivets.
(D)		#12-11 x 1 1/2" Low Profile Wood Screw	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E)		#10-16 x 1" Pancake Head Driller	8242100	1"	For clip / trim attachment to steel framing
(E)		#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(F)		1/8" x 3/8" Pop Rivet	82402XX		For Sill/Jamb attachment to C-Closure and panel.



**NO FASTENERS THROUGH TRIM LAP**

- INSTALL ORDER**
1. MOISTURE BARRIER
  2. C-CLOSURE 1"
  3. PANEL
  4. OUTSIDE CORNER
  5. C-CLOSURE 1"
  6. PANEL

Part	Description	Product #	Length	Installation Information
(A) 	Outside Corner, 24 Ga Outside Corner, 22 Ga Outside Corner, 0.032"	58724XX 60724XX 58724XXA	10'-2"	Hook Outside Corner around C-Closure, pull C-Closure into place. Pop Rivet to C-Closures under trim lap.
(B) 	C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure before panel. An alternate is to use Z-Closure to ease panel installation.
(C) 	Concealed Wall Clip 4" Low 16 Ga Galv	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(D) 	#12-11 x 1 1/2" Low Profile Wood Screw	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E) 	#10-16 x 1" Pancake Head Driller	8242100	1"	For clip / trim attachment to steel framing
(E) 	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(F) 	1/8" x 3/8" Pop Rivet	82402XX		For Outside Corner attachment to C-Closures

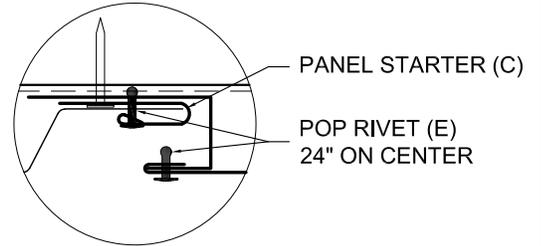


NO FASTENERS THROUGH TRIM LAP

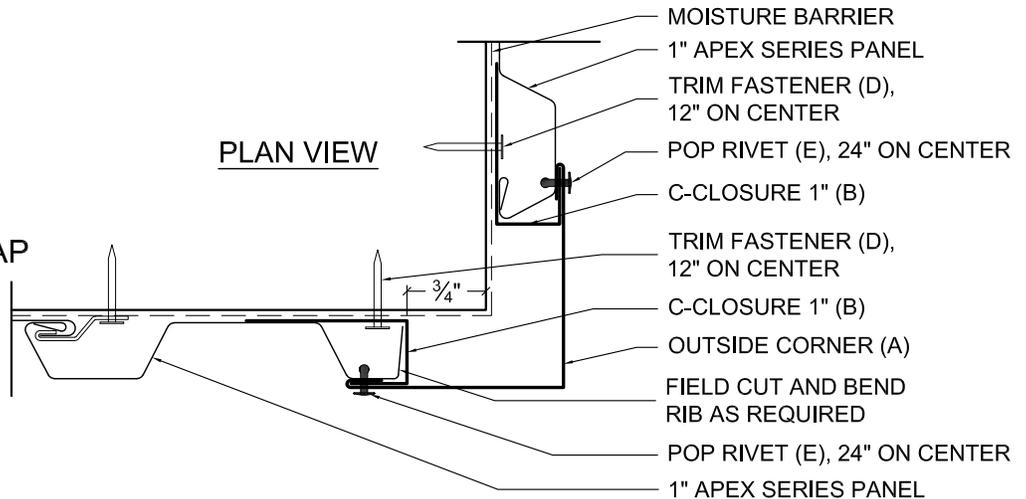
**INSTALL ORDER**

1. MOISTURE BARRIER
2. C-CLOSURE 1"
3. PANEL
4. OUTSIDE CORNER
5. C-CLOSURE 1"
6. PANEL

AT LOW RIB

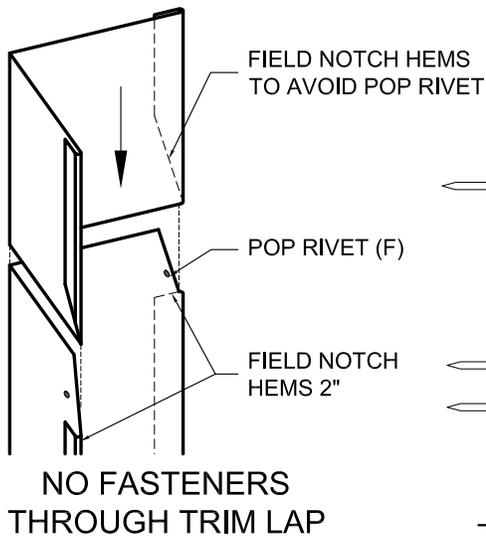


PLAN VIEW

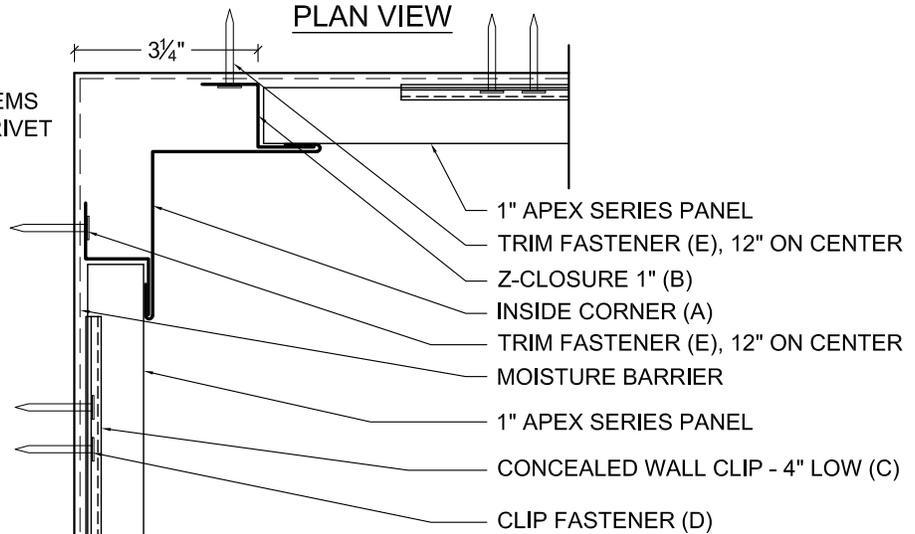


Part	Description	Product #	Length	Installation Information
<p><b>(A)</b></p>	Outside Corner, 24 Ga Outside Corner, 22 Ga Outside Corner, 0.032"	58724XX 60724XX 58724XXA	10'-2"	Hook Outside Corner around C-Closures. Pop Rivet to panel and C-Closures.
<p><b>(B)</b></p>	C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure to start panel.
<p><b>(C)</b></p>	Panel Starter, 24 Ga Panel Starter, 22 Ga Panel Starter, 0.032"	58728XX 60728XX 58728XXA	10'-2"	Fasten to face of C-Closure, slide low rib of panel into open hem.
<p><b>(D)</b></p>	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
<p><b>(D)</b></p>	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
<p><b>(E)</b></p>	1/8" x 3/8" Pop Rivet	82402XX		For Outside Corner attachment to C-Closures

## TRIM LAP

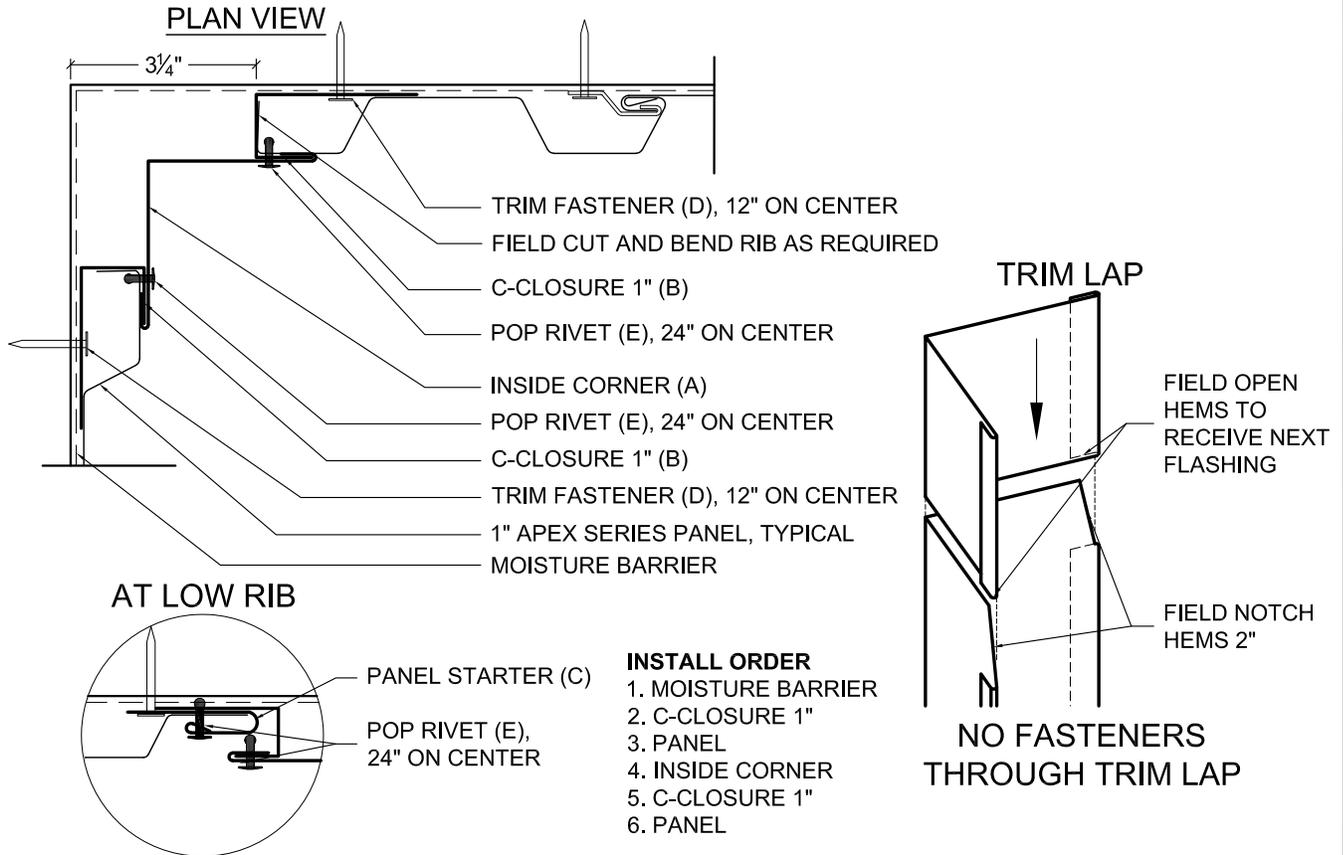


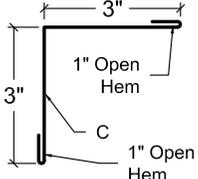
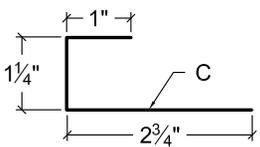
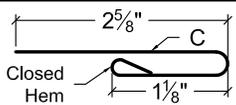
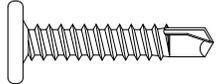
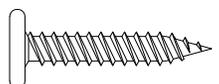
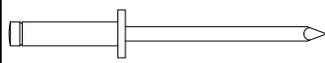
## PLAN VIEW

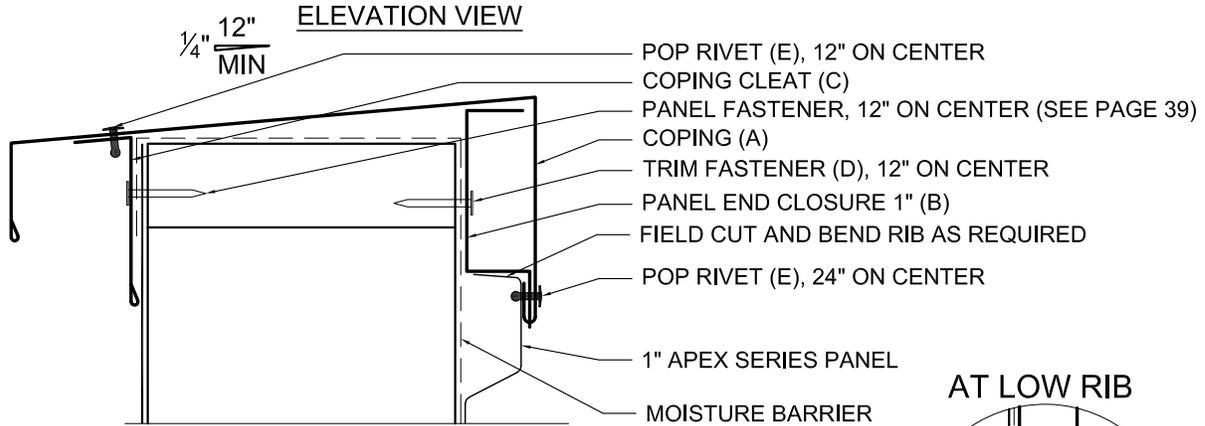


- INSTALL ORDER**
1. MOISTURE BARRIER
  2. Z-CLOSURE 1"
  3. PANEL
  4. INSIDE CORNER
  5. Z-CLOSURE 1"
  6. PANEL

Part	Description	Product #	Length	Installation Information
(A)	<p>Inside Corner, 24 Ga Inside Corner, 22 Ga Inside Corner, 0.032"</p>	58726XX 60726XX 58726XXA	10'-2"	Hook Inside Corner around Z-Closures into place. Pop Rivet to Z-Closures under trim lap.
(B)	<p>Z-Closure 1", 24 Ga Z-Closure 1", 22 Ga Z-Closure 1", 0.032"</p>	58727XX 60727XX 58727XXA	10'-2"	Install Z-Closure on each side of corner.
(C)	<p>Concealed Wall Clip 4" Low 16 Ga Galv</p>	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(D)	<p>#12-11 x 1 1/2" Low Profile Wood Screw</p>	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E)	<p>#10-16 x 1" Pancake Head Driller</p>	8242100	1"	For clip / trim attachment to steel framing
(E)	<p>#10-12 x 1" Pancake Head Wood Screw</p>	8243100	1"	For trim attachment to wood sheathing or framing
(F)	<p>1/8" x 3/8" Pop Rivet</p>	82402XX		For Inside Corner attachment to Z-Closures



	Part	Description	Product #	Length	Installation Information
(A)		Inside Corner, 24 Ga Inside Corner, 22 Ga Inside Corner, 0.032"	58726XX 60726XX 58726XXA	10'-2"	Hook Inside Corner Trim around C-Closures. Pop Rivet to closure trims and panel 24" on center.
(B)		C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure on each side of corner.
(C)		Panel Starter, 24 Ga Panel Starter, 22 Ga Panel Starter, 0.032"	58728XX 60728XX 58728XXA	10'-2"	Fasten to face of C-Closure, slide low rib of panel into open hem.
(D)		#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
(D)		#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(E)		1/8" x 3/8" Pop Rivet	82402XX		For Inside Corner attachment to C-Closures



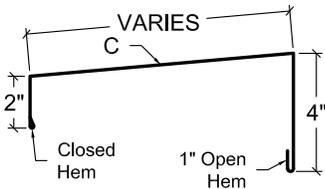
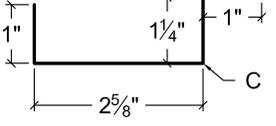
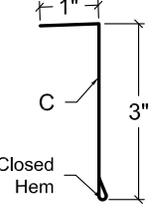
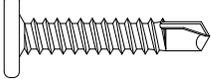
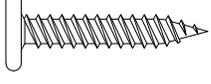
AT LOW RIB

PANEL STARTER  
(SEE PAGE 12)

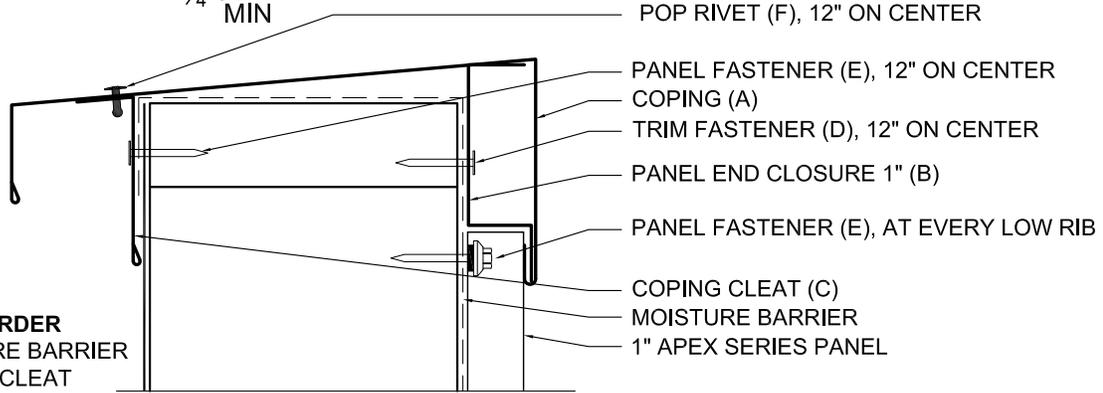
POP RIVET (E),  
24" ON CENTER

**INSTALL ORDER**

1. MOISTURE BARRIER
2. COPING CLEAT
3. PANEL END CLOSURE 1"
4. COPING
5. PANEL

Part	Description	Product #	Length	Installation Information
(A) 	Coping 8", 24 Ga Coping 8", 22 Ga Coping 10", 24 Ga Coping 10", 22 Ga Coping 12", 24 Ga Coping 12", 22 Ga	58714XX 60714XX 58715XX 60715XX 58716XX 60716XX	10'-2"	Hook Coping onto Panel End Closure and Pop Rivet to Coping Cleat.
(B) 	Panel End Closure 1", 24 Ga Panel End Closure 1", 22 Ga Panel End Closure 1", 0.032"	58731XX 60731XX 58731XXA	10'-2"	Carefully locate Panel End Closure to support Coping.
(C) 	Coping Cleat, 24 Ga Coping Cleat, 22 Ga Coping Cleat, 0.032"	58734XX 60734XX 58734XXA	10'-2"	Install Coping Cleat to accept Coping attachment.
(D) 	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
(D) 	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(E) 	1/8" x 3/8" Pop Rivet	82402XX		For trim attachment

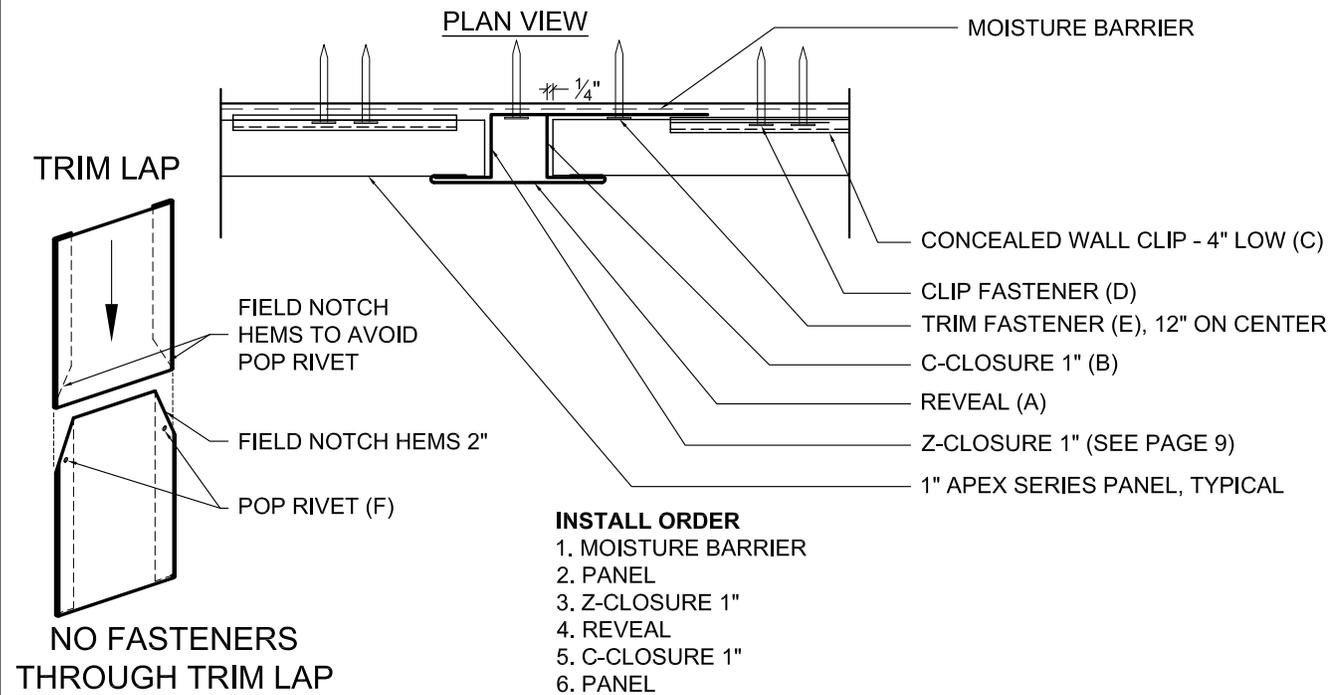
$\frac{1}{4}$ "  $\frac{12"}{MIN}$  ELEVATION VIEW

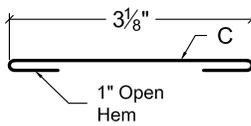
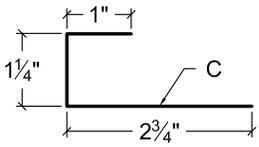
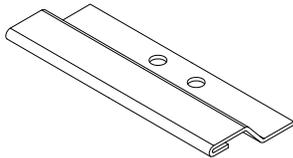
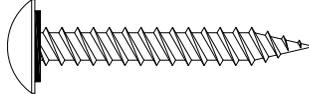
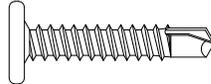
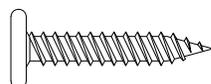
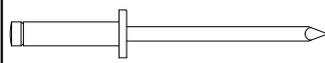


- INSTALL ORDER**
1. MOISTURE BARRIER
  2. COPING CLEAT
  3. PANEL
  4. PANEL END CLOSURE 1"
  5. COPING

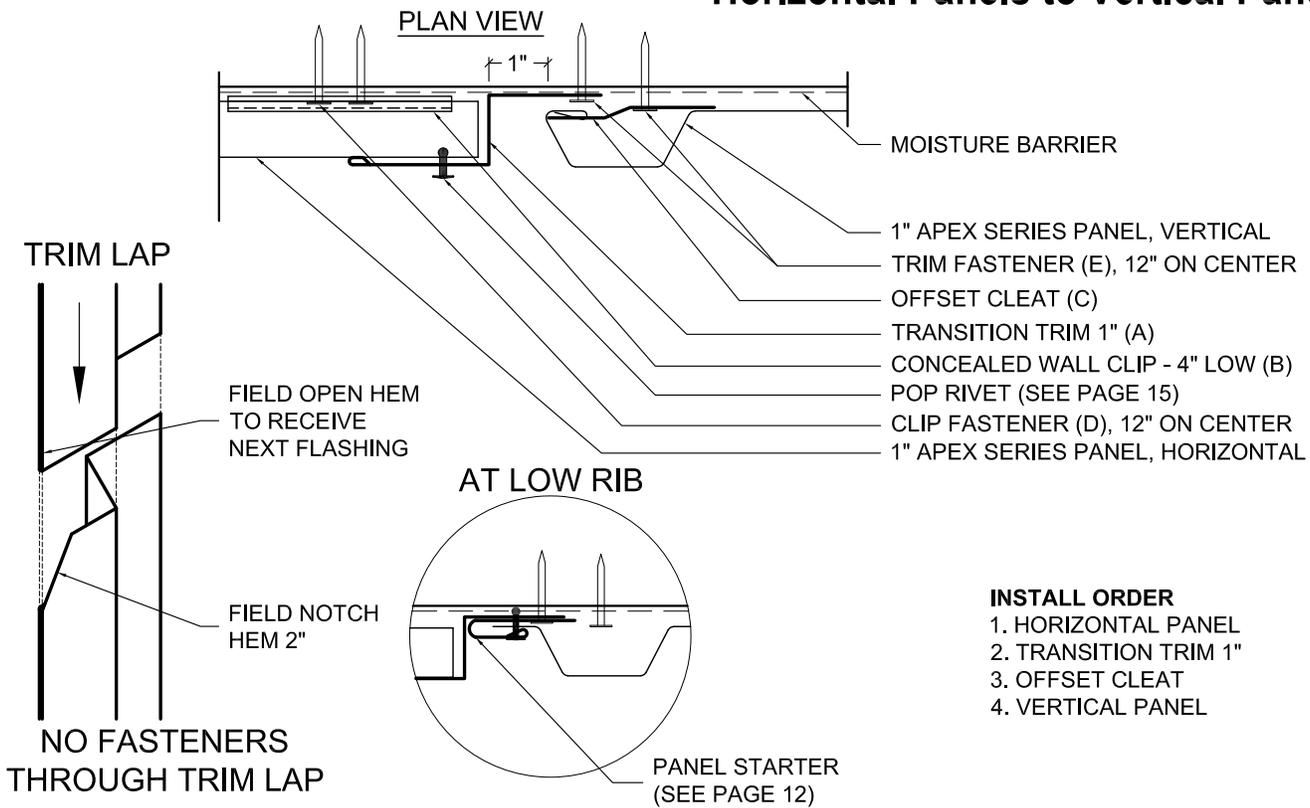
	Part	Description	Product #	Length	Installation Information
(A)		Coping 8", 24 Ga Coping 8", 22 Ga Coping 10", 24 Ga Coping 10", 22 Ga Coping 12", 24 Ga Coping 12", 22 Ga	58714XX 60714XX 58715XX 60715XX 58716XX 60716XX	10'-2"	Hook Coping onto Panel End Closure and Pop Rivet to Coping Cleat.
(B)		Panel End Closure 1", 24 Ga Panel End Closure 1", 22 Ga Panel End Closure 1", 0.032"	58731XX 60731XX 58731XXA	10'-2"	Carefully locate Panel End Closure to support Coping.
(C)		Coping Cleat, 24 Ga Coping Cleat, 22 Ga Coping Cleat, 0.032"	58734XX 60734XX 58734XXA	10'-2"	Install Coping Cleat to accept Coping attachment.
(D)		#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
(D)		#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(E)		#12-14 x 1/4" Self Driller XL	82353XX	1/4"	For panel attachment to steel framing
(E)		#10-14 x 1/2" Wood Screw XL	82123XX	1/2"	For panel attachment to wood sheathing or framing
(F)		1/8" x 3/8" Pop Rivet	82402XX		For trim attachment

Reveal - Horizontal Panels



Part	Description	Product #	Length	Installation Information
(A) 	Reveal, 24 Ga Reveal, 22 Ga Reveal, 0.032"	58740XX 60740XX 58740XXA	10'-2"	Hook Reveal on Z-Closure and engage C-Closure. Pop Rivet to Closures at trim lap.
(B) 	C-Closure 1", 24 Ga C-Closure 1", 22 Ga C-Closure 1", 0.032"	58711XX 60711XX 58711XXA	10'-2"	Install C-Closure to restrain Reveal. Leave 1/4" gap between end of panels and back of C-Closure.
(C) 	Concealed Wall Clip 4" Low 16 Ga Galv	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(D) 	#12-11 x 1 1/2" Low Profile Wood Screw	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E) 	#10-16 x 1" Pancake Head Driller	8242100	1"	For clip / trim attachment to steel framing
(E) 	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(F) 	1/8" x 3/8" Pop Rivet	82402XX		For Reveal attachment to Closures at trim lap

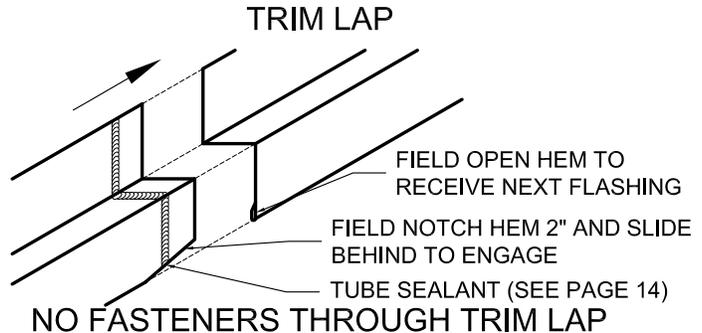
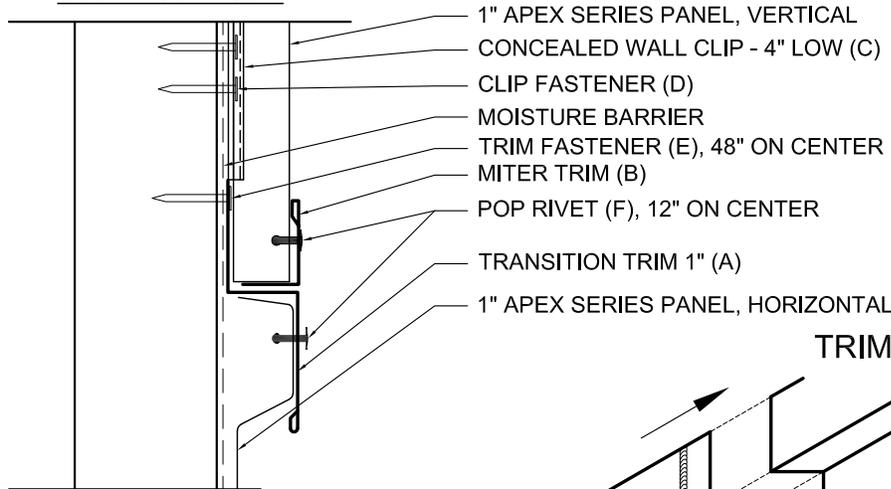
Horizontal Panels to Vertical Panels



Part	Description	Product #	Length	Installation Information
(A)	<p>Transition Trim 1", 24 Ga                      Transition Trim 1", 22 Ga                      Transition Trim 1", 0.032"</p>	58737XX 60737XX 58737XXA	10'-2"	Install Transition Trim over Z-Closure and Panel. Attach to Panel with Pop Rivet.
(B)	<p>Concealed Wall Clip                      4" Low                      16 Ga Galv</p>	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(C)	<p>Offset Cleat, 24 Ga</p>	5806499	10'-2"	Hook panel onto 1" leg of Offset Cleat.
(D)	<p>#12-11 x 1/2"                      Low Profile Wood Screw</p>	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E)	<p>#10-16 x 1"                      Pancake Head Driller</p>	8242100	1"	For trim attachment to steel framing
(E)	<p>#10-12 x 1" Pancake Head Wood Screw</p>	8243100	1"	For trim attachment to wood sheathing or framing

**Panels over Horizontal Panels**

ELEVATION VIEW



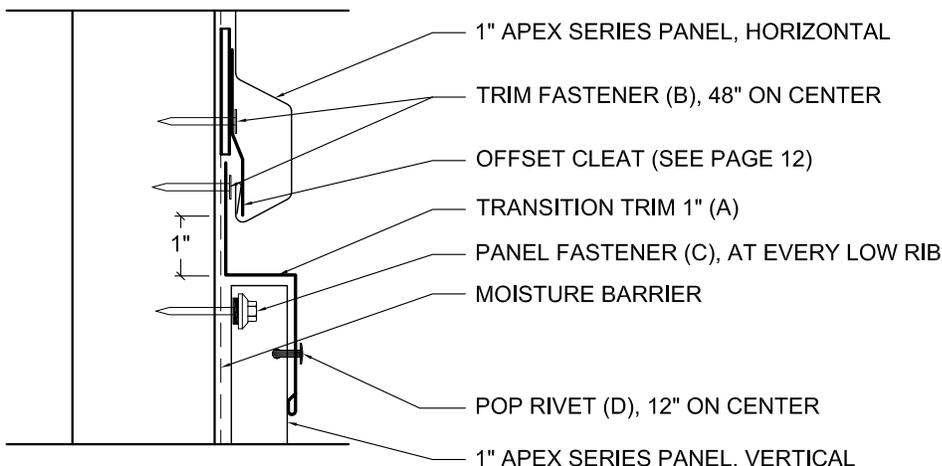
**INSTALL ORDER**

1. HORIZONTAL PANEL
2. TRANSITION TRIM 1"
3. VERTICAL PANEL
4. MITER TRIM

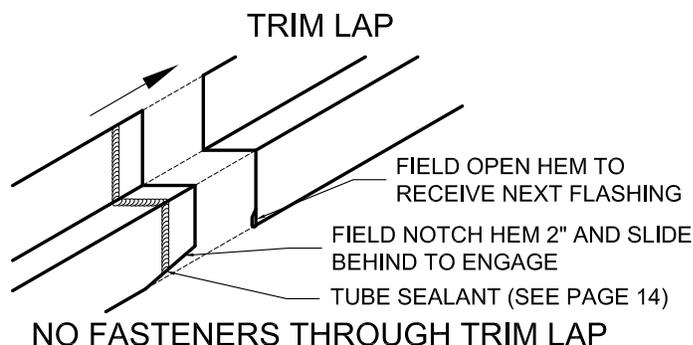
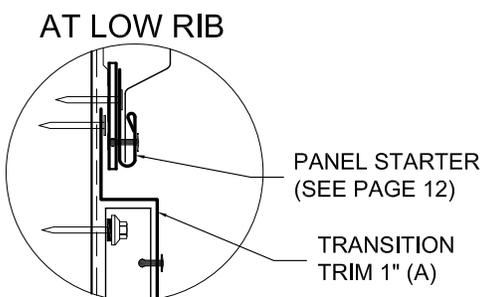
Part	Description	Product #	Length	Installation Information
<p><b>(A)</b></p>	Transition Trim 1", 24 Ga Transition Trim 1", 22 Ga Transition Trim 1", 0.032"	58737XX 60737XX 58737XXA	10'-2"	Install Transition Trim over horizontal panel and attach with Pop Rivet.
<p><b>(B)</b></p>	Miter Trim, 24 Ga Miter Trim, 22 Ga Miter Trim, 0.032"	58654XX 60654XX 58654XXA	10'-2"	Install at bottom of panels above header, attach with Pop Rivets.
<p><b>(C)</b></p>	Concealed Wall Clip 4" Low 16 Ga Galv	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
<p><b>(D)</b></p>	#12-11 x 1/2" Low Profile Wood Screw	8244100	1/2"	For clip attachment to wood sheathing or framing
<p><b>(D), (E)</b></p>	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
<p><b>(E)</b></p>	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
<p><b>(F)</b></p>	1/8" x 3/8" Pop Rivet	82402XX		For Trim attachment to Panel

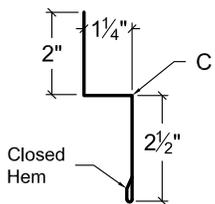
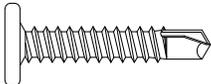
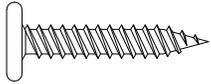
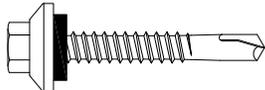
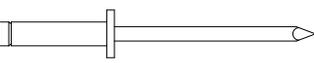
Horizontal Panels over Vert. Panels

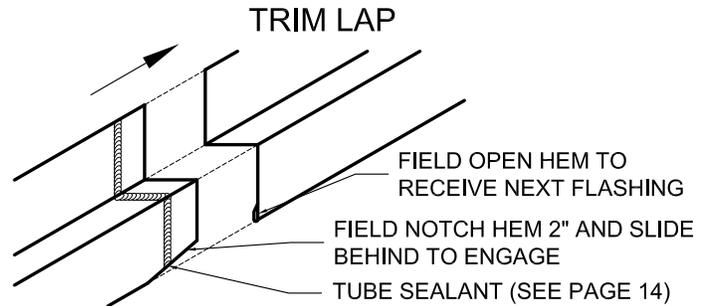
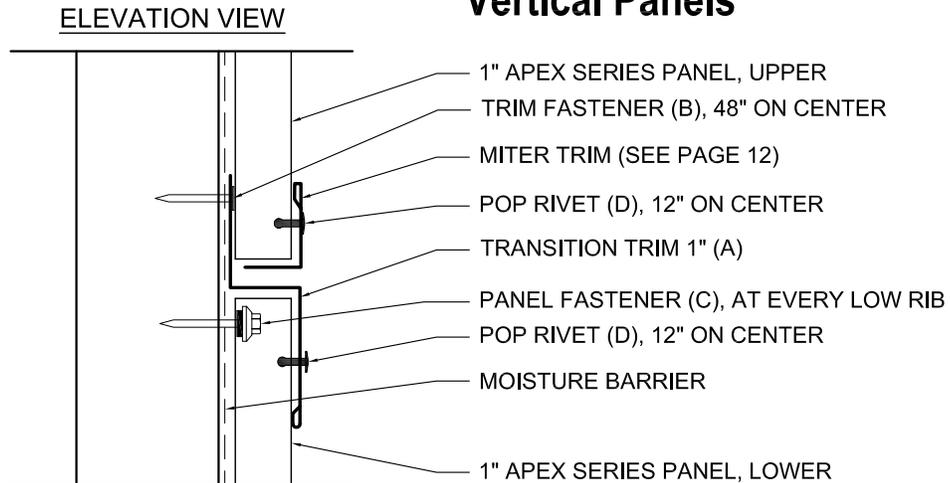
ELEVATION VIEW



- INSTALL ORDER**
1. VERTICAL PANEL
  2. PANEL FASTENER
  3. TRANSITION TRIM 1"
  4. OFFSET CLEAT
  5. HORIZONTAL PANEL



Part	Description	Product #	Length	Installation Information
(A) 	Transition Trim 1", 24 Ga Transition Trim 1", 22 Ga Transition Trim 1", 0.032"	58737XX 60737XX 58737XXA	10'-2"	Install Transition Trim over vertical panel and attach with Pop Rivet.
(B) 	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
(B) 	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
(C) 	#12-14 x 1/4" Self Driller XL	82353XX	1/4"	For panel attachment to steel framing
(C) 	#10-14 x 1/2" Wood Screw XL	82123XX	1/2"	For panel attachment to wood sheathing or framing
(D) 	1/8" x 3/8" Pop Rivet	82402XX		For Transition Trim attachment to Panel

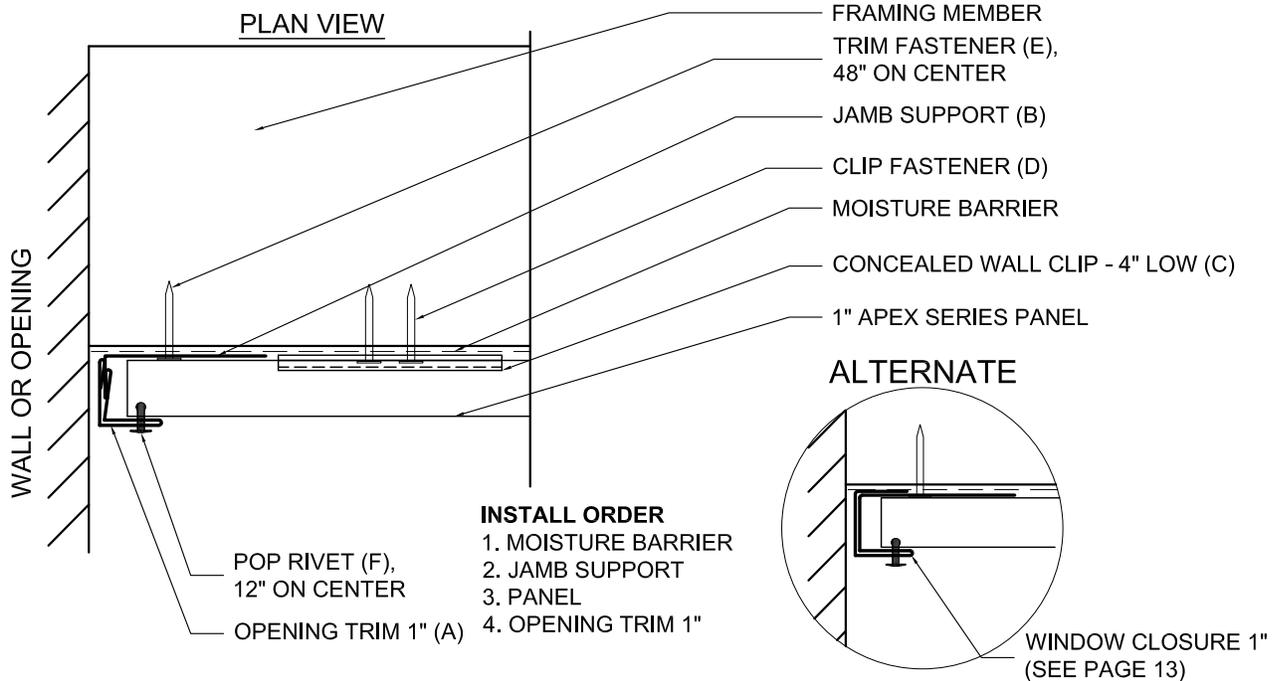


**INSTALL ORDER**

1. LOWER PANEL
2. TRANSITION TRIM 1"
3. UPPER PANEL
4. MITER TRIM

NO FASTENERS THROUGH TRIM LAP

Part	Description	Product #	Length	Installation Information
<b>(A)</b>	Transition Trim 1", 24 Ga Transition Trim 1", 22 Ga Transition Trim 1", 0.032"	58737XX 60737XX 58737XXA	10'-2"	Install Transition Trim over lower panel and attach with Pop Rivet at Outside Closure.
<b>(B)</b>	#10-16 x 1" Pancake Head Driller	8242100	1"	For trim attachment to steel framing
<b>(B)</b>	#10-12 x 1" Pancake Head Wood Screw	8243100	1"	For trim attachment to wood sheathing or framing
<b>(C)</b>	#12-14 x 1/4" Self Driller XL	82353XX	1/4"	For panel attachment to steel framing
<b>(C)</b>	#10-14 x 1/2" Wood Screw XL	82123XX	1/2"	For panel attachment to wood sheathing or framing
<b>(D)</b>	1/8" x 3/8" Pop Rivet	82402XX		For trim attachment to panel



Part	Description	Product #	Length	Installation Information
(A)	<p>Opening Trim 1", 24 Ga                      Opening Trim 1", 22 Ga                      Opening Trim 1", 0.032"</p>	58374XX 58375XX 58376XX	10'-2"	Engage Opening Trim onto Jamb Support. Attach to panel with Pop Rivets. Sealant may be needed at adjacent wall.
(B)	<p>Jamb Support, 24 Ga                      Jamb Support, 22 Ga                      Jamb Support, 0.032"</p>	57352XX 59354XX 59355XX	10'-2"	Jamb Support and Opening Trim can ease the installation of panels as opposed to using C-Closures at both ends of a panel.
(C)	<p>Concealed Wall Clip                      4" Low                      16 Ga Galv</p>	4934600	4"	Install along the length of every panel spaced per design and within 6" of the panel ends.
(D)	<p>#12-11 x 1 1/2"                      Low Profile Wood Screw</p>	8244100	1 1/2"	For clip attachment to wood sheathing or framing
(D), (E)	<p>#10-16 x 1"                      Pancake Head Driller</p>	8242100	1"	For clip / trim attachment to steel framing
(E)	<p>#10-12 x 1" Pancake Head Wood Screw</p>	8243100	1"	For trim attachment to wood sheathing or framing
(F)	<p>1/8" x 3/8"                      Pop Rivet</p>	82402XX		For trim attachment to panel

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-laden 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 scratch the coating surface.

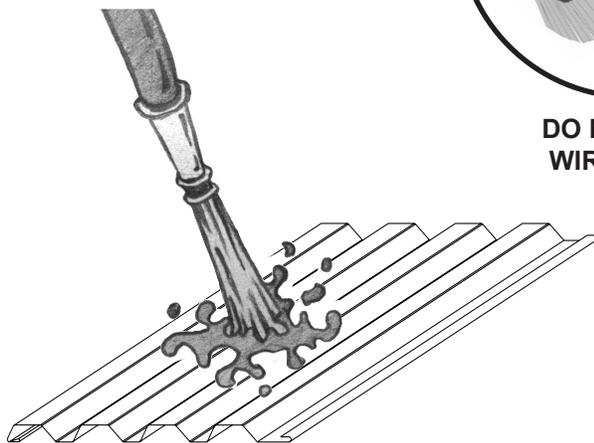
Mildew may occur in areas subject to high humidity but is not normally a problem due to the high inherent mildew resistance of the baked finish that is used. However, mildew can grow on dirt and spore deposits in some cases. To remove mildew along with the dirt, the following solution is recommended.

- $\frac{1}{3}$  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**

