



# Commercial & Industrial Building Systems

*Installation, Flashings & Details Guide*





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## Notes to the Designer/User

The details contained in this packet are intended to be a design aid and do not depict all situations. Modifications are the responsibility of the designer/user and should take into account climate conditions such as wind and snow, governing code requirements, and the actual usage and maintenance of the structure. Where possible, roof panel side laps and flashings should be lapped away from prevailing winds. Certain flashings should be supported if it is likely that a ladder will be used against them or if foot traffic is anticipated. Check with AEP Span any time you intend to specify a prefinished flashing in a gauge different than the panels. It is good practice to specify that all flashings be of the same material as the panels (gauge, color, finish) to ensure long-term durability. Field-painted flashings rarely equal the durability and color fastness of factory baked-on paint systems. Where possible, we have hemmed the edges of flashings to strengthen them and to minimize the exposure of cut edges.

### Framing

The details contained in this guide are shown with panels attached to spaced support members.

### Slope requirements

It is suggested that all panels in this booklet be used on slopes of 1:12 or greater, except Nu-Wave Corrugated and U-Panel which have a 3:12 minimum slope requirement.

### Condensation, Insulation & Ventilation

It is the designer's responsibility to determine the need and composition of condensation control materials including insulation and vapor retarders, as well as ventilation requirements. Metal roofing is susceptible to condensation and its control should be carefully considered.

### Valleys

Valley dimensions must be the proper width to account for slope, snow, ice, and rain conditions. If valleys are not kept free of debris, water can back up and intrusion may occur under the panels.

### Snow Design

If possible, valleys, gutters, roof elevation changes and penetrations should be minimized or eliminated in snow areas. Roof penetrations should be located as close to the ridge or peak of the roof as possible to minimize accumulations of ice and snow.

### Oil-Canning

Flat metal surfaces will display waviness commonly referred to as "oil-canning". This is caused by steel mill tolerances, variations in the substrate and roofing underlayments. Oil canning is a characteristic, not a defect, of panels manufactured from light-gauge metal. Coils are factory "corrective-levelled" prior to rollforming to minimize oil canning. Oil canning is not a cause for panel rejection. Additional information is available upon request.

### References

The Sheet Metal and Air Conditioning Contractors' National Association Inc. (SMACNA) manual is an excellent reference for

sheet metal contractors. Its guidelines for underlayments, gutter and downspout size requirements, and expansion/contraction of metals and flashings joints should be followed.

### Technical Assistance

Call your AEP Span Sales or Technical Representative for additional information on any of these subjects.

### Definitions

**Sealant:** Gunnable-grade single-component polyurethane

**Mastic:** Butyl mastic tape or butyl sealant

**Hem:** A that is (or as the formability of the metal will allow) to provide a uniform, attractive edge. High tensile strength (Grade 80) steel must be formed with a "teardrop hem" as shown to avoid cracking the steel at the bend. Lower tensile steels can be flattened close.



**Hook:** (also called an "open hem") A 180° bend on a piece of sheet metal that is left open to allow insertion of another piece of sheet metal. For example, the hook shown is used to hold the trim piece to a cleat below the trim.

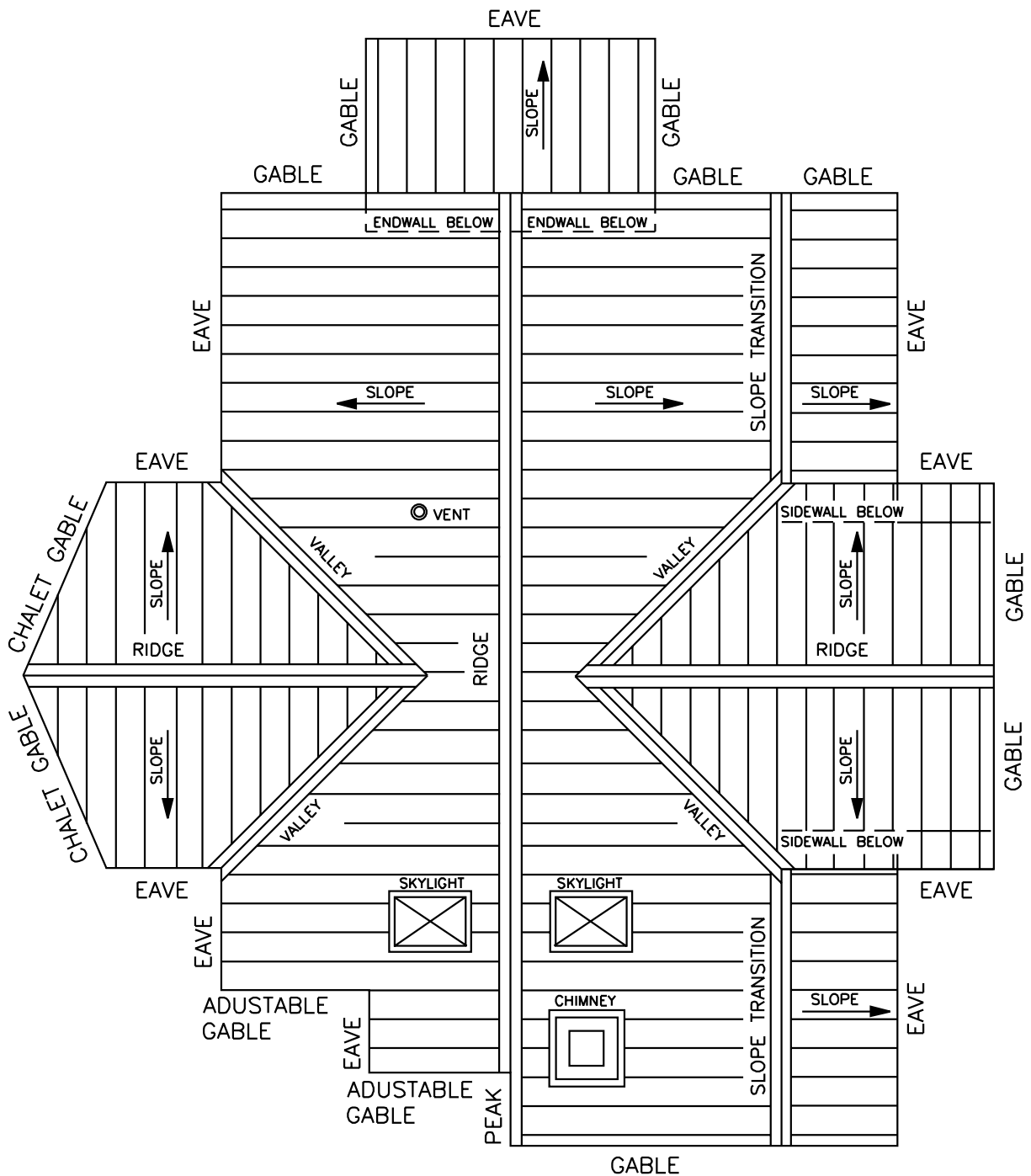


**Note:** Each flashing part in this guide has been assigned a part number. Each part number contains one or two letters followed by one or two numbers, for example: (EW6). These part numbers have been provided to the user to make ordering these flashing parts quick and easy.

### Underlayments:

Prior to installation of metal roofing panels, it is recommended that an underlayment be installed over the roof substrate. AEP Span encourages the use of AEP Span Underlayment HT as it is designed specifically for use under all AEP roofing systems and is suitable for use under any metal roofing system or coping. AEP Span Underlayment HT is **required** by AEP Span for AEP Span Full System Weathertightness Warranties. AEP Span Underlayment HT is a high temperature, self-healing, self-adhering, peel and stick underlayment with a non-abrasive surface that will not mar, scratch, or abrade the underside of metal panels and flashings. Please note that additional protection may be required to meet Class A fire ratings as defined in UL790 classified assemblies

## Map of Typical Roof Conditions

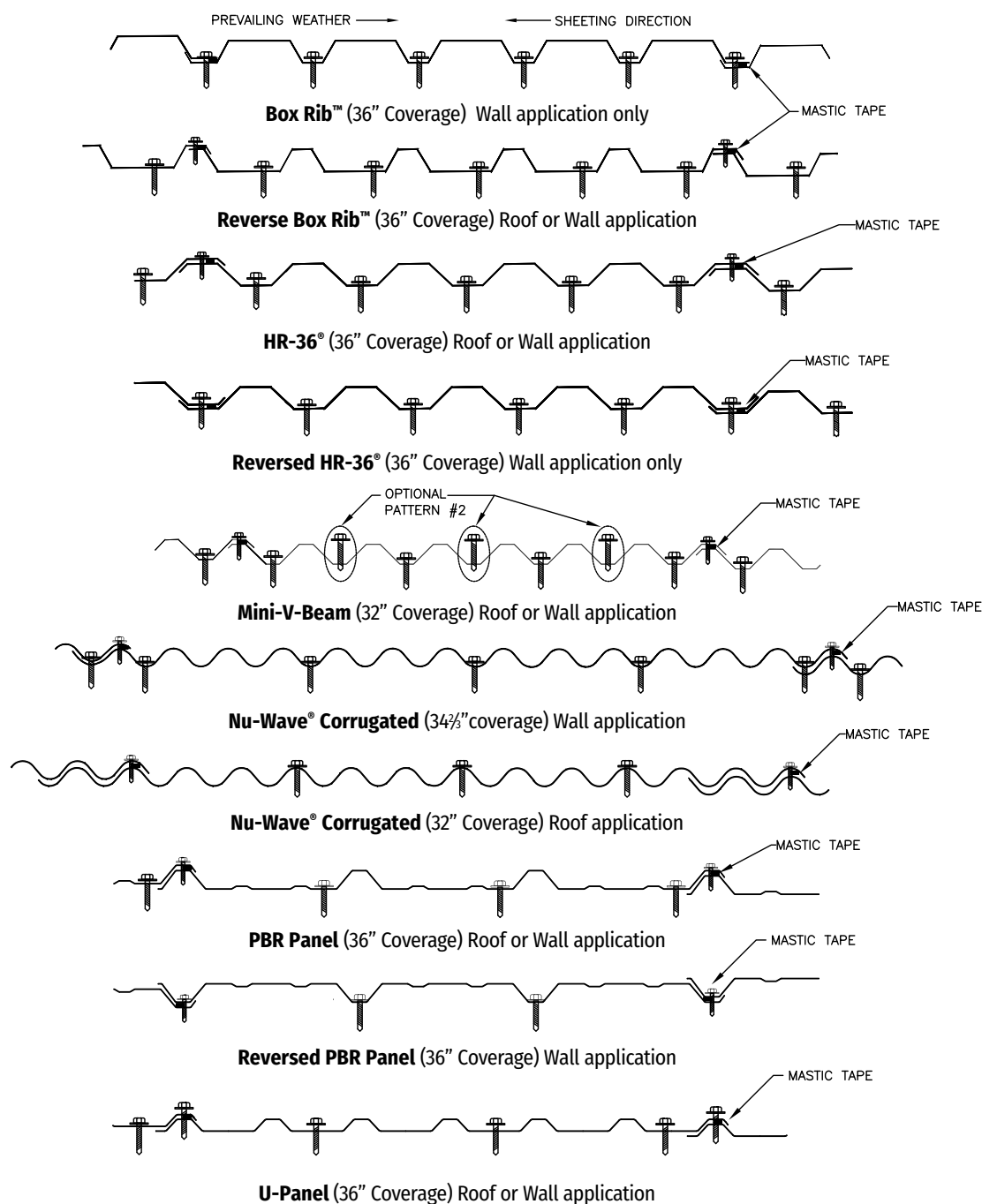


For suggestions on how to trim flashings in the different areas, please refer to the following pages:

Flashing	Page(s)
Eave .....	8, 21
Endwall .....	13, 26
Gable .....	10, 23
Gutter .....	9, 22
Panel Endlap .....	14













Flashing	Page(s)
Peak .....	11, 24
Ridge/Hip .....	6, 19
Sidewall .....	12, 25
Valley .....	7, 20

## Fastener Placement



**Note:** Lap panels away from prevailing weather. Use only those accessories specifically designed for use with this product. Use only galvanized or ZINCALUME®-coated fasteners. Isolate roofing and flashings from contact with dissimilar metals. Fastener selection will vary based upon substrate. The use of butyl mastic tape along the sidelaps, as shown above, is always recommended for roof panels. Space lap screws @ 18" o.c. maximum.

## Fastener Selection

Fastener #	Description		Use
		#9 x 1", 1 1/2", 2", 2 1/2", 3" Wood Screw 1/4" Hex Head	Panel to Dimensional Lumber
		#14 x 1", 2" Wood Screw 5/16" Hex Head	Panel to Plywood Minimum 1/2" thick, structural grade
		#12 x 3/4" Stitch Screw 1/4" Hex Head (compatible with #9 wood screw)	Trim and side lap attachments
		#14 x 7/8" Lap Self Driller 5/16" Hex Head (compatible with #14 wood screw)	Trim and side lap attachments. Attach panels to 18, 20, 22 gauge supports.
		STST-42 Stainless Steel Rivet 1/8 x 1/8	Trim-to-trim or trim-to-wall panel attachments
		#12 x 1", 1 1/2", 2", 1 1/2" Self Driller 5/16" Hex Head	Panel to purlin attachments

### Notes:

The table above shows the metal buildings panel fasteners provided by AEP Span. Refer to the panel flashing details and fastener placement pages of this manual for specific usage.

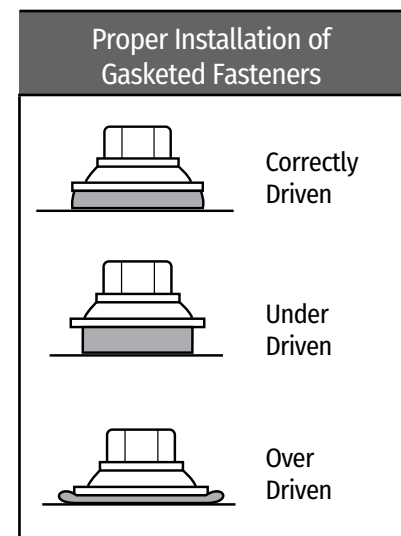
Panel attachment screws must be long enough to fully penetrate through the roof decking, or penetrate solid lumber at least one inch.

All screws must be coated to provide protection against corrosion.

Exposed fasteners should have sealing washers and be the same color as the parts they attach.

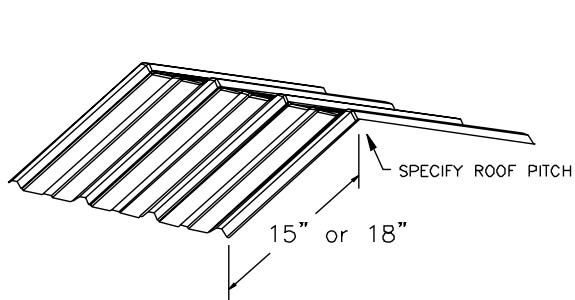
Roofing nails will also be required, but not furnished by AEP Span. They are typically used to temporarily hold a flashing in place that needs to be installed prior to panels.

Screws must be properly driven to ensure proper seal and holding strength. Do not underdrive or overdrive the screws. Recommended drill speed is 2000 rpm. Use of a depth-sensing nosepiece will aid in properly driving screws.

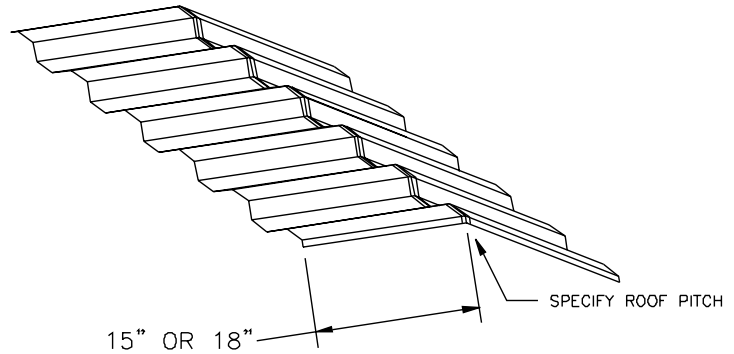


## Ridge/Hip Flashing

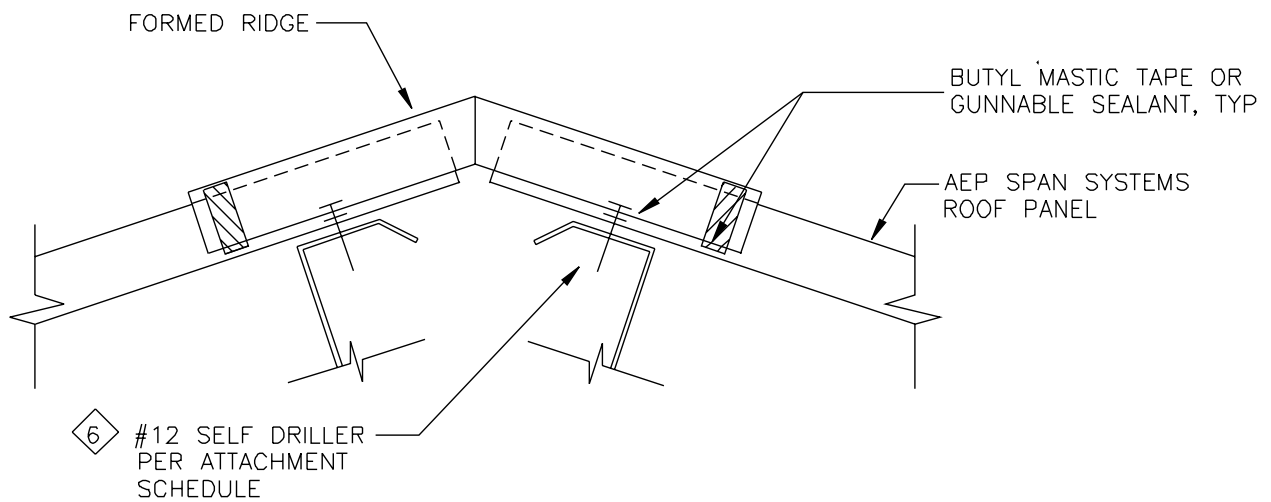
Box Rib, PBR Panel and HR-36,



**Formed Ridge (R7)**  
**PBR Panel**



**Formed Ridge**  
**HR-36 (R11)**  
**Box Rib (R43)**

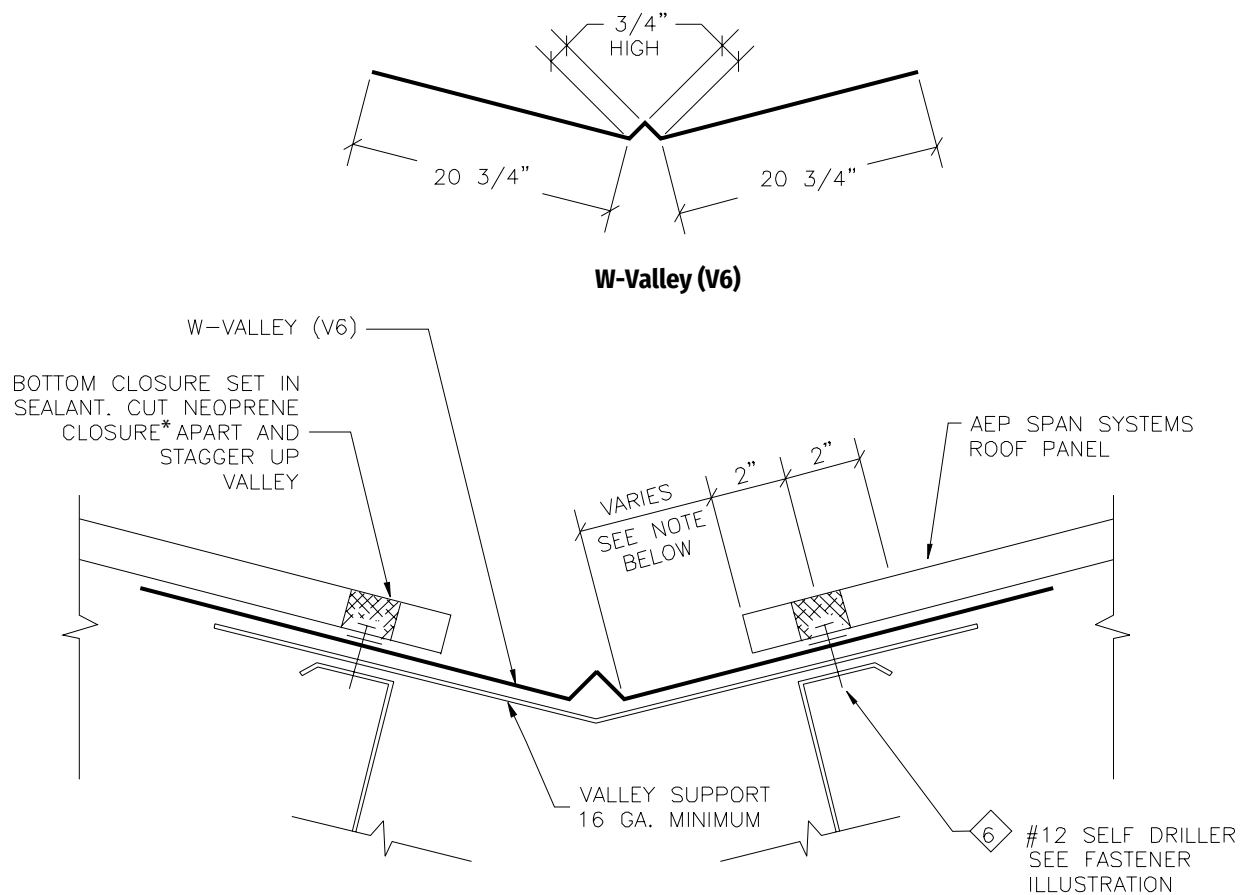


**Note:**

Maximum pitch with formed ridge 3:12.

## Valley Flashing

Box Rib, HR-36, Mini-V-Beam, and PBR Panel



### Note:

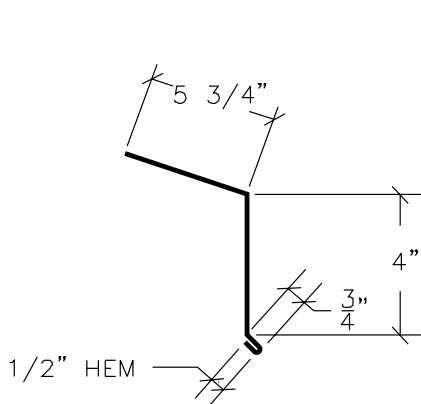
Valley dimensions must be the proper width to account for slope, snow, ice and heavy rain conditions. An underlayment such as a rubberized cold-applied membrane is recommended extending a minimum of 3'-0" up from the center of the valley on each side.

\*Special ordered beveled closures available for a specific pitch/slope.

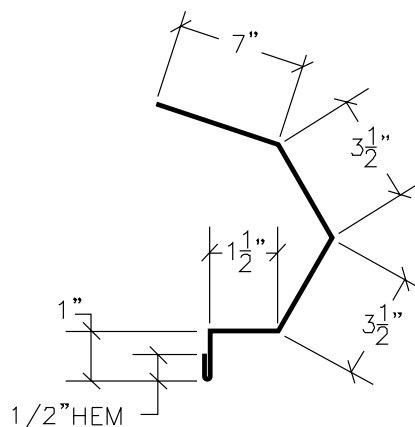


## Eave Flashing

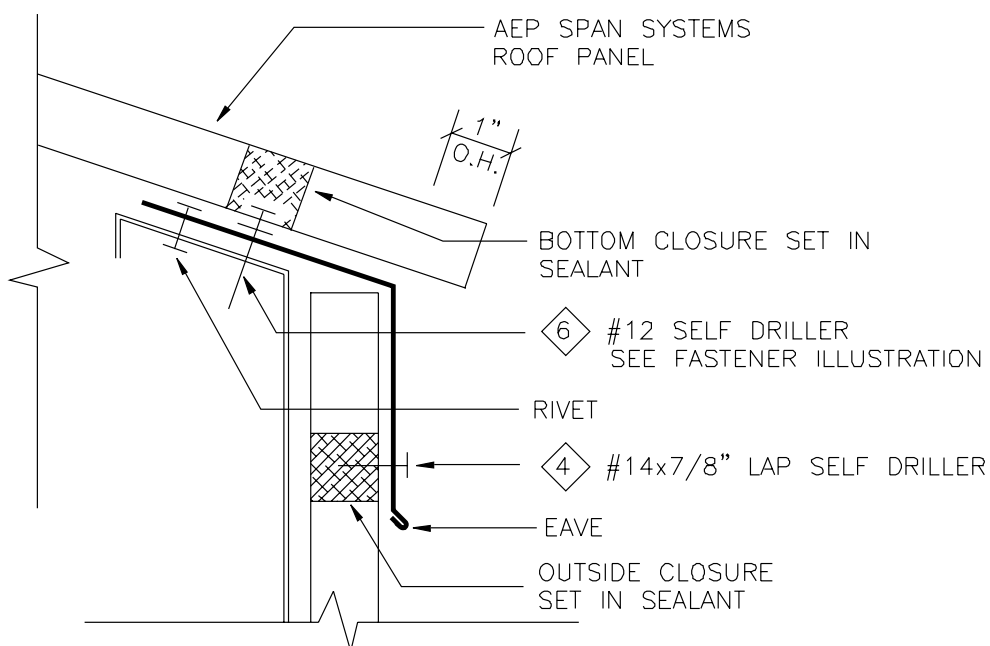
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



**Eave (E6)**

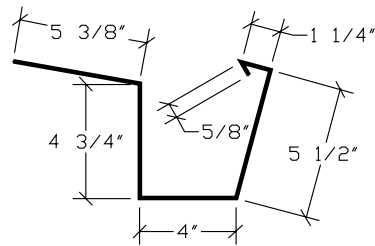


**Sculptured Eave (E7)**  
**optional**

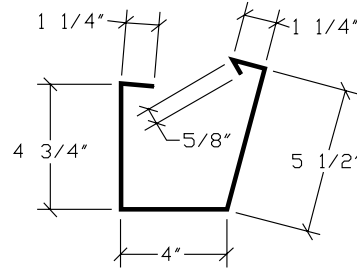


## Gutter Flashings

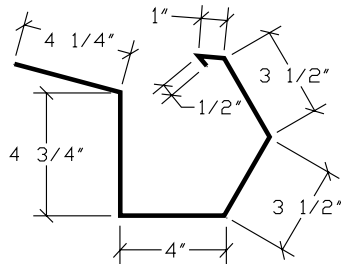
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



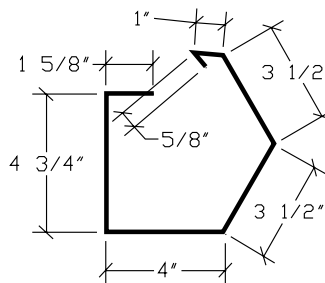
**Box Gutter (GU6)**  
*pre-hung*



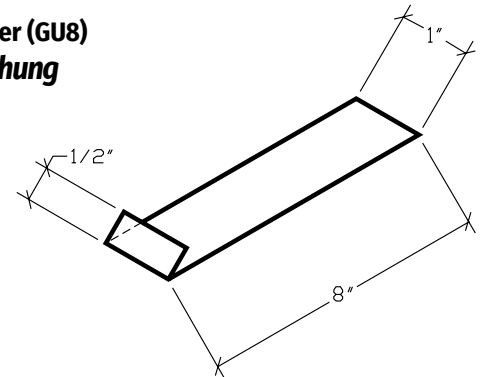
**Box Gutter (GU8)**  
*post-hung*



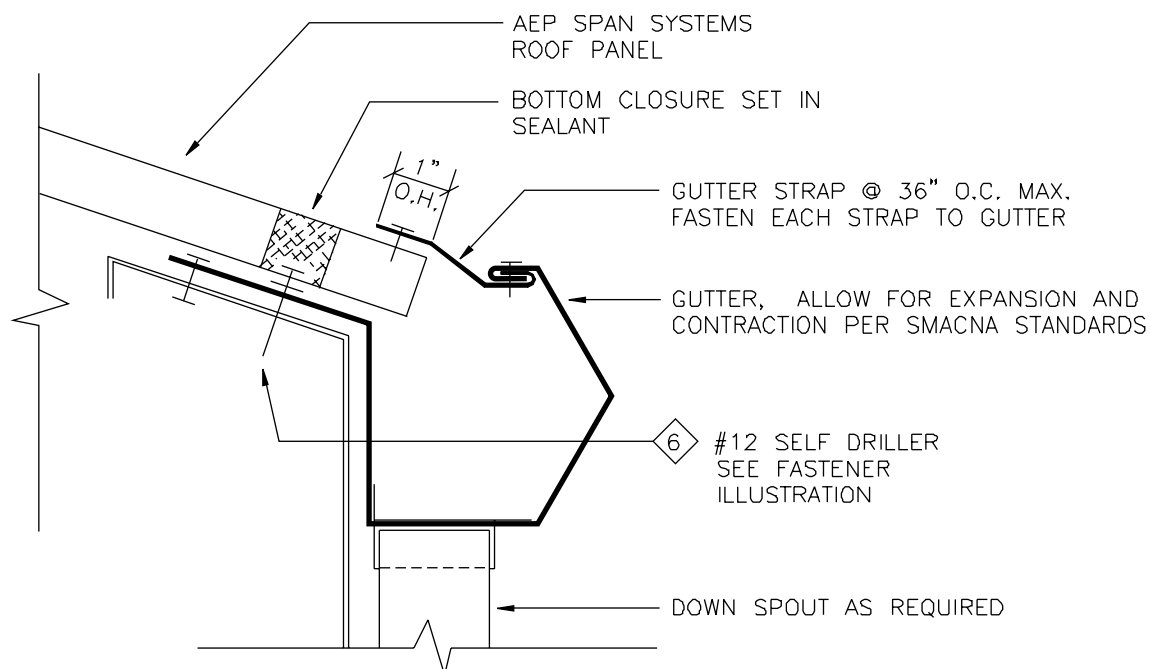
**Sculptured Gutter (GU7)**  
*pre-hung*



**Sculptured Gutter (GU9)**  
*post-hung*

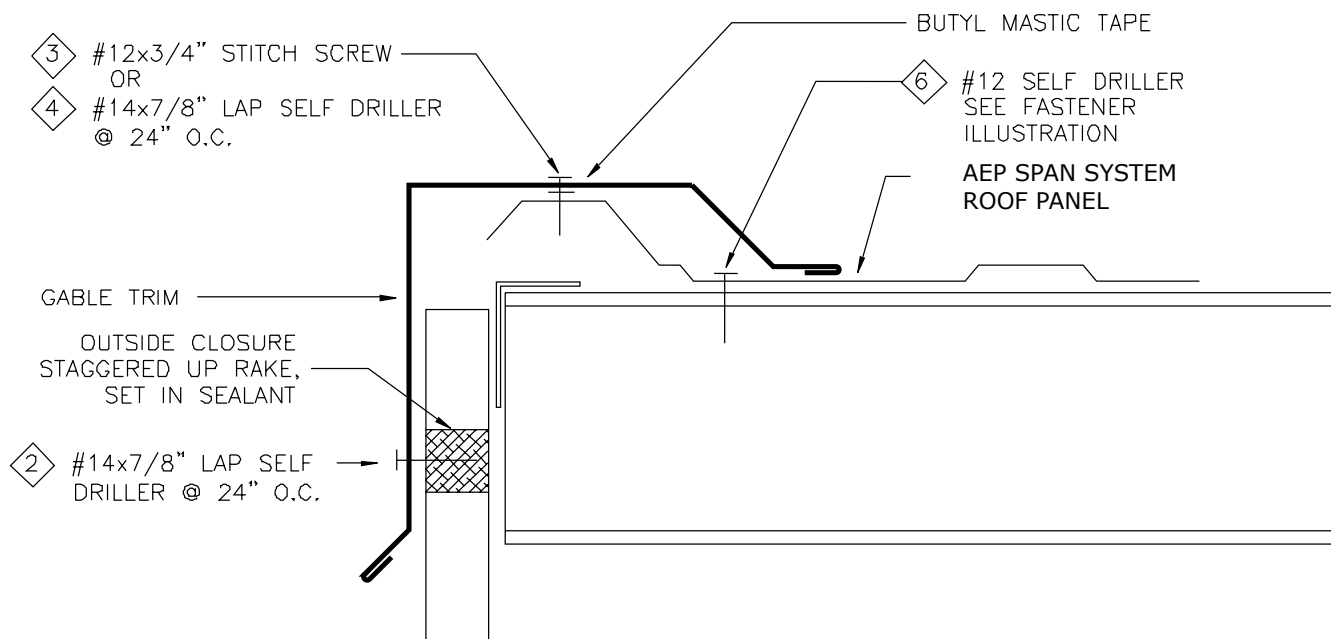
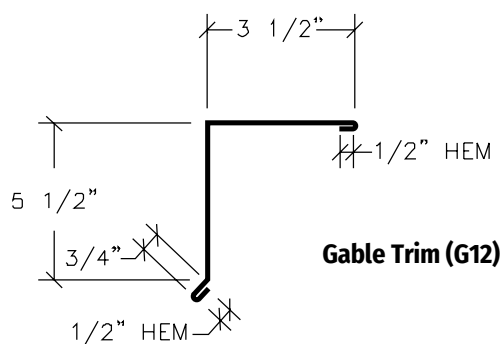
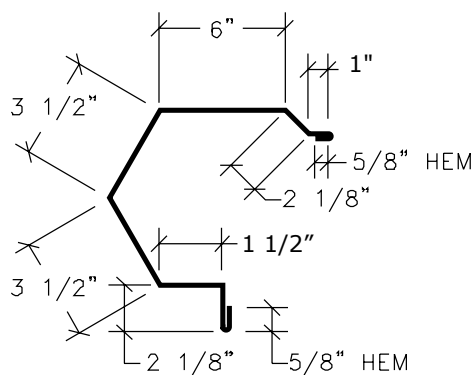
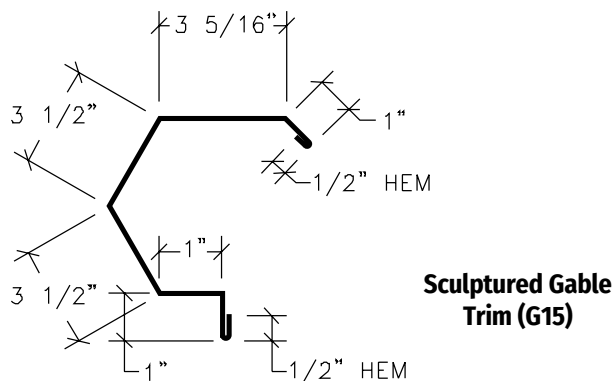
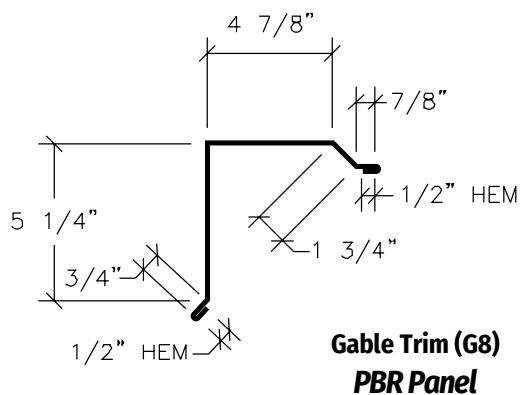


**Gutter Strap (GS6)**



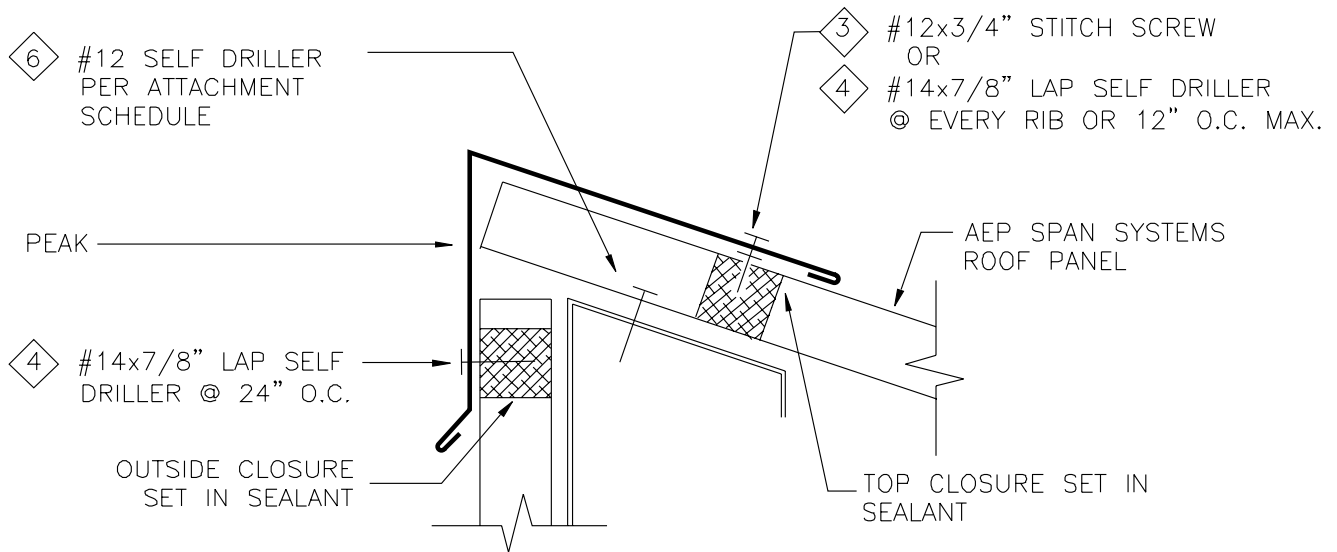
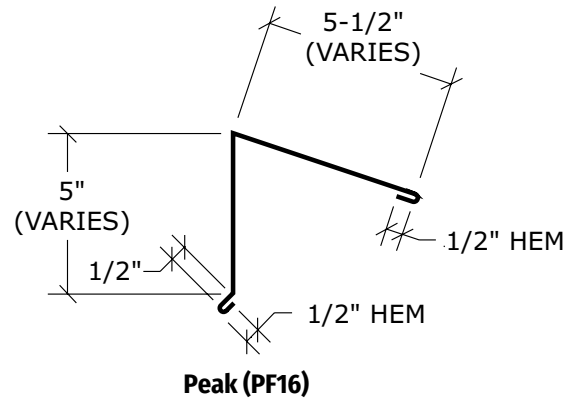
## Gable Flashings

Box Rib, HR-36, Mini-V-Beam, and PBR Panel



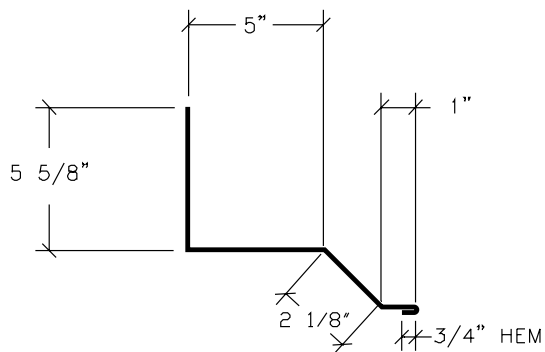
## Peak Flashings

Box Rib, HR-36, Mini-V-Beam, and PBR Panel

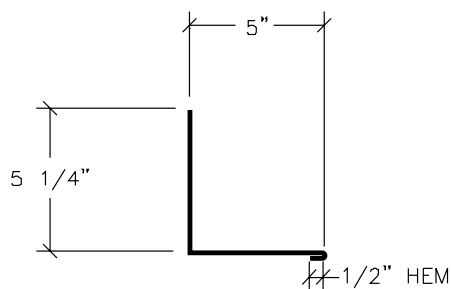


## Sidewall Flashings

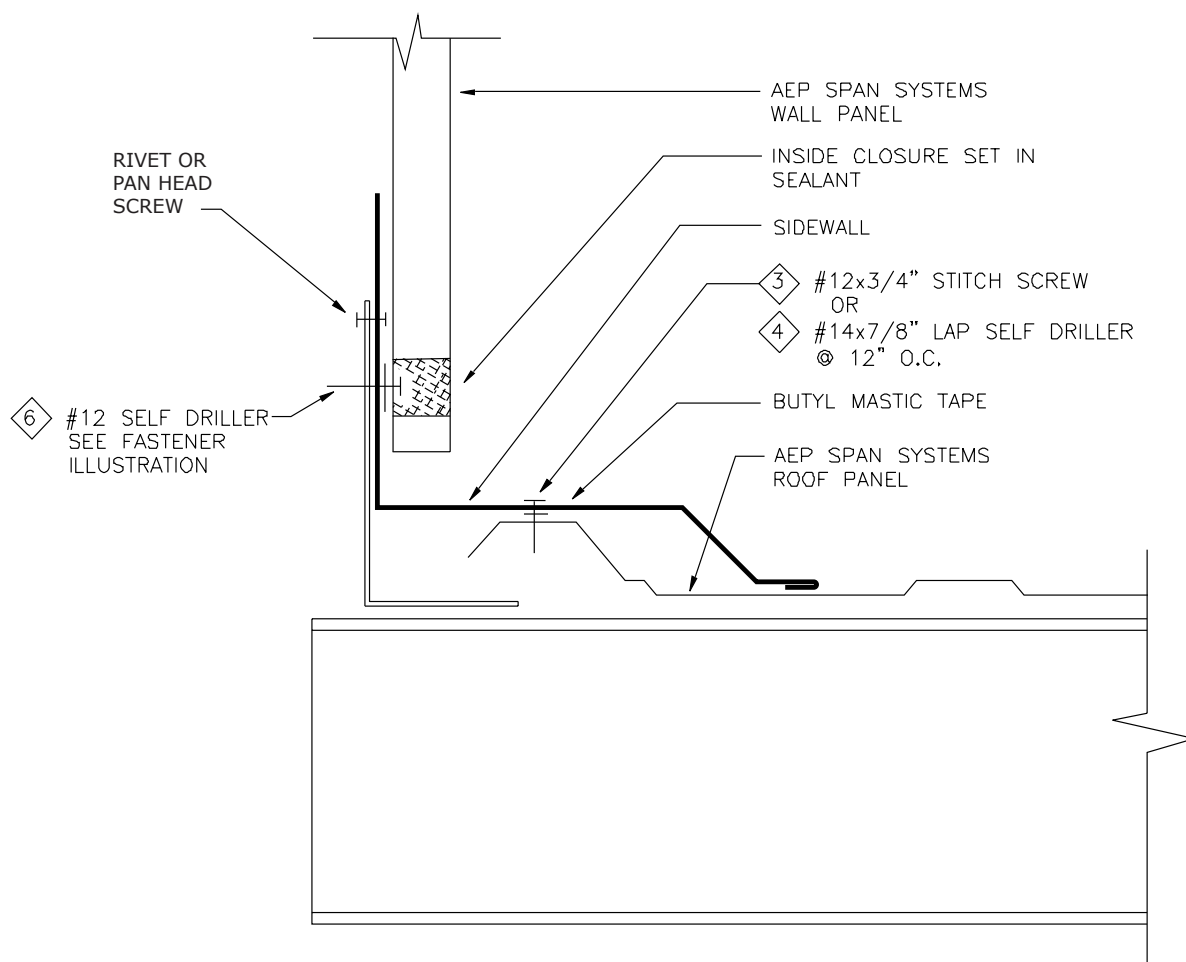
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



**Sidewall (SW7)  
PBR Panel**

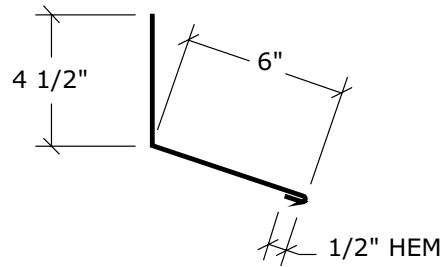


**Sidewall (SW8)**

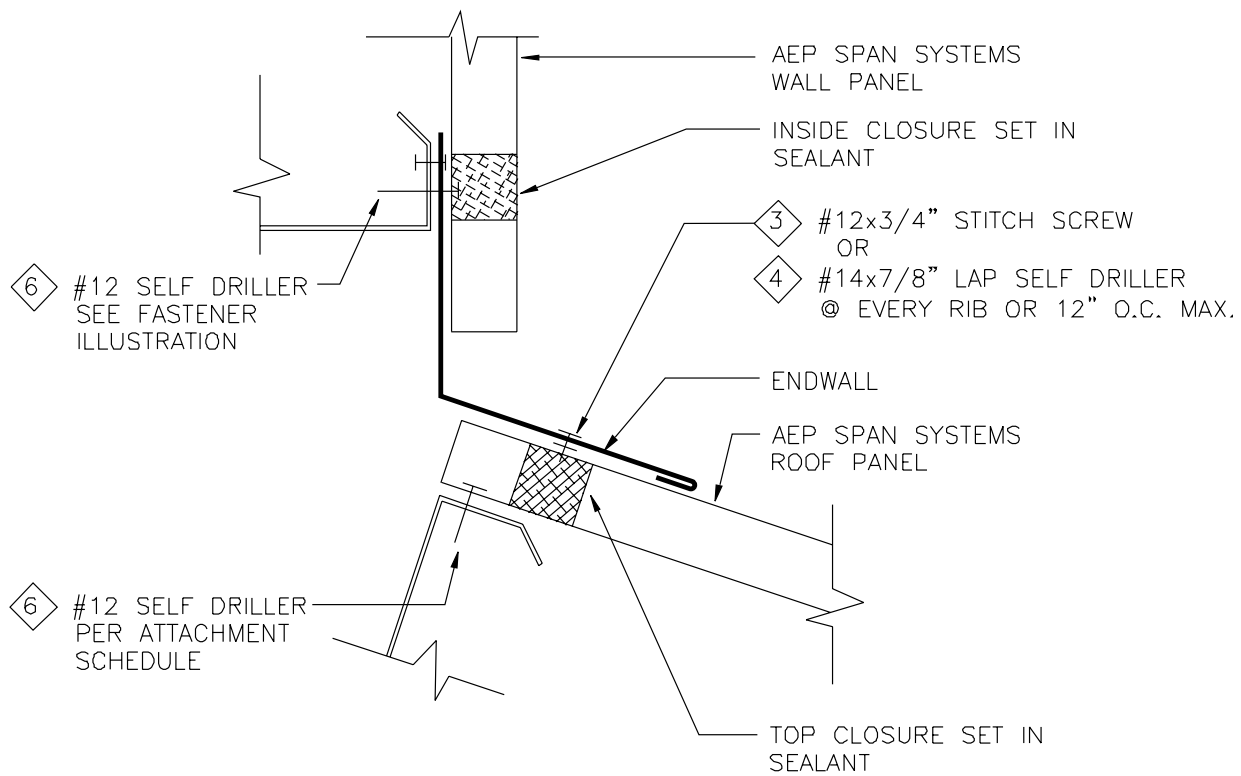


## Endwall Flashing

Box Rib, HR-36, Mini-V-Beam, and PBR Panel

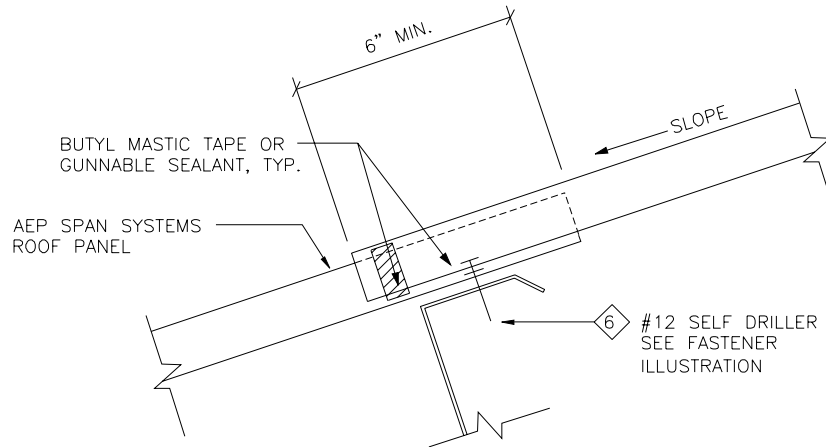


**Endwall (EW6)**

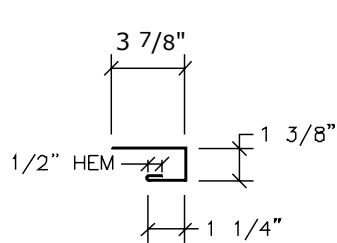


## **Panel Endlap**

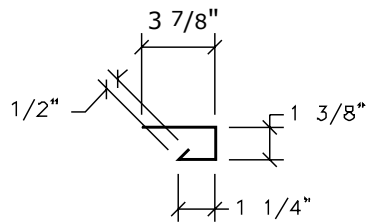
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



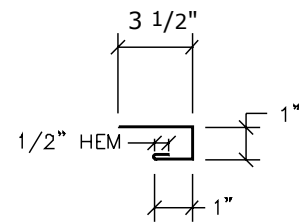
## Wall Details Window/Door Trim



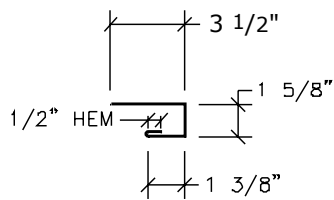
**C-Metal (C-6)**  
**PBR Panel**



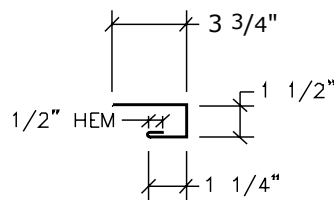
**Jamb Trim (J6)**  
**PBR Panel**



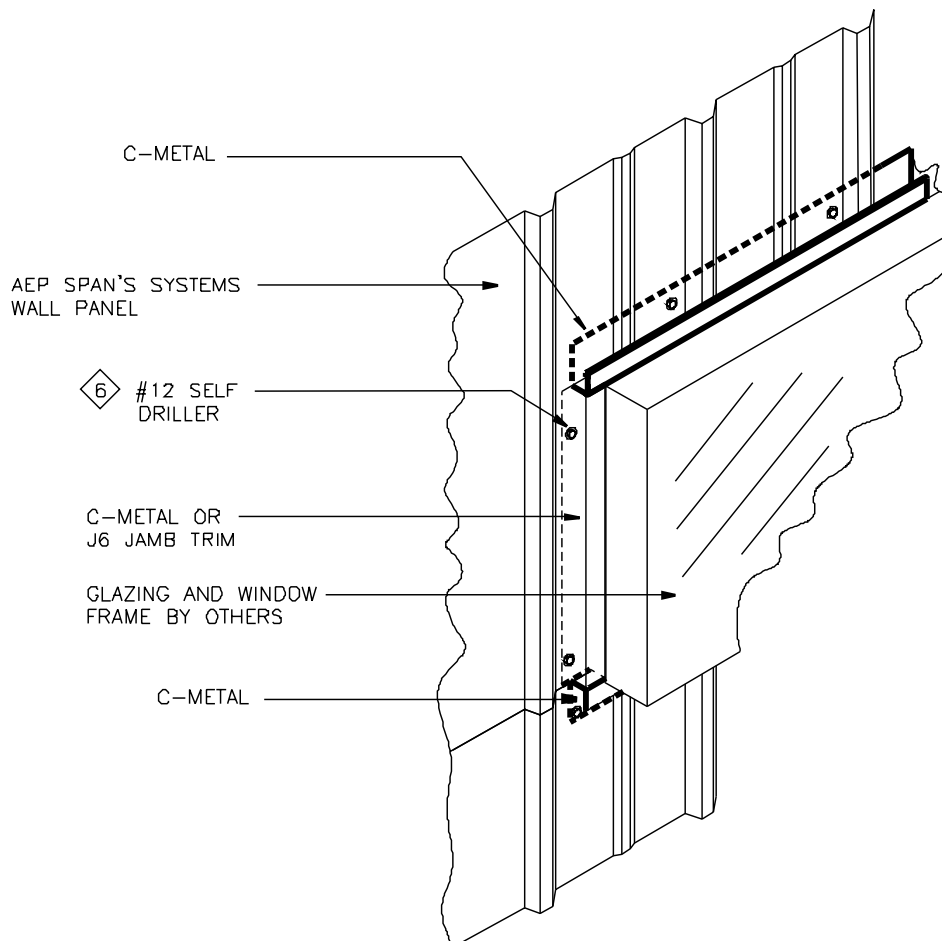
**C-Metal (C-13)**  
**Nu-Wave Corrugated  
& U-Panel**



**C-Metal (C11)**  
**Box Rib & HR-36**



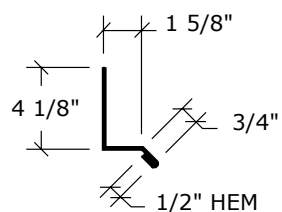
**C-Metal (C12)**  
**Mini-V-Beam**



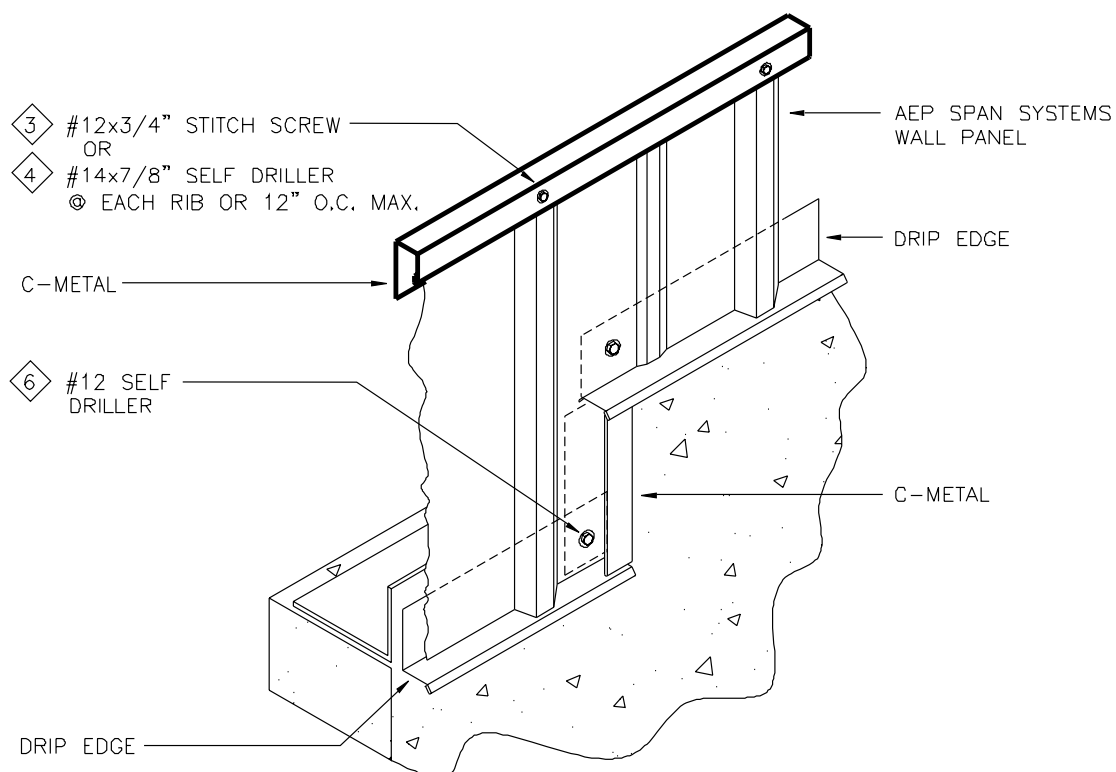


## Wall Details • Drip Edge, Wall Step, Panel Top

Box Rib, HR-36, Mini-V-Beam, and PBR Panel

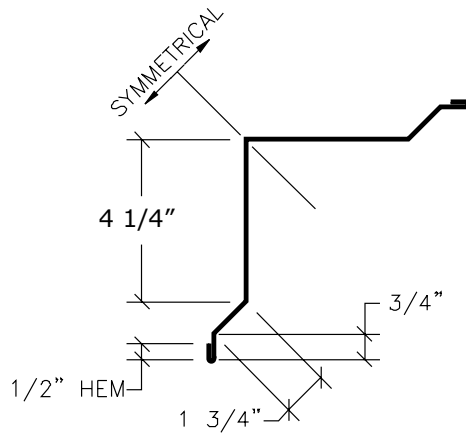


**Drip Edge (B6)**

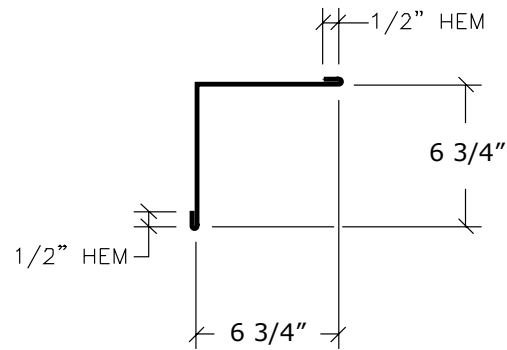


## Wall Details • Inside Corner

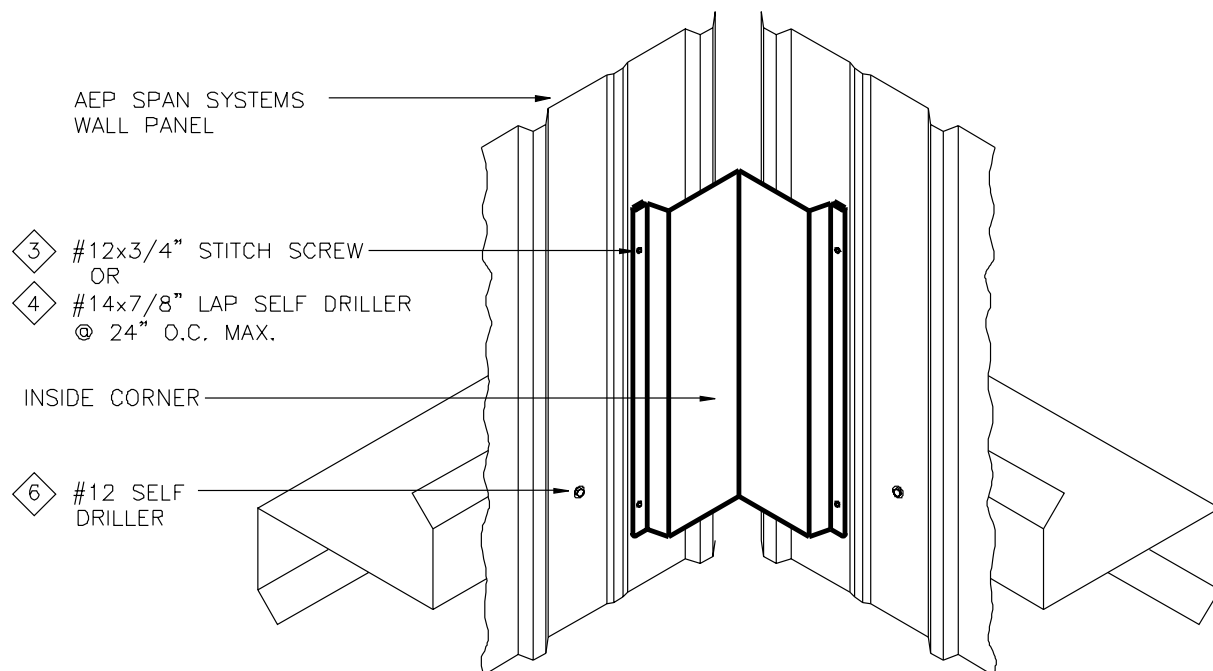
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



**Inside Corner (IC7)**

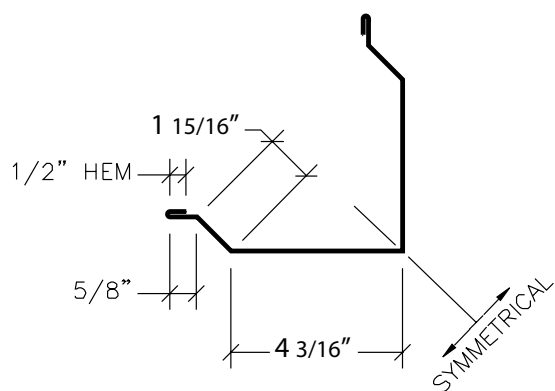


**Inside Corner (IC 11)**

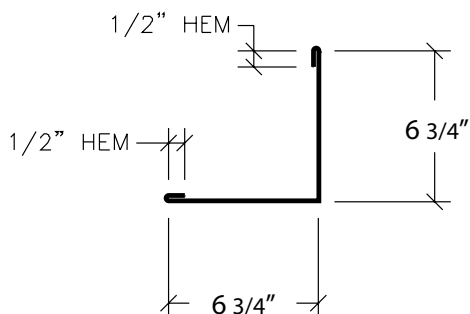


## Wall Details • Outside Corner

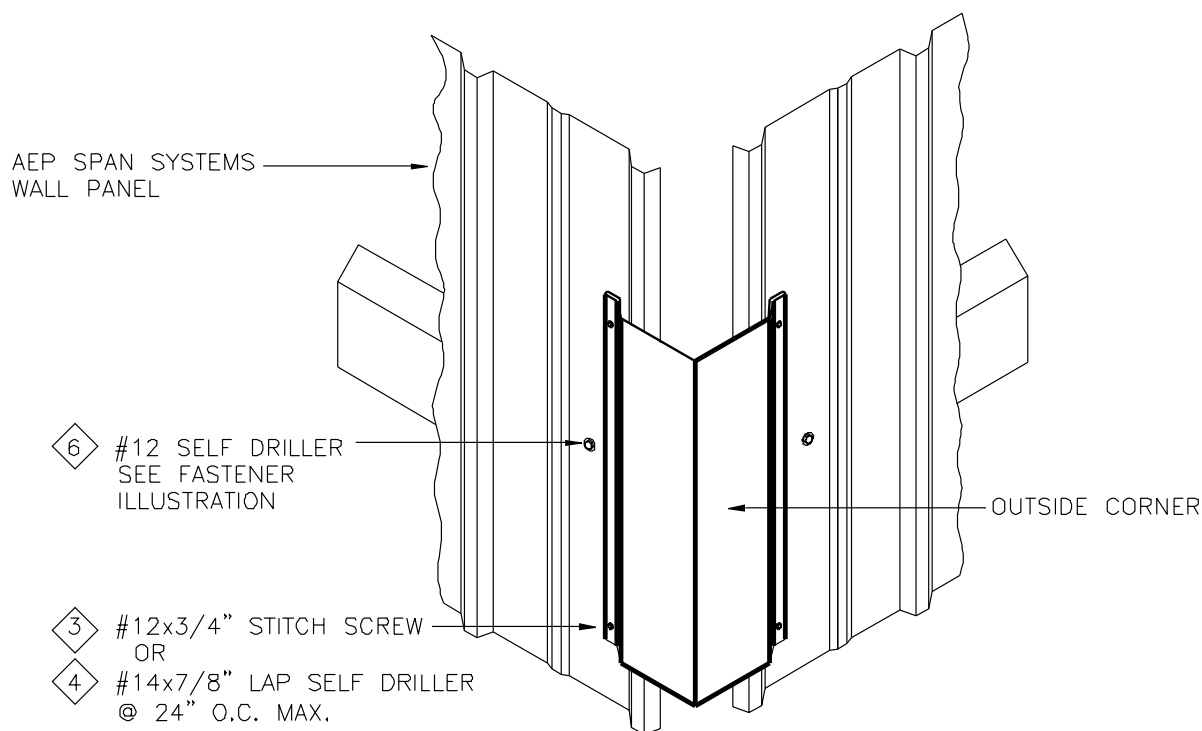
Box Rib, HR-36, Mini-V-Beam, and PBR Panel



**Outside Corner (OC7)**  
**PBR Panel**



**Outside Corner (OC11)**

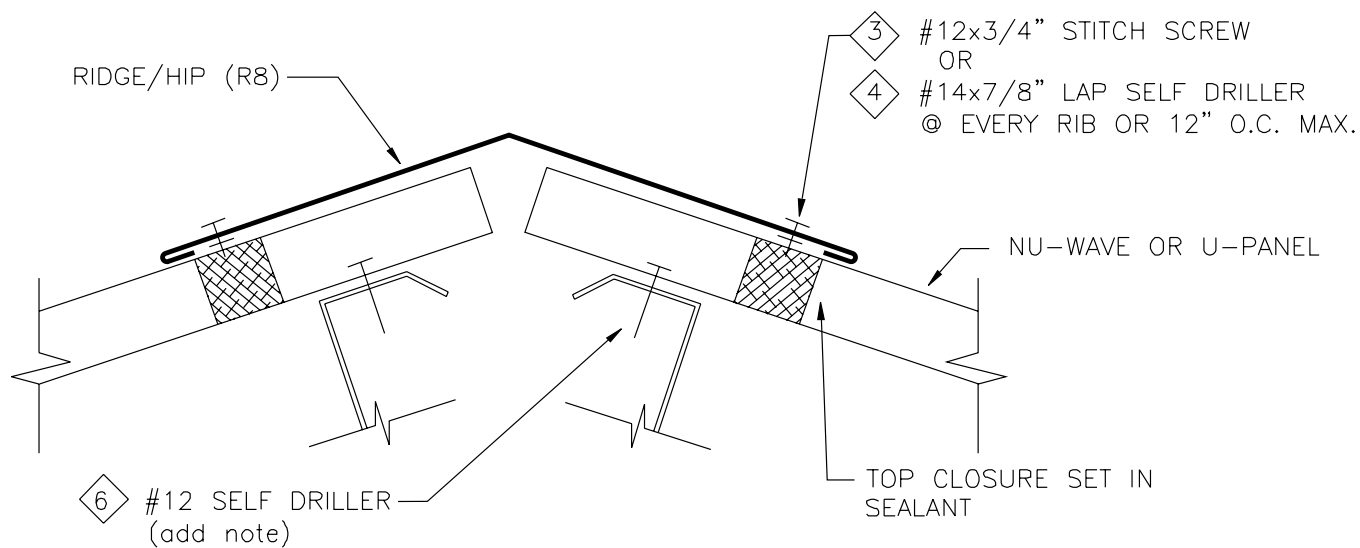


## Ridge/Hip Flashing

Nu-Wave Corrugated & U-Panel



**Ridge/Hip (R8)**



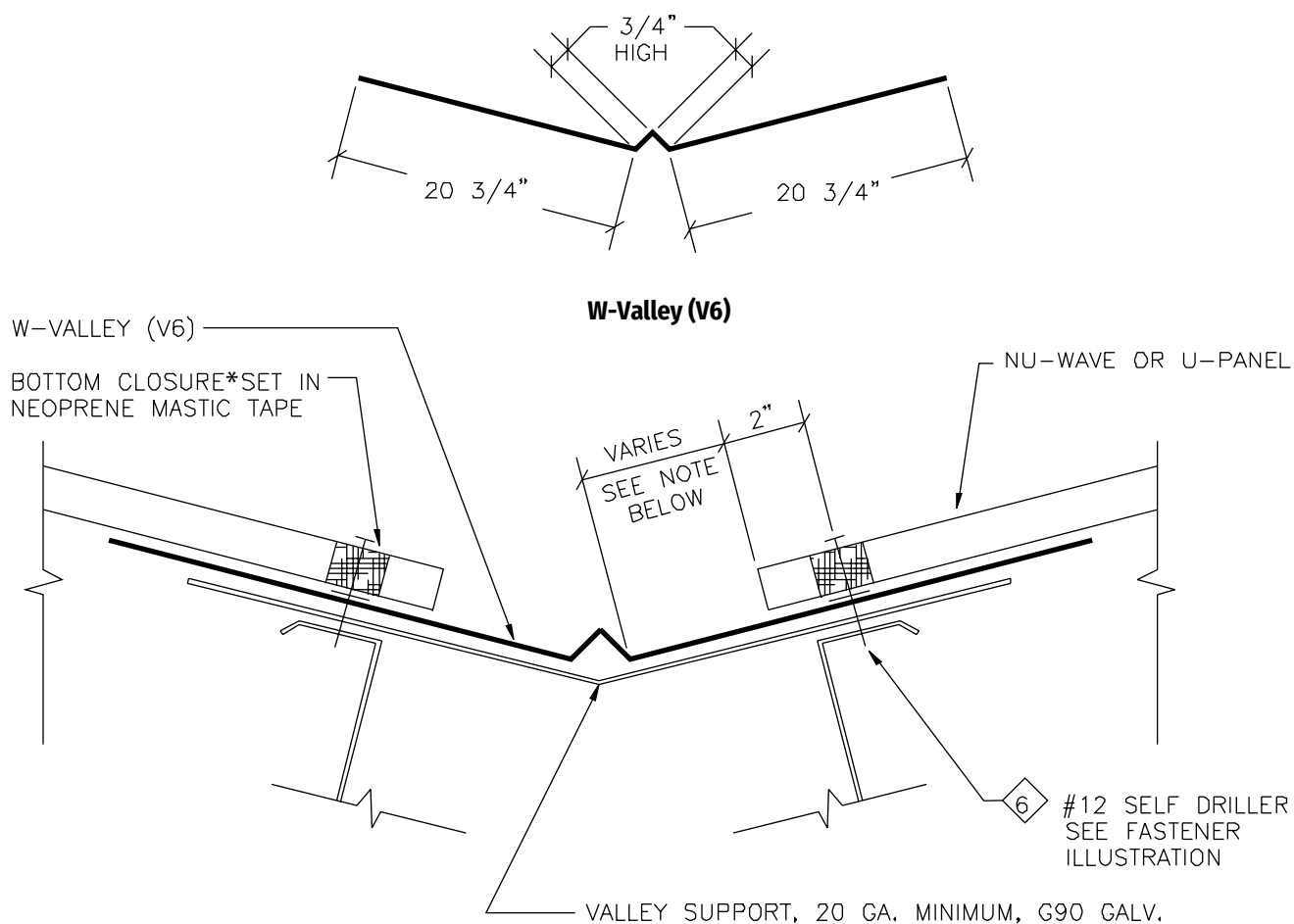
### Note:

Fasteners (except under ridge cap) should be located on tops of corrugations.

Special ordered beveled closures available for a specific pitch/slope.

## Valley Flashing

### Nu-Wave Corrugated & U-Panel



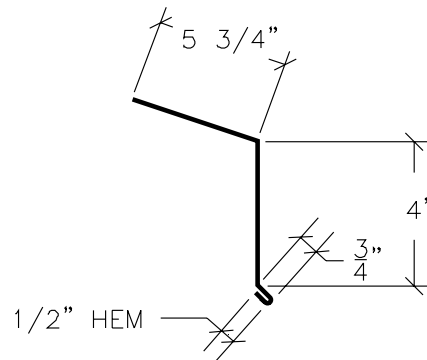
**Note:**

Valley dimensions must be the proper width to account for slope, snow, ice and heavy rain conditions. An underlayment such as a rubberized cold-applied membrane is recommended extending a minimum of 3'-0" up from the center of the valley on each side.

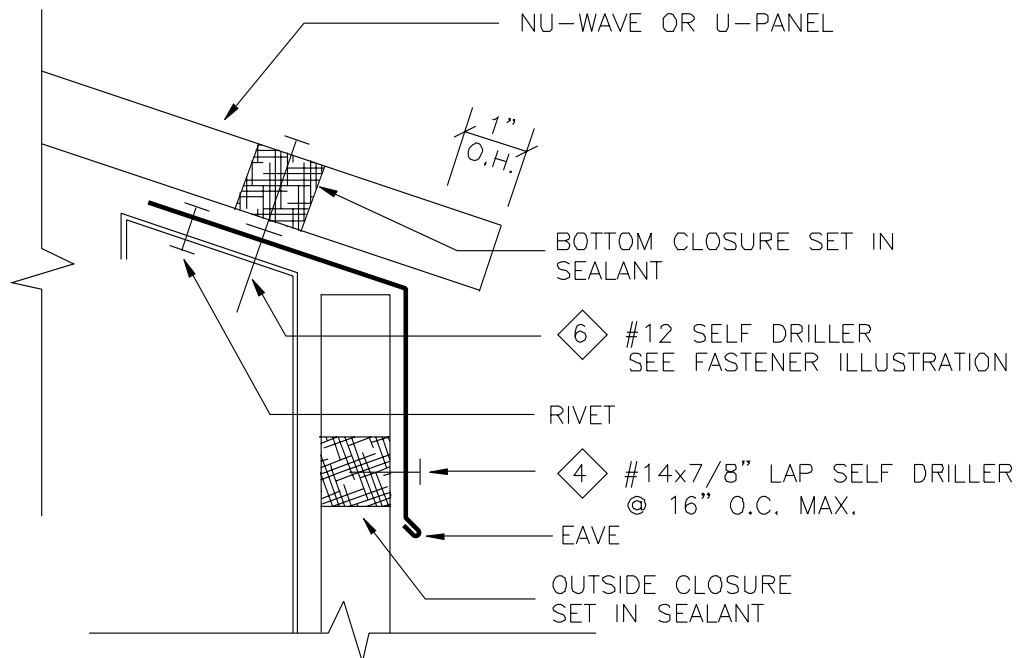
\*Special ordered beveled closures available for a specific pitch/slope.

## Eave Flashing

Nu-Wave Corrugated & U-Panel

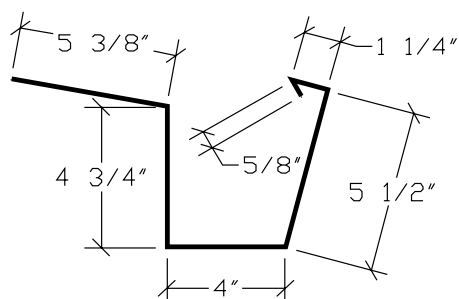


**Eave (E6)**

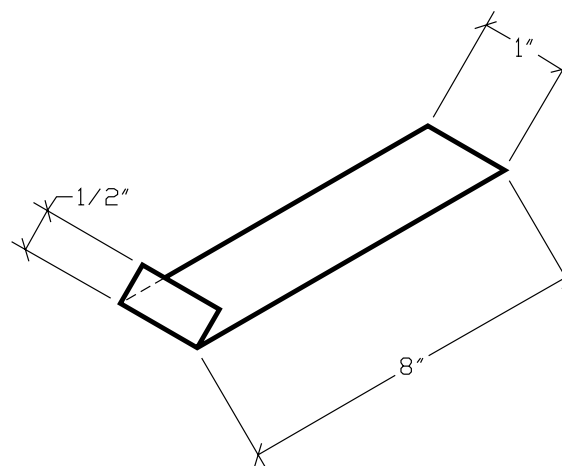


## Gutter Flashing

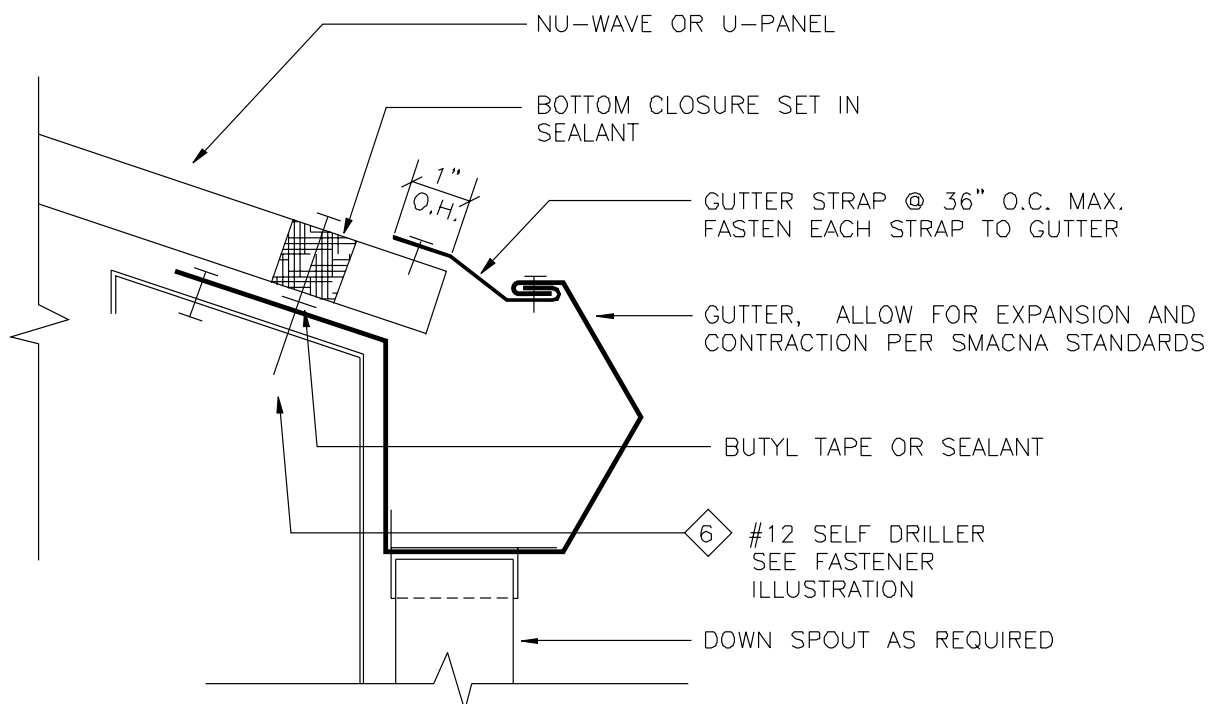
Nu-Wave Corrugated & U-Panel



**Box Gutter (GU6)**  
**pre-hung**

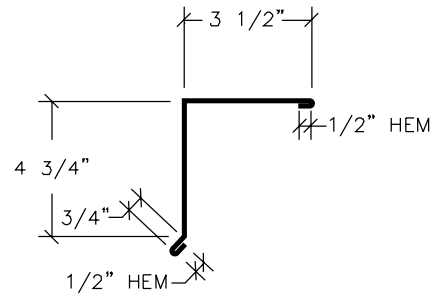


**Gutter Strap (GS6)**

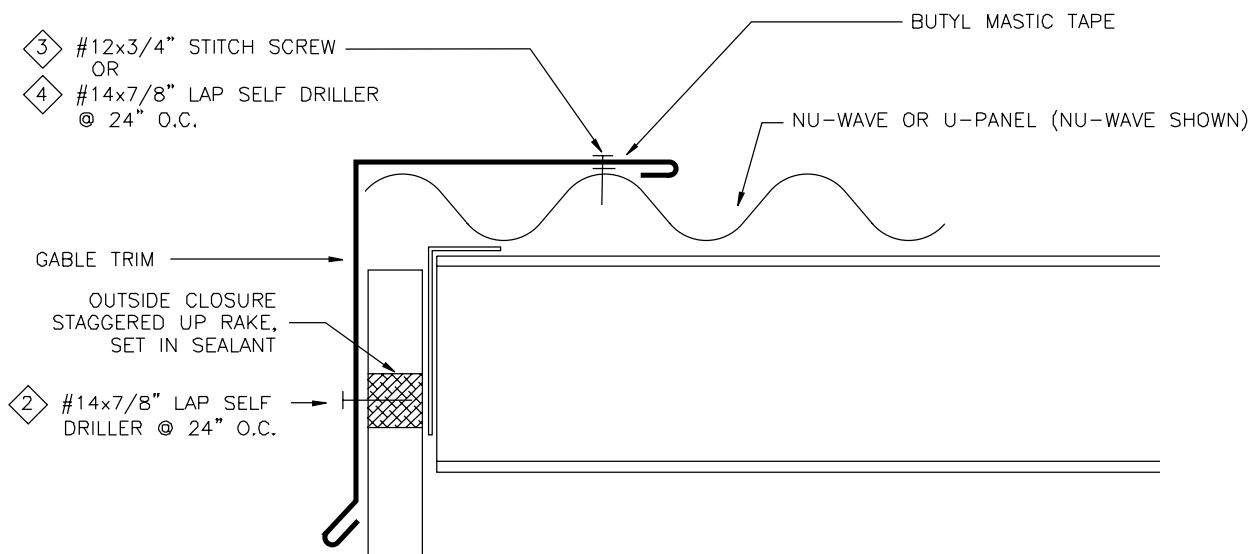


## Gable Flashing

Nu-Wave Corrugated & U-Panel



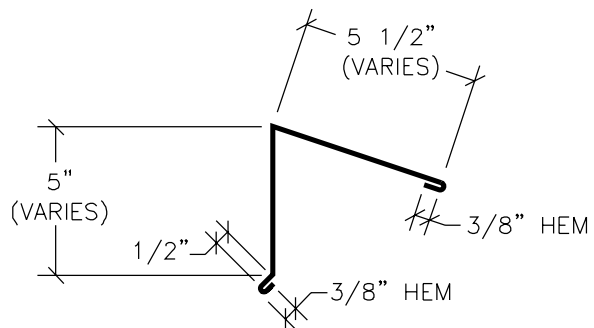
**Gable Trim (G19)**



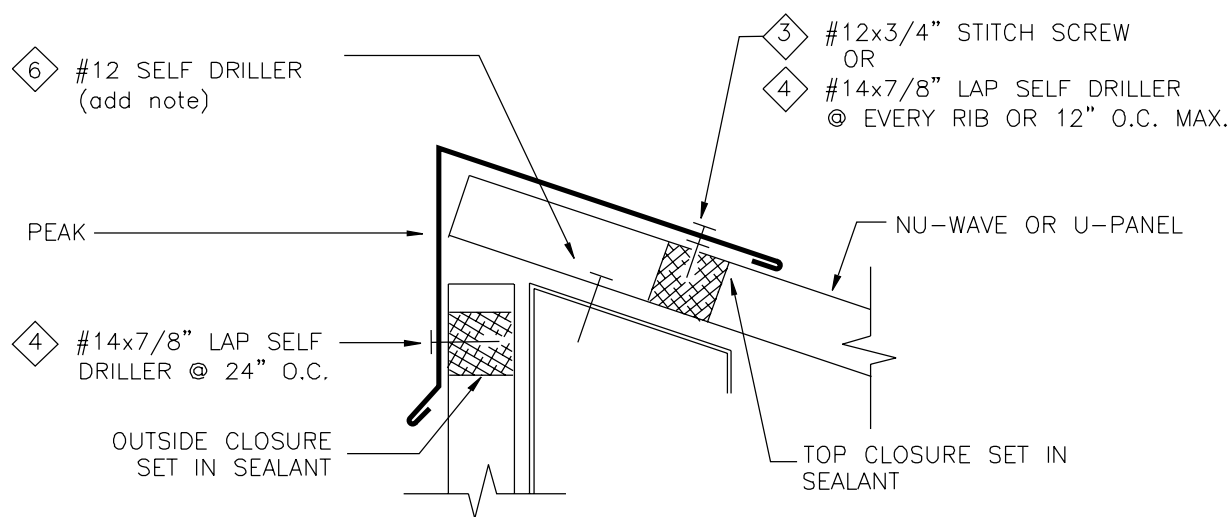


## Peak Flashing

Nu-Wave Corrugated & U-Panel

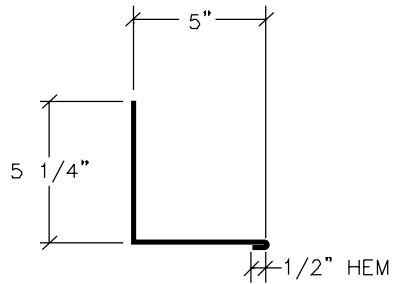


**Peak (PF16)**

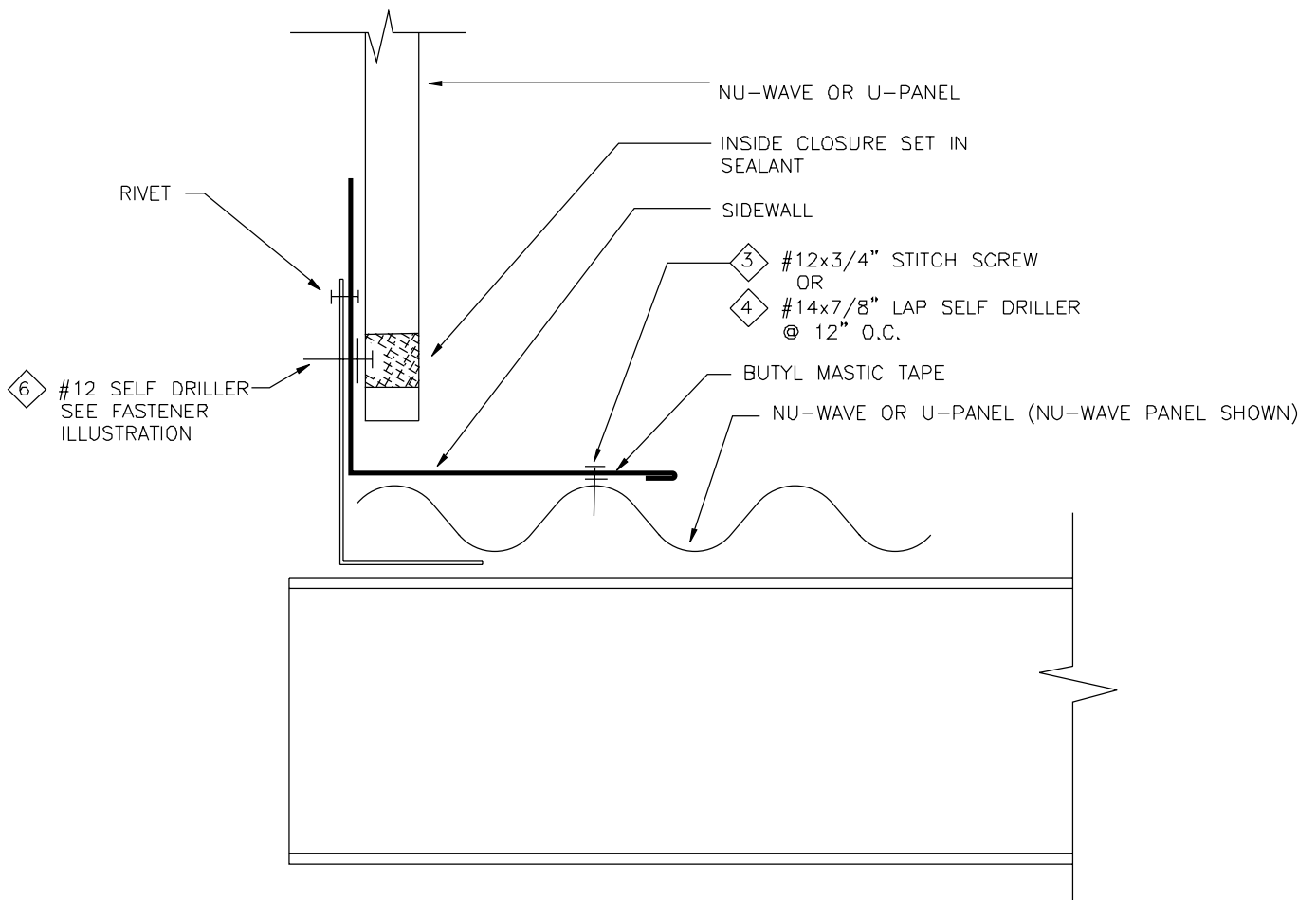


## Sidewall Flashing

Nu-Wave Corrugated & U-Panel

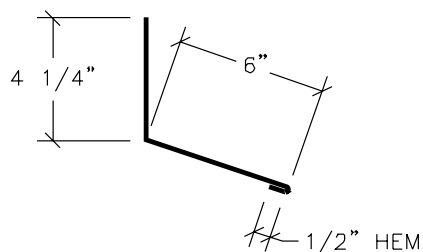


**Sidewall (SW8)**

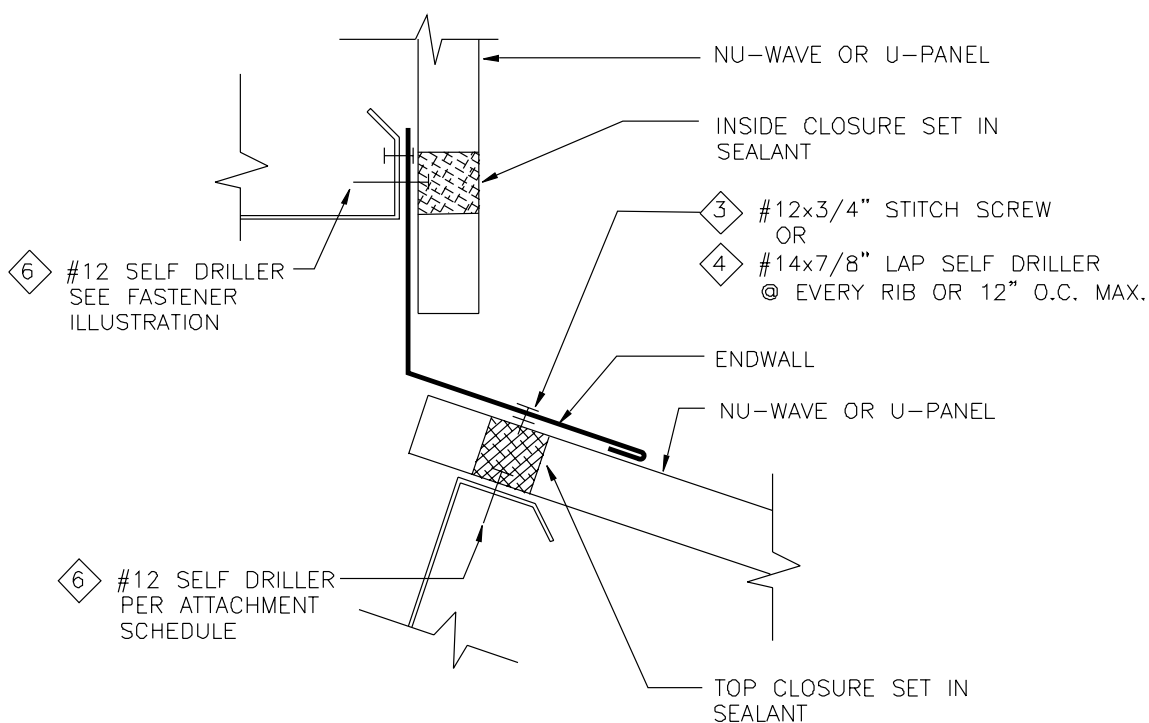


## Endwall Flashing

Nu-Wave Corrugated & U-Panel

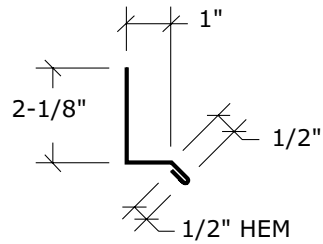


**Endwall (EW6)**

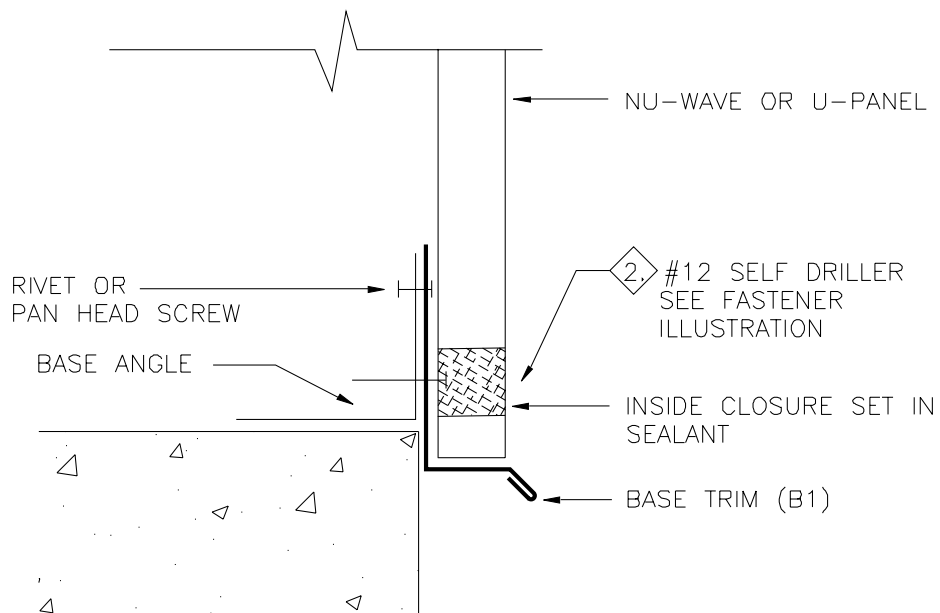


## Wall Details • Base Trim

Nu-Wave Corrugated & U-Panel

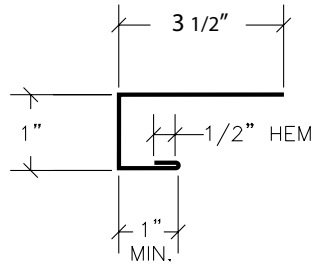


**Base Trim (B1)**

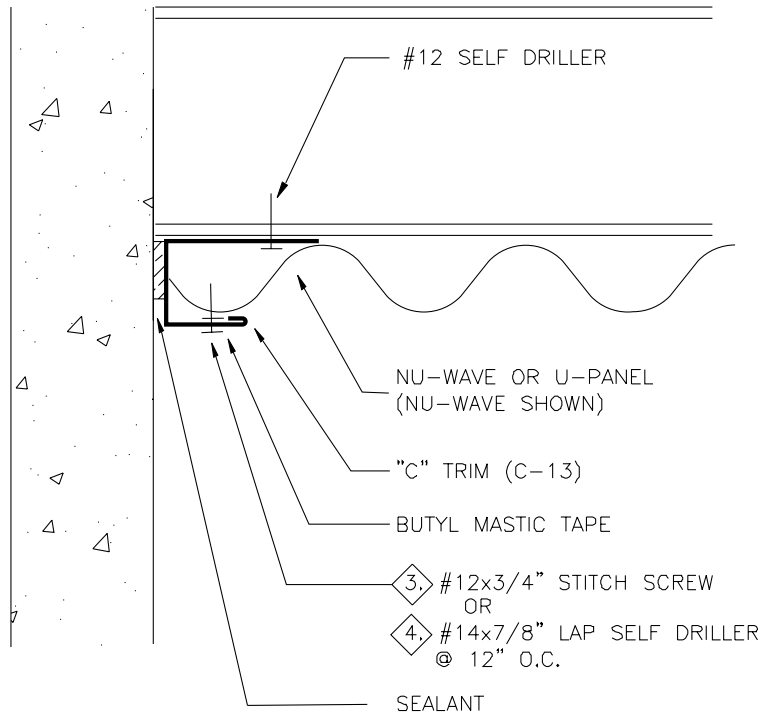


## Wall Details • “C” Trim

Nu-Wave Corrugated & U-Panel

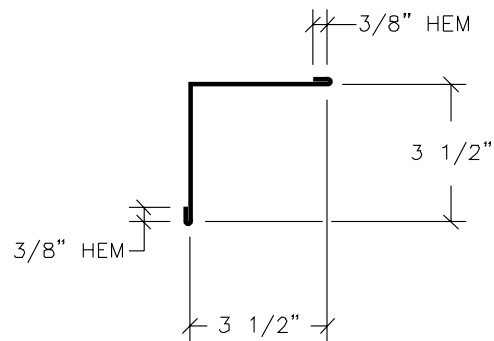


**“C” Trim (C13)**

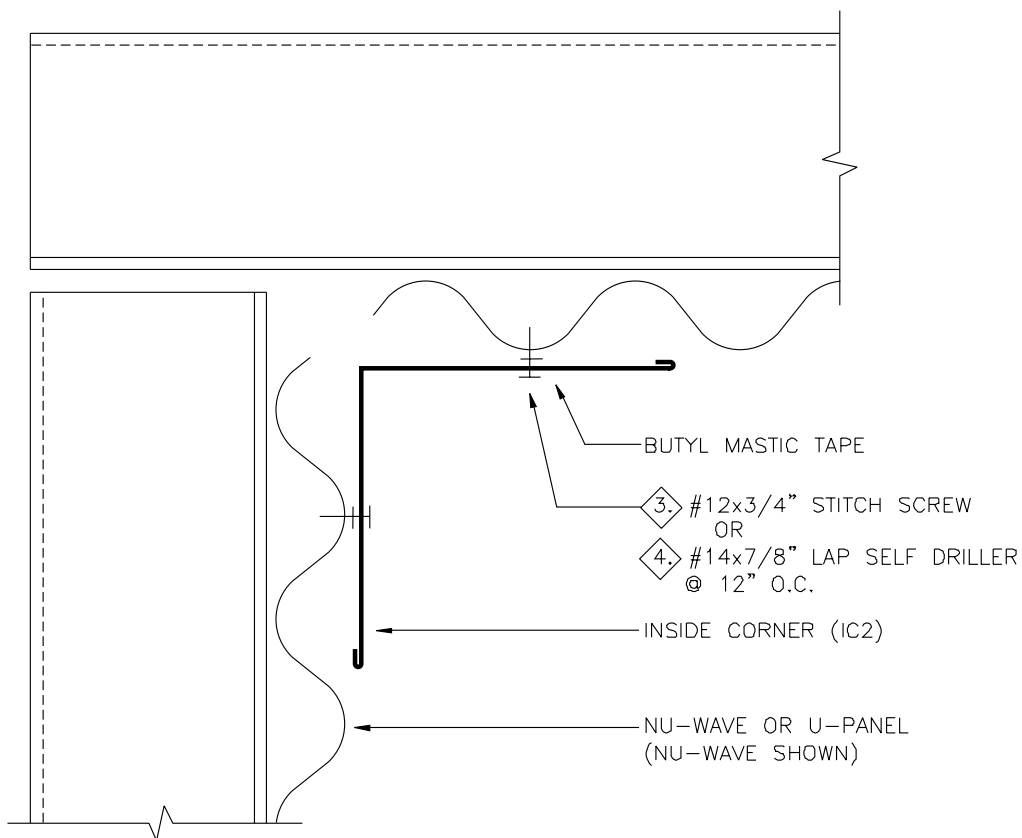


## Wall Details • Inside Corner

Nu-Wave Corrugated & U-Panel

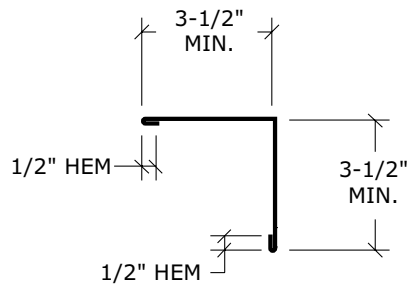


**Inside Corner (IC2)**

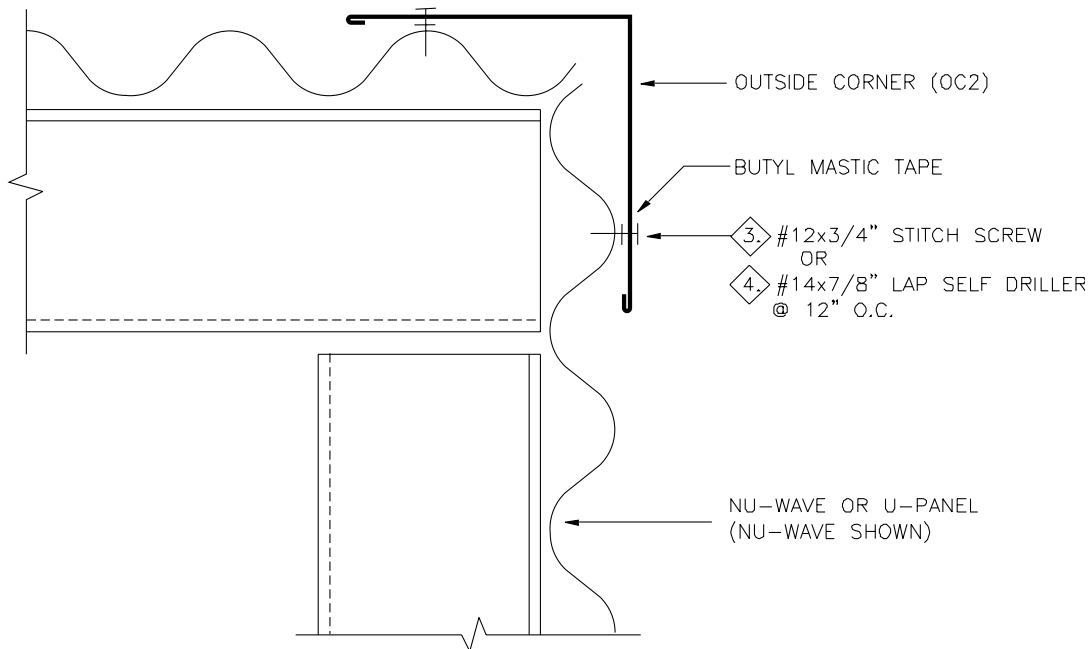


## Wall Details • Outside Corner

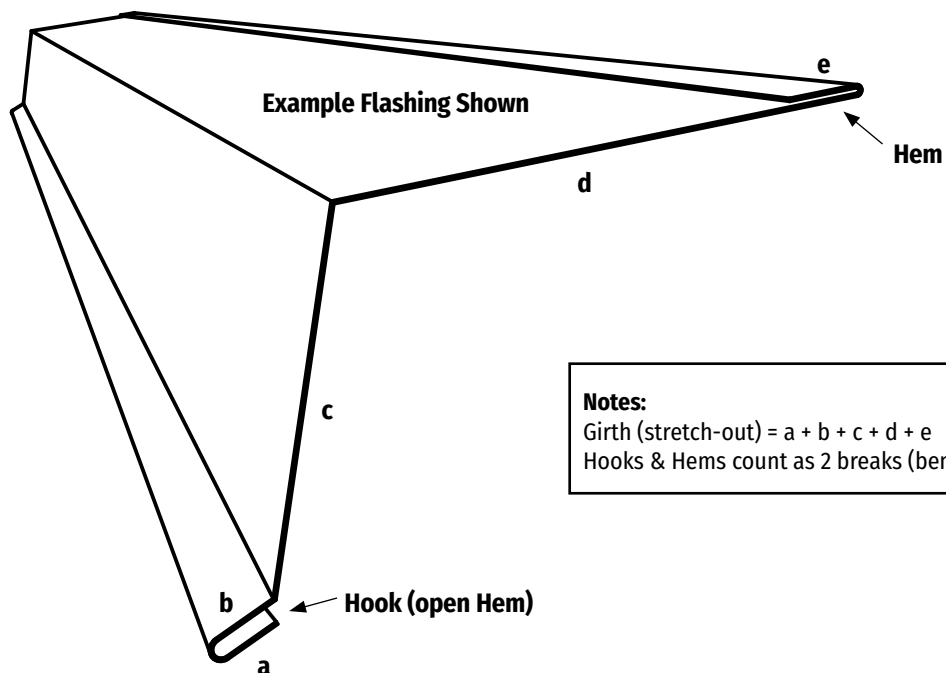
Nu-Wave Corrugated & U-Panel



**Outside Corner (OC2)**



## Custom Flashing Worksheet



**Notes:**

Girth (stretch-out) =  $a + b + c + d + e$   
 Hooks & Hems count as 2 breaks (bends)

**Custom Flashing Pricing:**

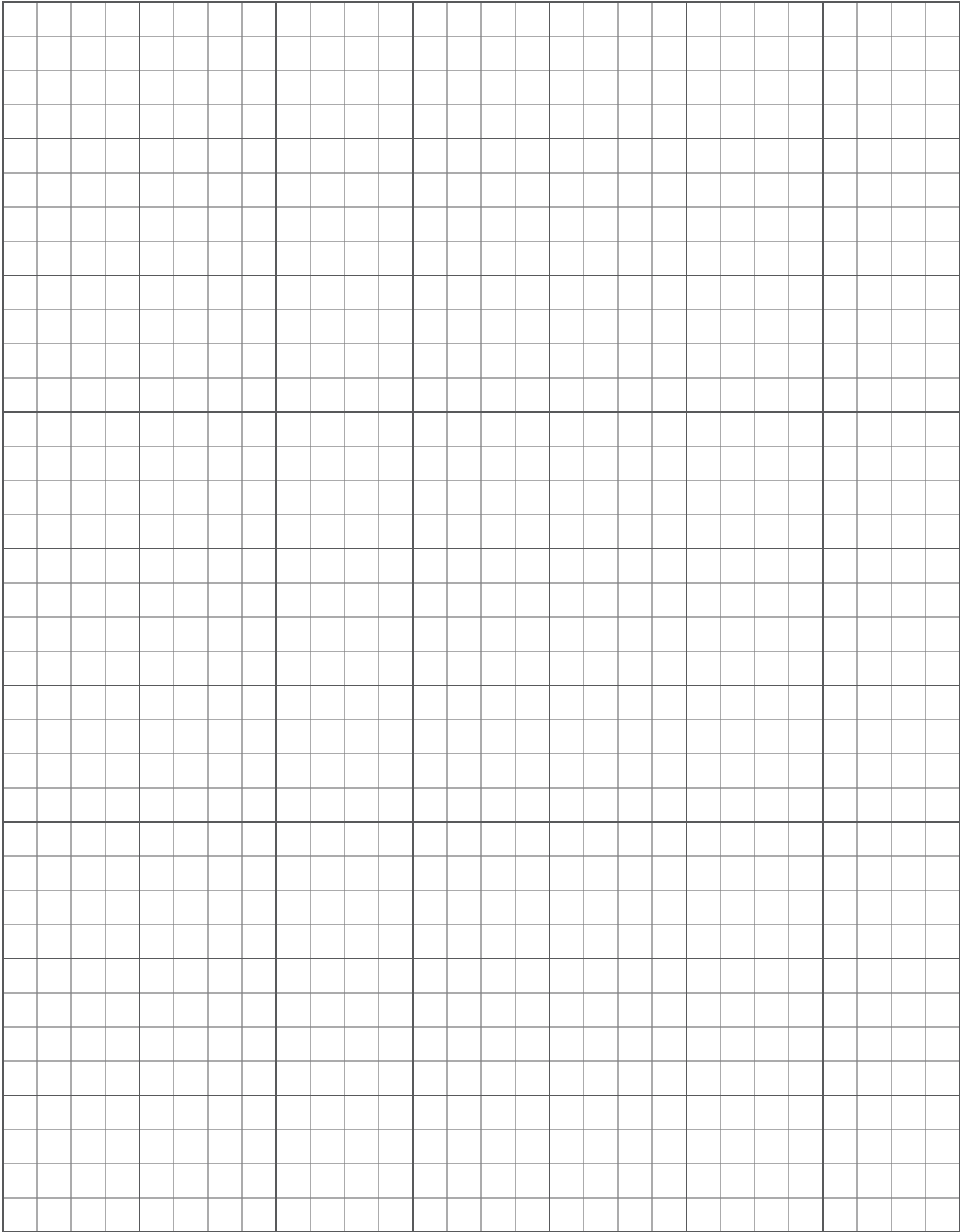
- A) Price per inch of girth per lineal ft = \$\_\_\_\_\_ (in/ft) (provided by AEP Span Rep.)  
 B) Total girth of custom flashing = \_\_\_\_\_ (in)  
 C) Slitting charge (required) = \$0.13/flashing  
 D) Price per break (bend) = \$0.15/break  
 E) Number of breaks in custom part = \_\_\_\_\_  
 F) Price per lineal ft =  $(A \times B) + C + (D \times E)$  = \_\_\_\_\_ (\$/ft)

**Custom Flashing Weight:**

Per unit weights (lb/in/ft): 20ga = 0.12 22ga = 0.10 24ga = 0.08 26ga = 0.07

Flashing weight = Total girth (B) x per unit weight (above) = \_\_\_\_\_ (lbs/ft)





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