

# 2" SNAP SEAM PANEL

Snap lock panel for the architectural industry

## Installation Manual



**BRIDGERSTEEL**  
CREATE LASTING BEAUTY

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### Building Design and Construction

To ensure adequate performance and longevity, protect metal panels from potentially corrosive situations and materials.

Fertilizer, lime, acids, feeds, manure, soils, and many other substances also cause corrosion in metal panels. Contact between metal panels and any potentially corrosive materials should be prevented.

Porous insulation board may absorb and retain moisture, and requires a vapor barrier similar to that described above. This vapor barrier should be installed such that moisture is prevented from contacting both the insulation and the metal panel.

### Purlins, Girts and Roof Deck

The material to which the metal panel is fastened should be properly spaced and sufficiently thick to provide a roof or wall system able to meet required design loads.

In re-roofing jobs where the condition of the old decking is in question, or where existing shingles will be left in place, new purlins should be fastened through the decking and into the rafters. This will provide a solid framework for attaching the metal panels.

### Roofing

Side-laps should face away from wind driven rain or away from the predominant viewing direction. Therefore, begin installation by installing the first sheet square with the eave and gable at the downwind end of the roof, farthest away from the direction of prevailing winds or away from the predominant viewing location.

In applications requiring a panel end-lap, please refer to the details of this manual. All end-laps require sealant. When weathertightness is critical, use sealant tape in all side-laps.

To provide a drop edge, allow and overhang of 1" to 2" at the eave. At the gable edge, use a gable or sidewall flashing. This will keep weather out, prevent lifting in high winds, and provide a neat, finished appearance. The trim and roofing sheet should be fastened every 6" to 10" along the gable edge.

### Roof Pitch

The metal roofing panels shown in this manual require a minimum pitch of 3" per foot in the snap configuration and 1/2" per foot when seamed to ensure proper drainage.

### Bending and Bowing

Roofing and siding sheets are roll-formed from hardened, tempered metal for maximum strength. If a sheet must be bent, a gentle

90-degree bend is the maximum recommended. Metal should not be re-bent once it has been formed, nor should it be folded back on itself, since it is not designed to take a lockseam. When a metal roofing sheet must be installed on a curved roof, screws should be installed at every overlapping rib at the sheet ends to resist the natural tendency of the metal to spring back. Standard fastener spacing is permitted over the rest of the sheet. Tape sealant or butyl caulking should be placed at all side-laps and end-laps.

Additional care and fasteners must be provided when securing the top and bottom purlins on a laminated rafter building to prevent the curved panels from pulling the purlins loose from the rafters. Ring-shank pole barn nails, heavy wood screws, lag screws, or bolts are often used for attaching these purlins.

### Safety

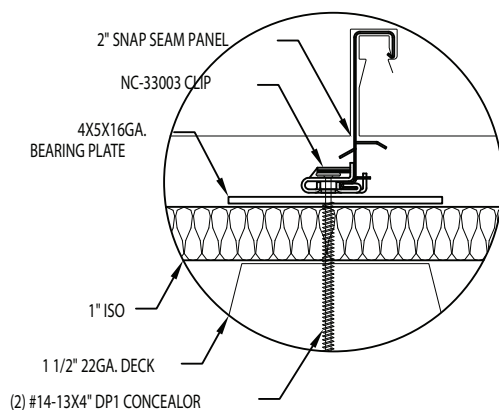
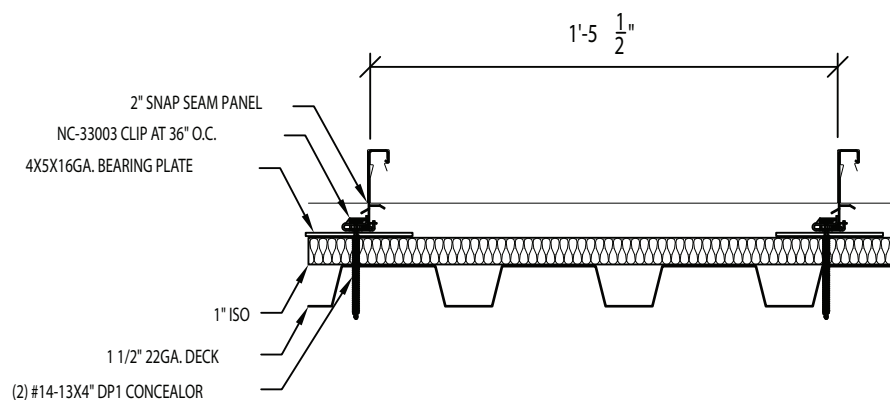
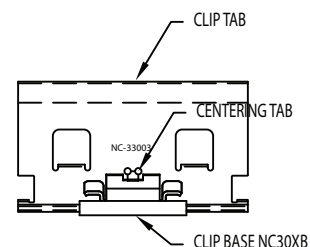
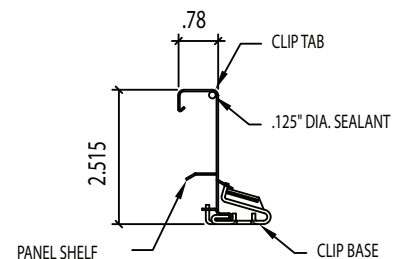
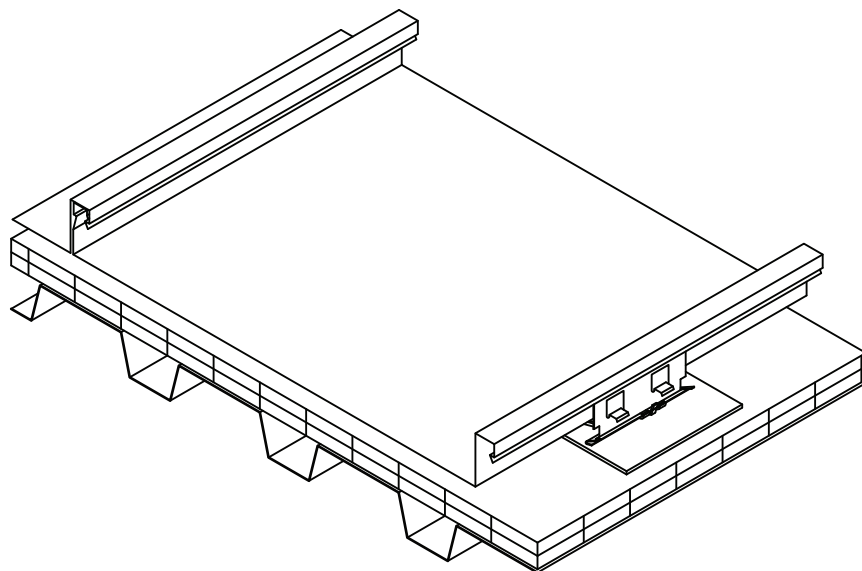
Always work safely when installing metal products. Use extreme caution on the roof at all times, and wear gloves and safety glasses to avoid injury. Hearing protection should be used when power-cutting metal panels. Do not walk on panels until all the fasteners are installed. Metal panels are slippery when wet, dusty, frosty, or oily. Do not attempt to walk on a metal roof under these conditions. Wear soft-soled shoes to improve traction and to minimize damage to the paint finish. Always be aware of your position on the roof relative to any roof openings, roof edges, co-workers, and penetrations. Installing metal panels on a windy day can be dangerous and should be avoided. Consult OSHA guidelines for more complete safety requirements.

### Cutting Steel Panels

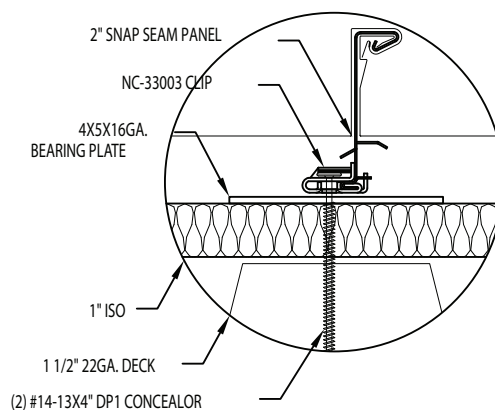
Steel panels may be cut with straight-cut snips, electric or pneumatic shears, a portable profile shear, or an electric nibbler. Some installers prefer using a circular saw with a metal cutting abrasive blade. This method may be faster, but it has some drawbacks: 1. Saw cut edges are jagged and unsightly and tend to rust more quickly than seared edges. 2. Saw cutting produces hot metal filings that can embed in the paint and cause rust marks on the face of the panel. 3. Panels to be saw cut must be turned face down and cut in a location down-wind and well away from the building and other panels to avoid embedment of metal filings on other panels. 4. Saw cut panels must be thoroughly wiped to ensure the removal of all metal filings. 5. Saw cutting burns the paint and galvanizing at the cut edge, leading to the onset of edge rust.

### Building Maintenance

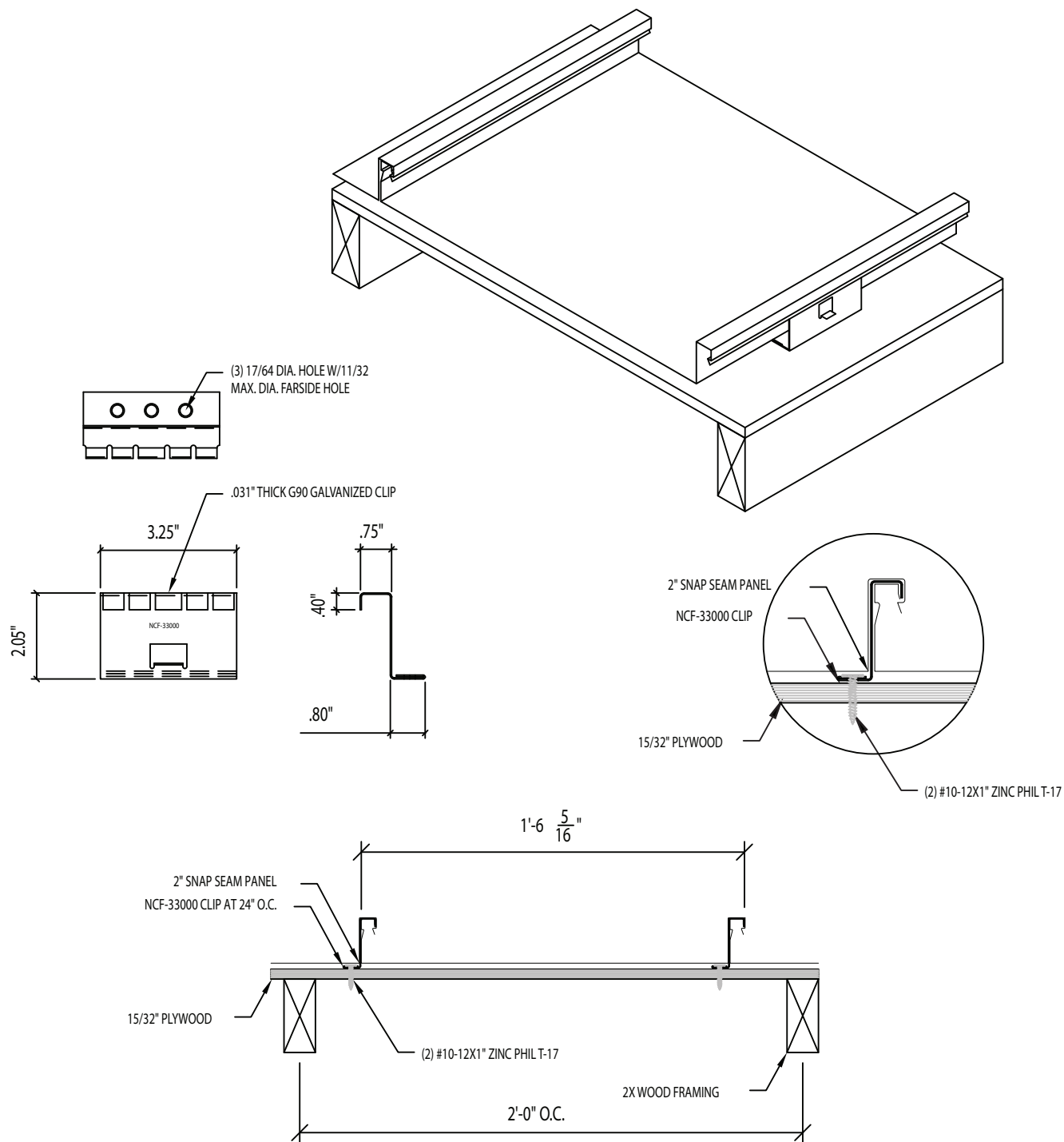
A metal roof should be inspected annually and cleaned as necessary to maintain its beauty and performance. Any debris or residue, including leaves, twigs, and dust should be cleaned off promptly to prevent moisture entrapment against the metal, which may lead to finish deterioration or premature corrosion.

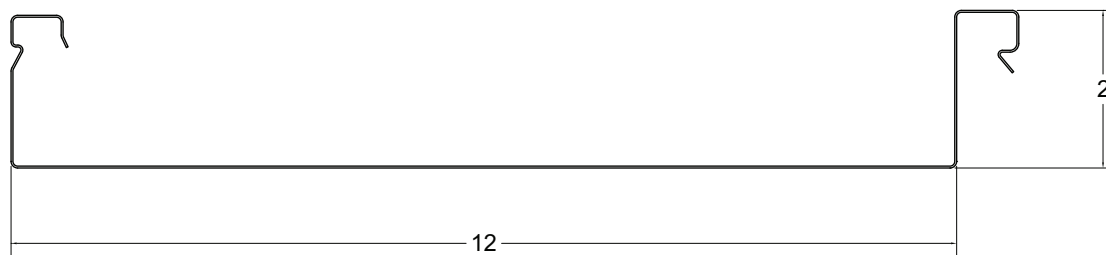


CROSS SECTION  
BEFORE SEAMING



CROSS SECTION  
AFTER SEAMING





SECTION PROPERTIES								
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	POSITIVE BENDING			NEGATIVE BENDING		
			Ix	Se	Ma	Ix	Se	Ma
			(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)	(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)
24	50	1.41	0.2028	0.1293	3.8710	0.0864	0.0774	2.3180

NOTES:

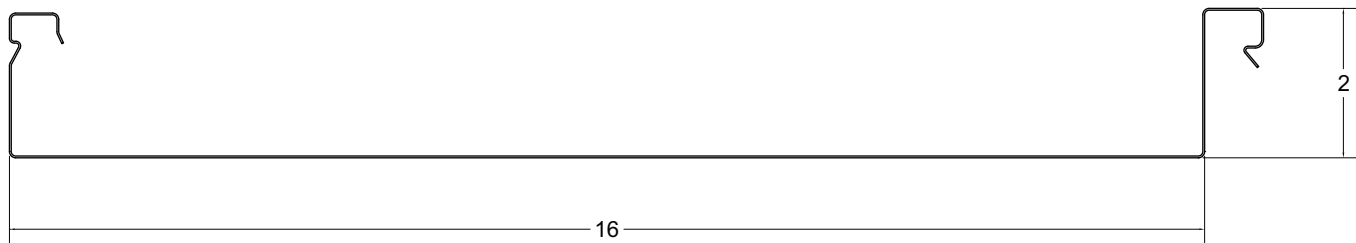
1. Section properties were computed in accordance with the 2012 edition of the North American Specification For Design Of Cold-Formed Steel Structural Members.
2. Ix is for deflection determination.
3. Se is for bending.
4. Ma is allowable bending moment.
5. All values are for one foot of panel width.

Span Type	Load Type	Allowable Uniform Loads (psf)								
		Span in Feet								
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Single	Positive Wind/Live Load (L/180)	500.0	394.2	295.7	236.5	197.1	169.0	147.8	127.4	103.2
	Positive Wind/Live Load (L/240)	500.0	394.2	295.7	236.5	197.1	169.0	147.8	127.4	103.2
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
2 Span	Positive Wind/Live Load (L/180)	454.5	303.0	227.2	181.8	151.5	126.1	96.6	76.3	61.8
	Positive Wind/Live Load (L/240)	454.5	303.0	227.2	181.8	151.5	126.1	96.6	76.3	61.8
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
3 Span	Positive Wind/Live Load (L/180)	500.0	344.3	258.2	206.6	172.2	147.6	120.7	95.4	77.3
	Positive Wind/Live Load (L/240)	500.0	344.3	258.2	206.6	172.2	147.6	120.7	95.4	77.3
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
4 Span	Positive Wind/Live Load (L/180)	497.0	331.4	248.5	198.8	165.7	142.0	112.7	89.1	72.1
	Positive Wind/Live Load (L/240)	497.0	331.4	248.5	198.8	165.7	142.0	112.7	89.1	72.1
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0

NOTES:

1. Allowable loads were computed in accordance with the 2012 edition of the North American Specification For Design Of Cold-Formed Steel Structural Members.
2. Allowable loads are based on uniform span lengths, Material thickness = .023", Design thickness = .0223", Fy = 50 ksi.
3. Positive Wind Load and Live Load is limited by bending, shear, combined shear & bending and web crippling and deflection of L/180 or L/240.
4. ASTM E 1592 Uplift includes a 2.0 factor of Safety
5. Panel Uplift Tested per ASTM E1592-01, Report #78-0260T-12, by Force Engineering & Testing, Inc.
6. The weight of the panel has not been deducted from the allowable loads.

# 2" SNAP SEAM 16" WIDE 24 GA. SECTION PROPERTIES



SECTION PROPERTIES								
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	POSITIVE BENDING			NEGATIVE BENDING		
			Ix	Se	Ma	Ix	Se	Ma
			(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)	(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)
24	50	1.28	0.1643	0.1002	3.0000	0.0653	0.0582	1.7422

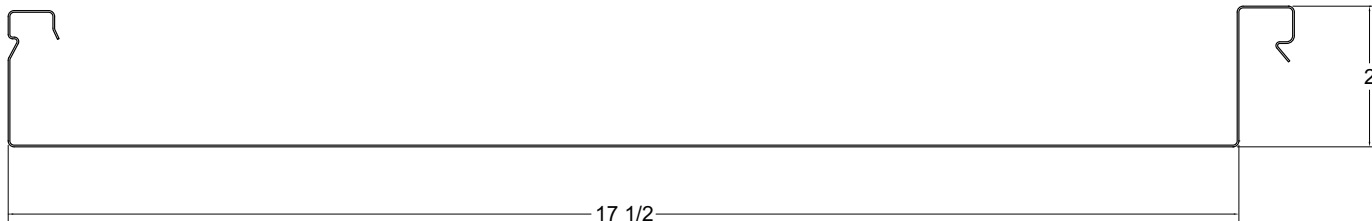
## NOTES:

1. Section properties were computed in accordance with the 2012 edition of the North American Specification For Design Of Cold-Formed Steel Structural Members.
2. Ix is for deflection determination.
3. Se is for bending.
4. Ma is allowable bending moment.
5. All values are for one foot of panel width.

Span Type	Load Type	Allowable Uniform Loads (psf)								
		Span in Feet								
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Single	Positive Wind/Live Load (L/180)	443.5	295.7	221.8	177.4	147.8	126.7	110.9	98.6	80.0
	Positive Wind/Live Load (L/240)	443.5	295.7	221.8	177.4	147.8	126.7	110.9	98.6	80.0
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
2 Span	Positive Wind/Live Load (L/180)	340.9	227.3	170.4	136.4	113.6	94.8	72.6	57.4	46.5
	Positive Wind/Live Load (L/240)	340.9	227.3	170.4	136.4	113.6	94.8	72.6	57.4	46.5
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
3 Span	Positive Wind/Live Load (L/180)	387.4	258.2	193.7	154.9	129.1	110.7	90.7	71.7	58.1
	Positive Wind/Live Load (L/240)	387.4	258.2	193.7	154.9	129.1	110.7	90.7	71.7	58.1
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
4 Span	Positive Wind/Live Load (L/180)	372.8	248.5	186.4	149.1	124.3	106.5	84.7	66.9	54.2
	Positive Wind/Live Load (L/240)	372.8	248.5	186.4	149.1	124.3	106.5	84.7	66.9	54.2
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0

## NOTES:

1. Allowable loads were computed in accordance with the 2012 edition of the North American Specification For Design Of Cold-Formed Steel Structural Members.
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3. Positive Wind Load and Live Load is limited by bending, shear, combined shear & bending and web crippling and deflection of L/180 or L/240.
4. ASTM E 1592 Uplift includes a 2.0 factor of Safety
5. Panel Uplift Tested per ASTM E1592-01, Report #78-0260T-12, by Force Engineering & Testing, Inc.
6. The weight of the panel has not been deducted from the allowable loads.



SECTION PROPERTIES								
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	POSITIVE BENDING			NEGATIVE BENDING		
			Ix	Se	Ma	Ix	Se	Ma
			(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)	(IN.4/FT.)	(IN.3/FT.)	(KIP-IN.)
24	50	1.25	0.1529	0.0918	2.7463	0.0597	0.0532	1.5936

**NOTES:**

1. Section properties were computed in accordance with the 2012 edition of the North American Specification For Design Of Cold-Formed Steel Structural Members.
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Span Type	Load Type	Allowable Uniform Loads (psf)								
		Span in Feet								
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Single	Positive Wind/Live Load (L/180)	405.5	270.3	202.8	162.2	135.2	115.9	101.4	90.1	73.2
	Positive Wind/Live Load (L/240)	405.5	270.3	202.8	162.2	135.2	115.9	101.4	90.1	73.2
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
2 Span	Positive Wind/Live Load (L/180)	311.7	207.8	155.8	124.7	103.9	86.7	66.4	52.5	42.5
	Positive Wind/Live Load (L/240)	311.7	207.8	155.8	124.7	103.9	86.7	66.4	52.5	42.5
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
3 Span	Positive Wind/Live Load (L/180)	354.2	236.1	177.1	141.7	118.1	101.2	83.0	65.6	53.1
	Positive Wind/Live Load (L/240)	354.2	236.1	177.1	141.7	118.1	101.2	83.0	65.5	53.1
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0
4 Span	Positive Wind/Live Load (L/180)	340.8	227.2	170.4	136.3	113.6	97.4	77.5	61.2	49.6
	Positive Wind/Live Load (L/240)	340.8	227.2	170.4	136.3	113.6	97.4	77.5	61.2	49.6
	ASTM E 1592 (Uplift)	135.2	123.1	111.1	99.1	87.1	75.1	63.0	51.0	39.0

**NOTES:**

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4. ASTM E 1592 Uplift includes a 2.0 factor of Safety
5. Panel Uplift Tested per ASTM E1592-01, Report #78-0260T-12, by Force Engineering & Testing, Inc.
6. The weight of the panel has not been deducted from the allowable loads.





## FIELD STORAGE AND HANDLING

2" Snap Seam Panels may be roll formed on the job site or shipped from the factory. If shipped from the factory the contractor becomes responsible for the proper handling and storage of the panels upon acceptance of the shipment.

Roll forming of panels on the job site is usually done at the roof. If for any reason the panels are roll formed on the ground, they should be stored and handled the same as panels shipped from the factory.

## STANDARD ROOF DETAILS

The 2" Snap Seam installation instructions demonstrate the assembly of standard conditions, which may be different from conditions on a specific job. Always review the erection drawings for non-standard conditions or differences from the standard details. The specific erection drawing details always supersede these standard details and instructions.

These standard perimeter details are based on typical and proven industrial/commercial designs and utilize commonly available trim and flash profiles and components. These details utilize gasket type sealed assembly to provide more positive weathertightness under a broad range of conditions, including lower pitched roofs.

Other profile trim and flash may be used, as long as the trim or flash laps and seals to the roof panel in the same manner as shown on these standard details.

When other trim and flashing designs are specified, such as a hemmed panel attachment at the eave, or SMACNA requirements are specified, their erection drawings must provide the specific details and required instructions.

## TYPICAL ROOF ASSEMBLIES

The following details show the common roof assemblies and panel attachments. Use these details to determine which attachment method and components are required for your specific job.

Before starting the roof installation, confirm that the panel clips, rake plates and eave plates are of the correct stand-off height. Also confirm that the panel clip fasteners are of the required type and length and that bearing plates are provided (if required). Panel clip fasteners, bearing plates and their spacing must be specified on the erection drawings.

In most cases, panel clips are required at every roof structural, regardless of how close together they may be. Two fasteners per panel clip will be specified.

Confirm that both insulation type and thickness and insulation blocks (if required) are compatible with the stand-off height specified for your job.

When the insulation is too thick, roof panel installation is difficult and the panel fl at may bow up, causing fit-up and appearance problems. Remember, the insulation block thickness must be added to the compressed insulation thickness.

EXAMPLE: A 1 3/8" stand-off can only accept 3" fiberglass insulation when used with a 1" thick insulation block.

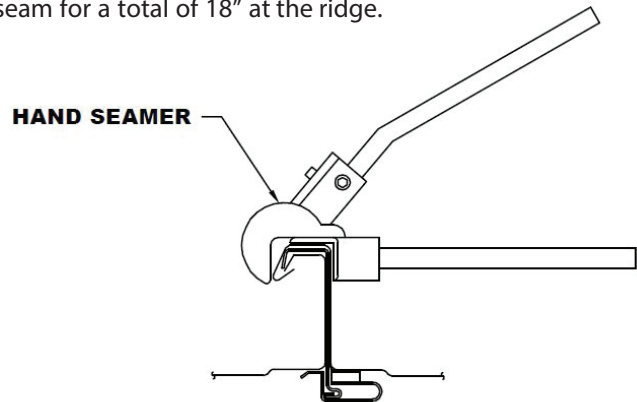
## INSTALLATION DETAILS

Under normal conditions, the 2" Snap Seam Panels are designed to install from right to left when looking from eave to ridge but can be installed in either direction.

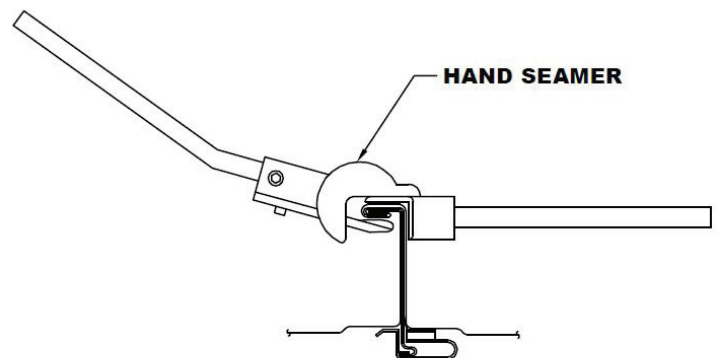
### HAND SEAMING OPERATION CAUTION! PANELS DO NOT HAVE TO BE MACHINE SEAMED AS THEY ARE INSTALLED!

It is critical that the panel seams are crimped and folded before using the electric seamer. Failure to follow these guidelines will result in damaged seams.

To begin seaming, set the hand seamer on the seam. Align the edge of the hand seamer about one to two inches passed the edge of the panel. Crimp the panel 3 to 4 times along the seam for a total of 12" at the eave and 5 or 6 times along the seam for a total of 18" at the ridge.



**BEGINNING HAND SEAMING**



**ENDING HAND SEAMING**

Before beginning installation of the metal roof system, the installer should examine the substrate to insure that all supporting members are straight, level and plumb to avoid any 2" Snap Seam panel distortion. All substrates should be designed to meet all the necessary building code requirements.

The installer should thoroughly familiarize himself with all installation instructions before starting work.

This manual contains suggestions and guidelines on how to install 2" Snap Seam roof systems. The installation details shown are proven methods of construction, but are not intended to cover all instances, building requirements, designs or codes. It is the responsibility of the designer/installer to ensure that the details meet particular building requirements.

The panels should be installed plumb, straight and accurately to the substrate. Some field cutting and fitting of panels and trim is to be expected by the installer and minor field corrections are a part of normal installation work.

Trim shall be installed true and in proper alignment with exposed fasteners equally spaced for the best appearance.

Oil Canning in the flat area of the panels is common to the industry and shall not be cause for rejection.

## **ARCHITECT, ENGINEERING, AND ERECTOR INFORMATION**

/, Oil Canning is not a cause for rejection, Heavier gauges and striations minimize oil canning.

0, Roof panels may be erected from either direction.

1, The information in this manual is believed to be correct and accurate. It should not be used for any specific application without being reviewed by a registered professional engineer. All metal roofs should be designed by a registered, professional engineer for loads specified by the governing building code, including the higher pressures encountered at the edge zones of the roof.

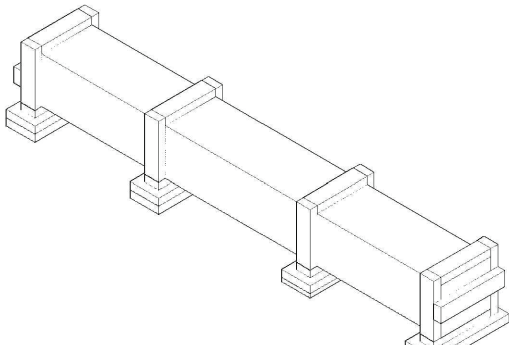


### STORAGE

If metal is not to be used immediately, store inside in a well-ventilated, dry location. Any outdoor storage is at the customer's own risk! At time of delivery, inspect panels for moisture. If moisture has formed, the panels should be uncrated, wiped dry, and allowed to dry completely. Failure to remove the entrapped moisture between the sheets immediately will affect the service life of the metal. Extended storage of panels in a bundle is not recommended. Under no circumstances should the sheets be stored near or come in contact with salt water, corrosive chemicals, ash, or fumes generated or released inside the building of nearby plants, foundries, plating works, kilns, fertilizer, and wet or green lumber.

If panel bundles must be stored outside, the following list of requirements must be followed:

- /, The storage area should be reasonably level, and should be located so as to minimize handling of crates during the construction process.
- 0, When stored on bare ground, place a plastic ground cover under the crates to minimize condensation on the panels from moisture in the soil.
- 1, Store crates at least 6 inches above the ground level to allow air circulation beneath the bundle, and to prevent rising water from entering the bundle.
- 2, Elevate one end of the crate slightly to permit runoff of moisture from the top of the bundle.



### Receiving Material:

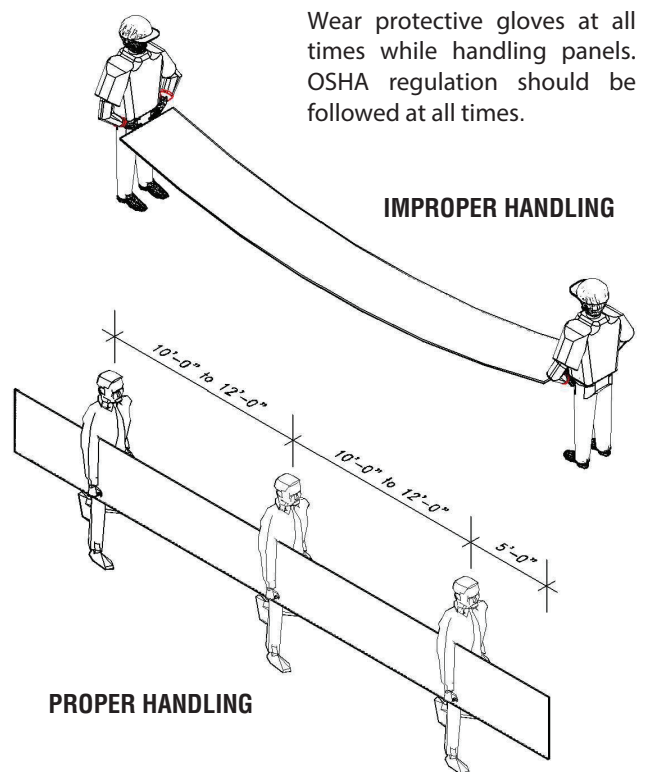
It is the responsibility of the installer to unload material from the delivery truck. The installer shall be responsible for providing suitable equipment for unloading of material from the delivery truck.

After receiving material, check the condition of the material, and review the shipment against the shipping list to ensure all materials are accounted for. If damages or shortages are discovered, it should be noted on the shipping copy at time of delivery. If material is delivered by common carrier, a claim must be made with the carrier as soon as possible. If replacement material is required, you must contact manufacturer to place the order. If material is delivered on company trucks, note the damages and shortages on the shipping copy. Any damages and shortages must be reported to manufacturer within 48 hours from the time of shipment.

### GENERAL HANDLING

Each crate should be handled carefully to avoid being damaged. Care should be taken to prevent bending of the panel or abrasion to finish. Please follow these steps for proper care while unloading and handling crates in order to prevent panel damage:

- /, Crates should remain intact during any handling, and until the individual panels in each bundle are ready to be installed. Crates should never be lifted by the banding.
- 0, Lift each crate as close as possible to its center of gravity.
- 1, If the crates are to be lifted with a crane, use a spreader bar of appropriate length, and nylon bands slings. (Do not use wire rope slings as they will damage the panels).
- 2, Depending on panel length, some crates may be lifted by a forklift. When using a forklift, the forks should be spread apart to their maximum spacing, and the load must be centered on the forks to prevent scratching the next panel. A panel should never be picked up by its ends. Instead, lift the panel along its longitudinal edge and carry in a vertical (not flat) position. For panels over 10'-0" in length, two or more people should lift the panel along the same edge.
- 3, After crates are opened, individual panels must also be handled carefully to prevent panel buckling or damage to the panel coating. When removing a panel from a crate, it should never be allowed to slide over another panel. The individual panel should be "rolled" out of the crate in order to minimize the chance of panel damage.



Wear protective gloves at all times while handling panels. OSHA regulation should be followed at all times.

### **FORKLIFT:**

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

Once shipment arrives, check shipment for damages and list materials. Manufacturer will not be responsible for shortages or damages on material, unless noted on shipping list.

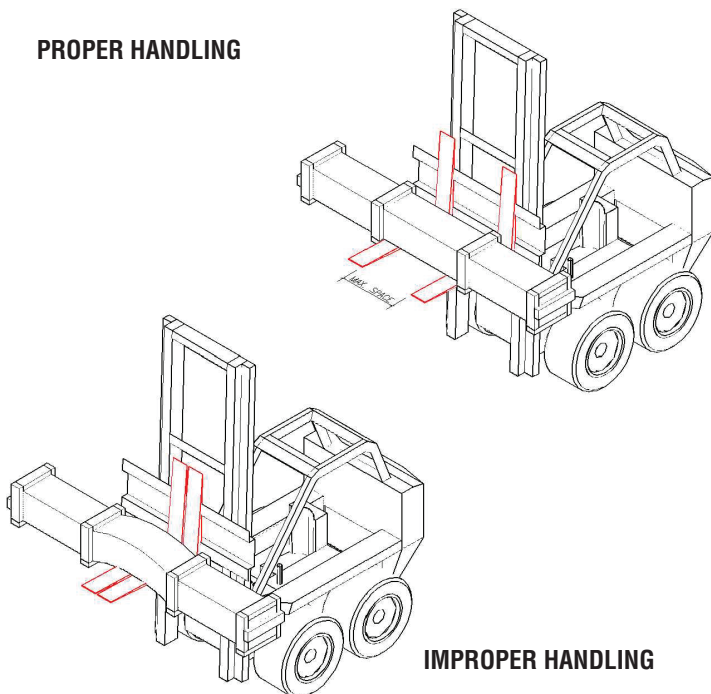
Each package should be lifted at its center of gravity, to prevent any damage, and should be kept in bundle until final placement on project.

When lifting packages with a crane, a spreader bar and nylon straps should be used. Do not use wire rope or chain slings, they will cause damage to the package.

When lifting packages with a forklift, forks must be a minimum of 5'-0" apart. Drive forklift slowly when crossing rough terrain to prevent package buckling.

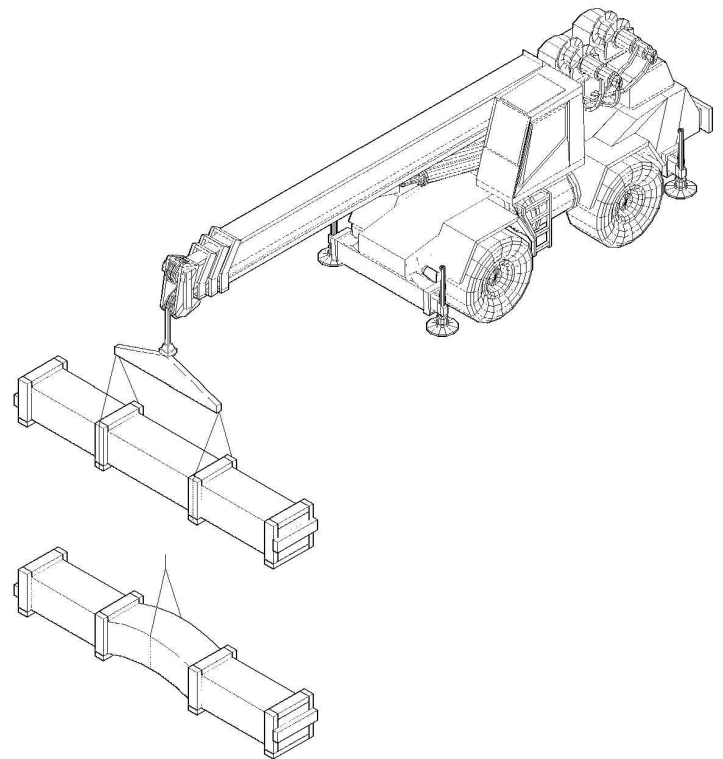
Block and band with cardboard carton method of packaging is used for orders that are to be picked up by the customer or shipped by a common carrier. 2"x4"s are strapped under the forklift. Bundles less than 20'-0" long may be handled by a forklift. The forklift should be at least 5'-0" between forks.

### **PROPER HANDLING**



### **CRANE:**

A crane should be used when lifting panels with length greater than 20'-0". Please be sure to utilize a spreader bar to ensure the even distribution of the weight to the pick up points. As a rule, when lifting panels, no more than 1/3 of the length of the panel should be left unsupported. Nylon slings should be used to pick up panels. Do not use cable or chains because this will damage the panels.



### **FOOT TRAFFIC:**

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

If continuous foot traffic is necessary during installation, provide walking platforms to avoid any panel damage.

When walking on the roof panel is unavoidable, walk only in the flats of the panel. Walking on the ribs can cause damage to the panels.

Improper unloading and handling of packages and crates may cause bodily injuries or material damage. The manufacturer will not be responsible for any bodily or material damage during unloading and storage of delivered material.

**NOTES:**

If a skill saw is used, the blade will generate slivers of metal chips. Any slivers of metal chips must be immediately removed from the panels because they will damage the finish and shorten the life of the product.

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

**CAUTION**

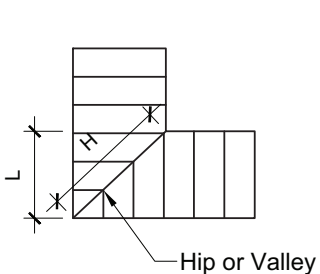
All product surfaces should be free of debris at all times. Installed surfaces should be wiped clean at the end of each work period. Never cut panels over metal surfaces. Metal shaving will rust on the surface thus voiding the warranty.

**CAUTION**

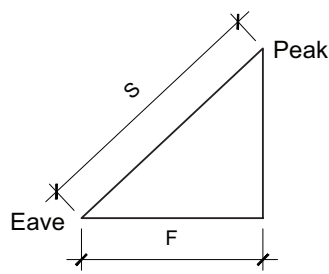
When cutting metal panels, goggles must be worn for eye protection.

**TOUCH UP PAINT**

All painted panels and flashings have a factory applied baked on finish. Handling and installing panels may result in some small scratches or nicks to the paint finish. Touch-up paint is available in matching colors. Touch-up paint does not have the superior chalk and fade resistance of the factory applied paint finish and will normally discolor at an accelerated rate. Aerosol paint should not be used because of the overspray that may occur. Periodic touch-up may be required to maintain color match. There is no warranty on touch-up paint in regards to color match because the paint processes are different.



$$(L) \times (\text{Hip Valley Multiplier}) = H$$



$$(F) \times (\text{Pitch Factor}) = S$$

**DESIGN CONSIDERATIONS & CALCULATIONS****INSULATION & VENTILATION:**

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

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

In addition to providing resistance to heat transfer, insulation can also protect against condensation forming on cold surfaces, either inside the building or within the wall/roof system cavity. The arrangement of the building's insulation system and vapor retarder is the responsibility of the building designer. These are some basic guidelines to help control condensation in a metal building.

1. The insulation should have a vapor retarder face on the "warm" side of the insulation. For most buildings, this means that the vapor retarder is on the inside surface (towards the building's interior)
2. The thickness of the insulation must be designed to maintain the temperature of the vapor retarder above the interior dew point, using the worst-case expected outside temperature.
3. All perimeter conditions, seams, and penetrations of the vapor retarder must be adequately sealed in order to provide a continuous membrane to resist the passage of water vapor.
4. Building ventilation, whether by gravity ridge vent, power operated fans, or other means, contributes significantly to reduce condensation. The movement of air to the outside of the building reduces the interior level of vapor pressure.

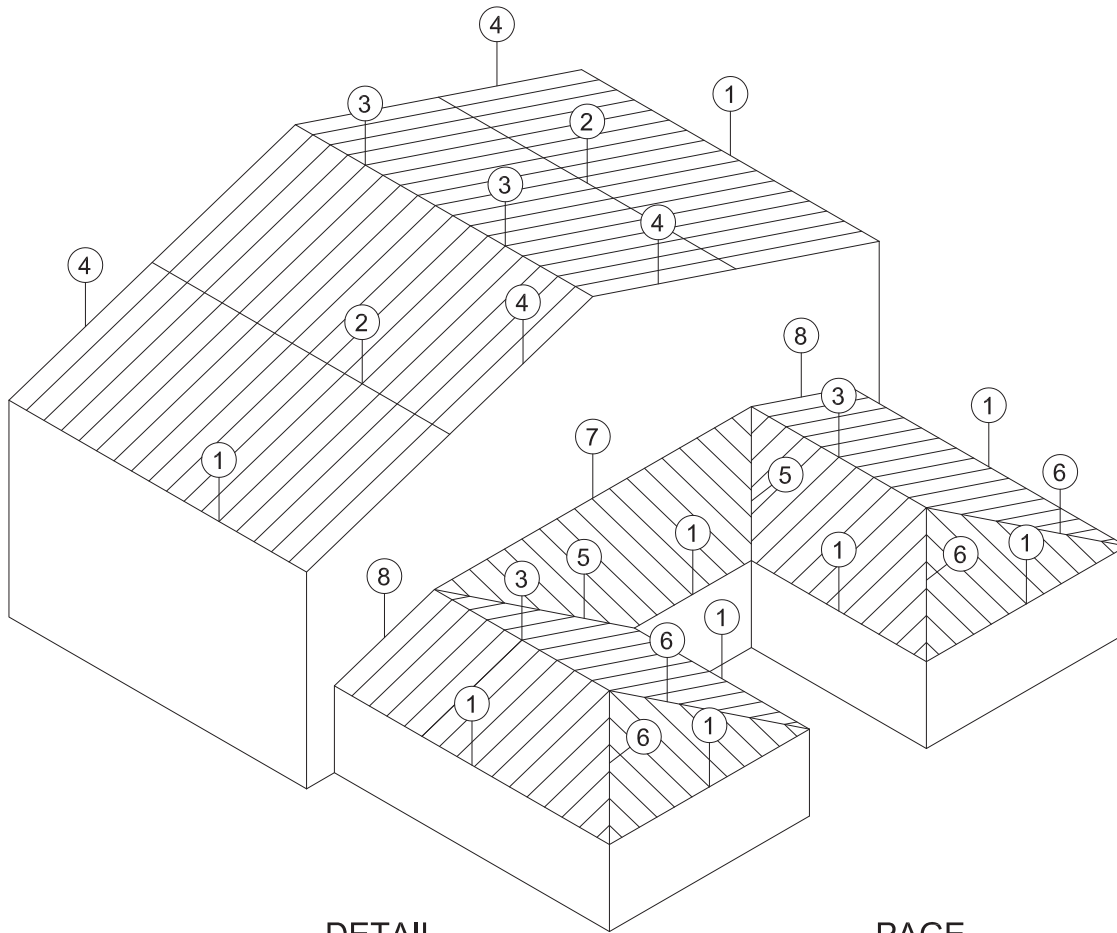
On buildings that have an attic space or are being retrofitted with a metal roofing system, vents should be placed at both ends of the eave and peak of the roof in order to prevent a buildup of moisture (humidity) in the attic space.

Contact your local building code officials or engineer on proper ventilation practices for your area.

**ROOF PITCH FACTOR CHART**

PITCH	PITCH FACTOR	HIP/VALLEY MULTIPLIER	PITCH	PITCH FACTOR	HIP/VALLEY MULTIPLIER
3:12	1.0308	1.4362	8:12	1.2019	1.5635
4:12	1.0541	1.4530	9:12	1.2500	1.6008
5:12	1.0833	1.4743	10:12	1.3017	1.6415
6:12	1.1180	1.5000	11:12	1.3566	1.6853
7:12	1.1577	1.5298	12:12	1.4142	1.7320

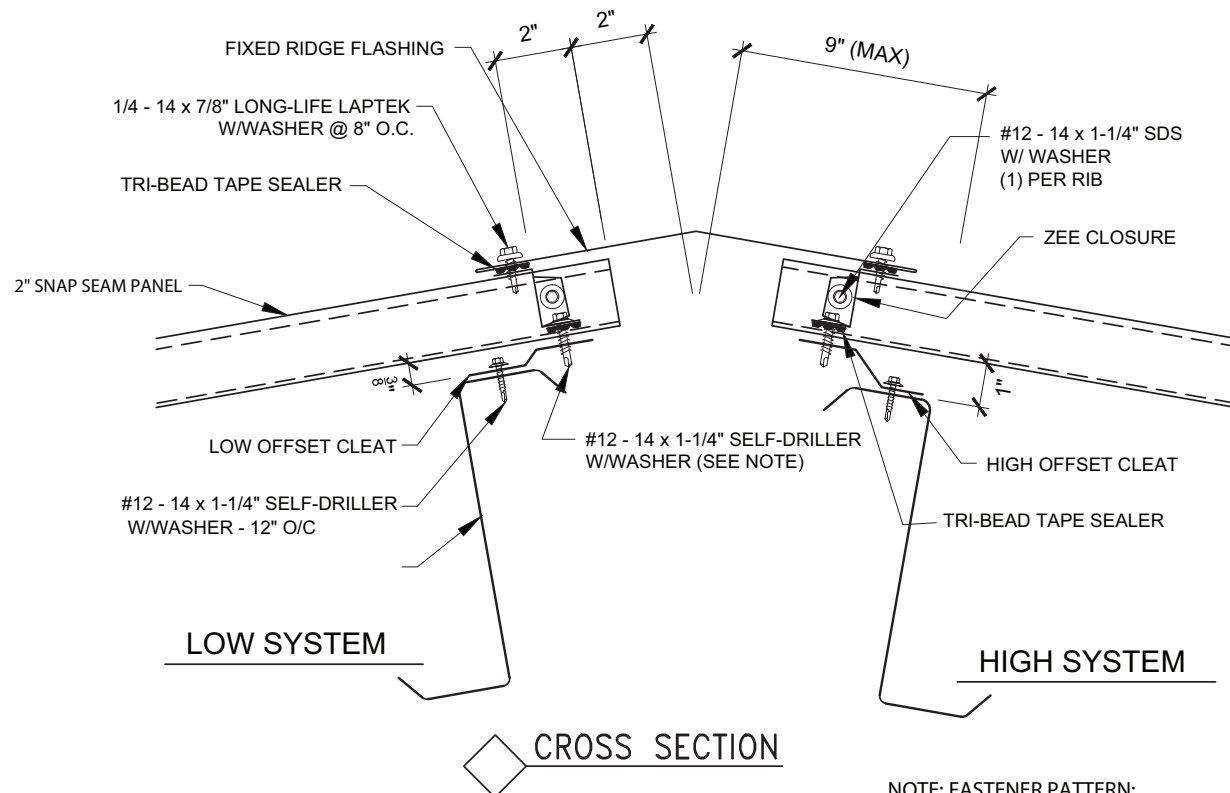
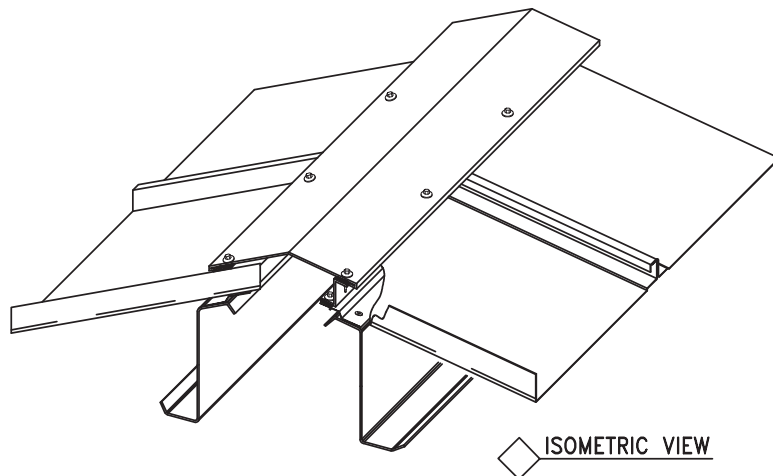
This chart should be used when specifying and ordering panels and trims.



<u>DETAIL</u>	<u>PAGE</u>
① EAVE	21-22, 31-32, 40
② PANEL ENDLAP	45
③ RIDGE	15-16, 17, 26-27, 37-38
④ RAKE	23, 25, 33-34, 41-42
⑤ VALLEY	19-20, 30, 39
⑥ HIP	18, 28-29
⑦ EAVE PARAPET	24, 35, 43
⑧ PARAPET	34, 36, 44

FIXED DETAILS SHALL NOT BE USED WITH PANELS GREATER  
THAN 25'-0" IN LENGTH.

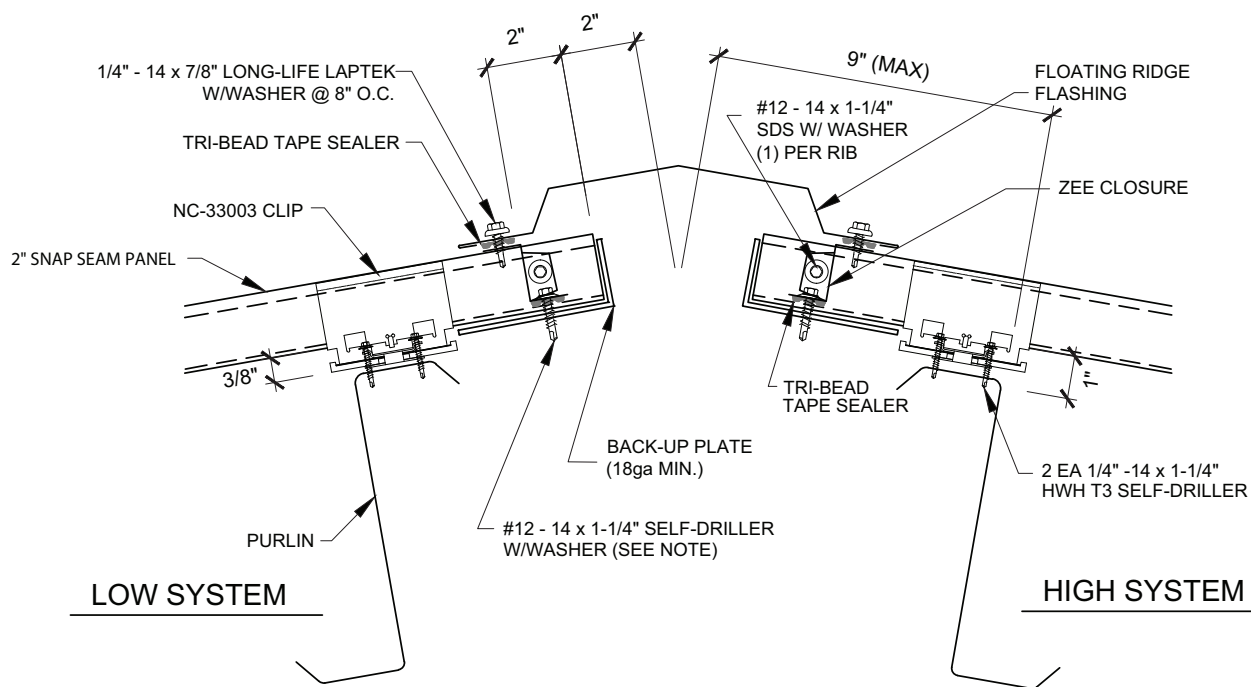
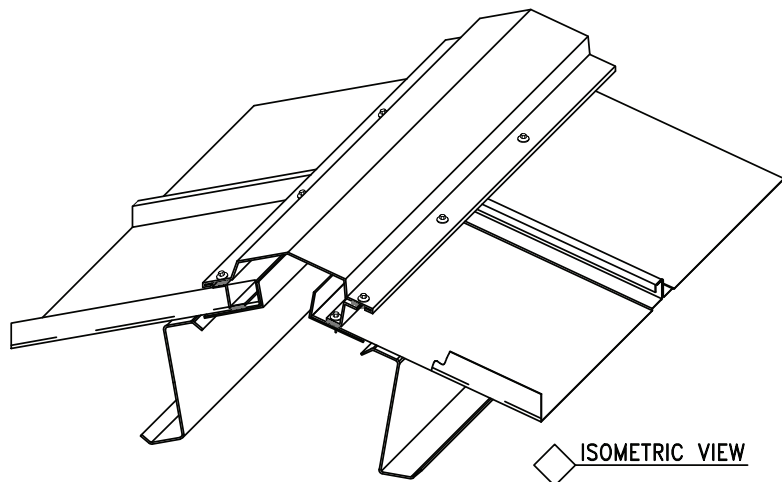




NOTE: FASTENER PATTERN:  
 17.5" PANEL [5 PER PANEL]  
 16" PANEL [4 PER PANEL]  
 12" PANEL [3 PER PANEL]

### NOTES:

1. Do not use this detail with the fixed eave or valley details.
2. Peak purlin spacing for fixed ridge is 5" from the centerline of ridge to web of purlin. If this dimension is not used, a special ridge flash will be required.
3. The upslope end of the panel is 3" from the web of the peak purlin.
4. Field cut "Z" closures to fit panel width.
5. Install Tri-Bead tape sealer to panels. Center of tape sealer should be 1- $\frac{3}{4}$ " from end of panel.
6. Install "Z" closures to peak purlin with Fastener 12-14x1-1/4" Tek2. Vertical leg of "Z" closure should be 2" from end of panel.
7. Seal end of "Z" closure to panel seam with urethane sealant.
8. Attach ridge flash to "Z" closure with Fastener  $\frac{1}{4}$ "-14x $\frac{7}{8}$ " LL LAPTEK.



NOTE: FASTENER PATTERN:  
 17.5" PANEL [5 PER PANEL]  
 16" PANEL [4 PER PANEL]  
 12" PANEL [3 PER PANEL]

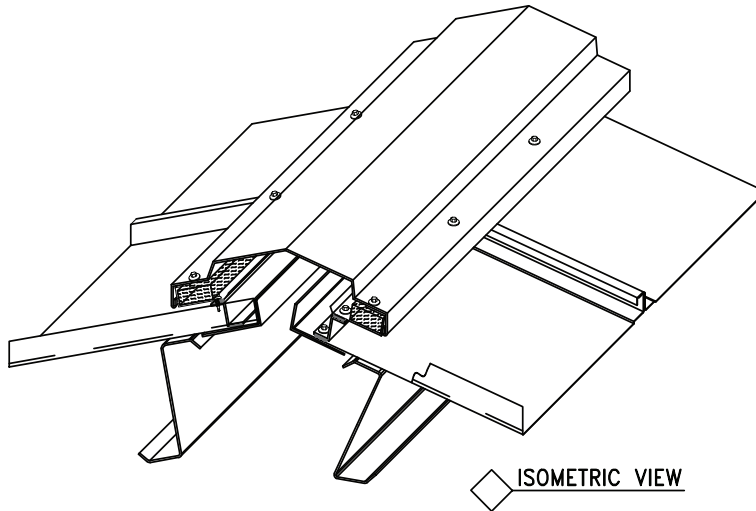
#### NOTES:

1. Do not use this detail with the offset cleat method of attachment at the eave or valley.
2. Install back-up plate onto end of panel.
3. Field cut "Z" closures to fit panel width.
4. Install Tri-Bead sealer to panels. The center of the tape sealer should be  $1\frac{1}{2}$ " from end of panel.
5. Install "Z" closures to panels with Fastener 12-14x1-1/4" Tek2.
6. Seal end of "Z" closure to panel seam with urethane sealant. Install Tri-Bead tape sealer to top of "Z" closure.
7. Attach ridge flash to "Z" closure with Fastener  $\frac{1}{4}$ "-14x $\frac{7}{8}$ " LL LAPTEK

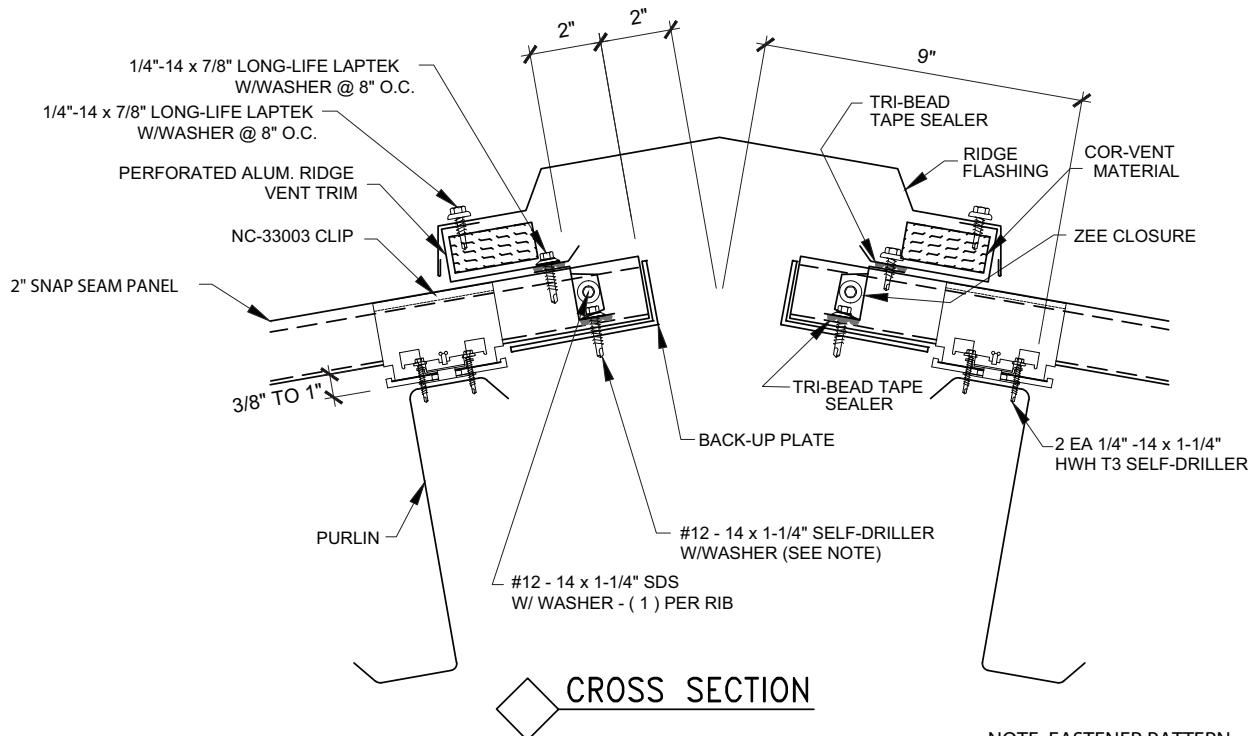


# TYPICAL DETAILS FLOATING VENTED RIDGE

## Details over Steel Frame



ISOMETRIC VIEW

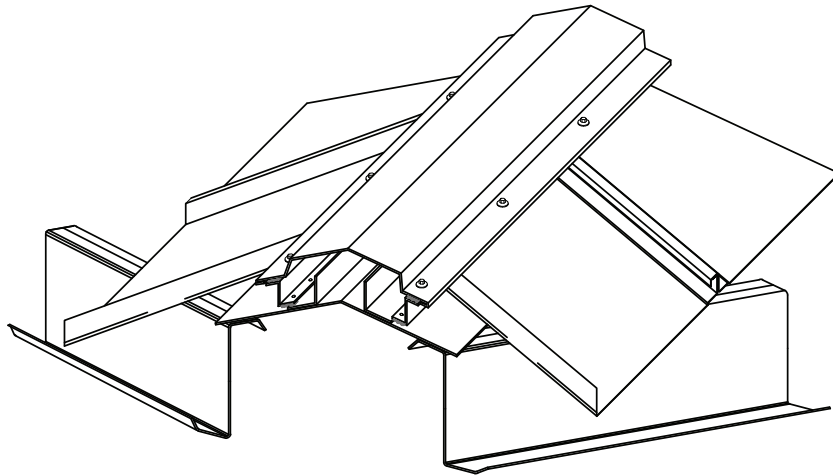


CROSS SECTION

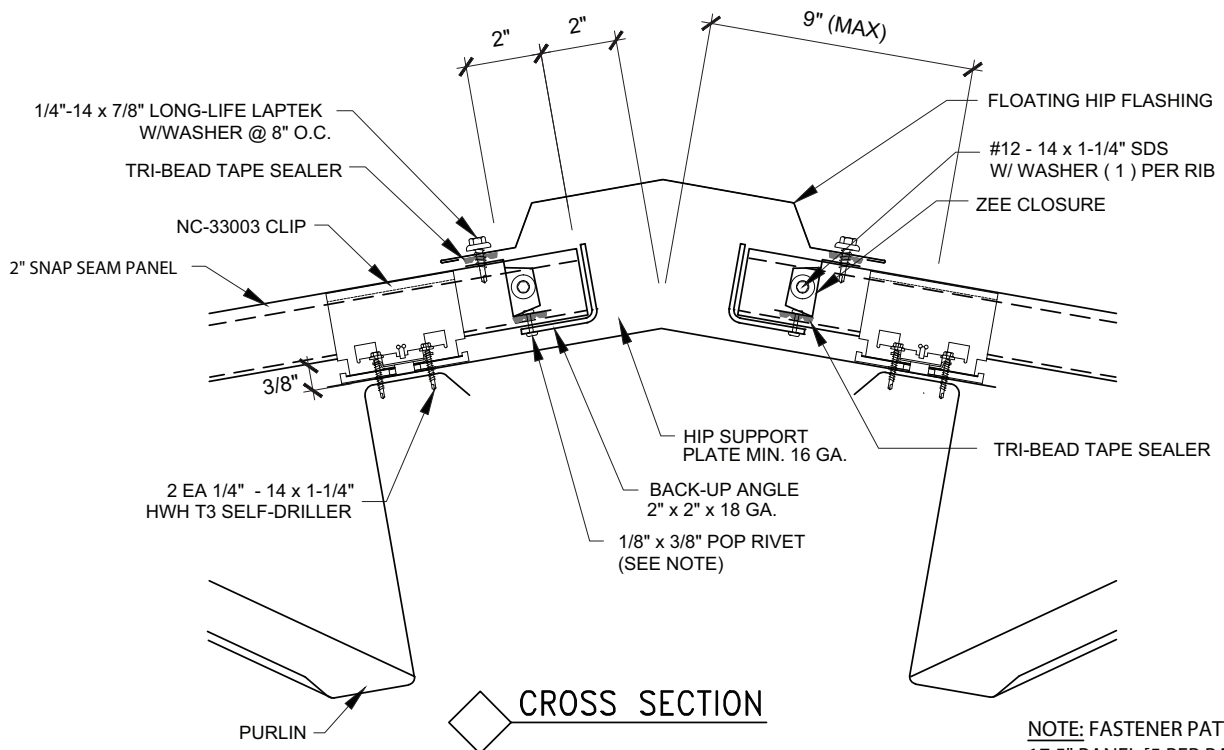
### NOTES:

1. Do not use this detail with the offset cleat method of attachment at the eave or valley.
2. Install back-up plate onto end of panel.
3. Field cut "Z" closures to fit panel width.
4. Install Tri-Bead tape sealer to panels. The center of tape sealer should be 1- $\frac{1}{2}$ " from end of panel.
5. Install "Z" closures to panels with Fastener #12 - 14 x 1-1/4" Tek2.
6. Seal end of "Z" closure to panel seam with urethane sealant. Install Tri-Bead tape sealer to top of "Z" closure.
7. Install vented metal to outside closures with Fastener  $\frac{1}{4}$ "-14x $\frac{7}{8}$ " Lap Tek.
8. Attach ridge flash with Fastener  $\frac{1}{4}$ "-14x $\frac{7}{8}$ " Lap Tek at 8" o.c. to vented metal.

NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]



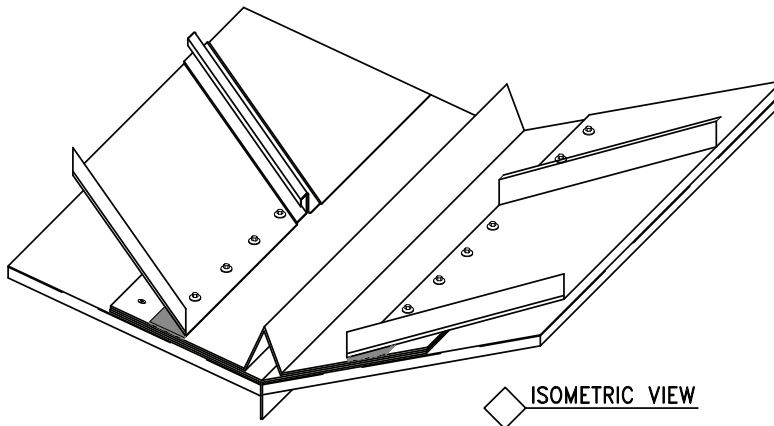
ISOMETRIC VIEW



NOTE: FASTENER PATTERN:  
 17.5\"/>

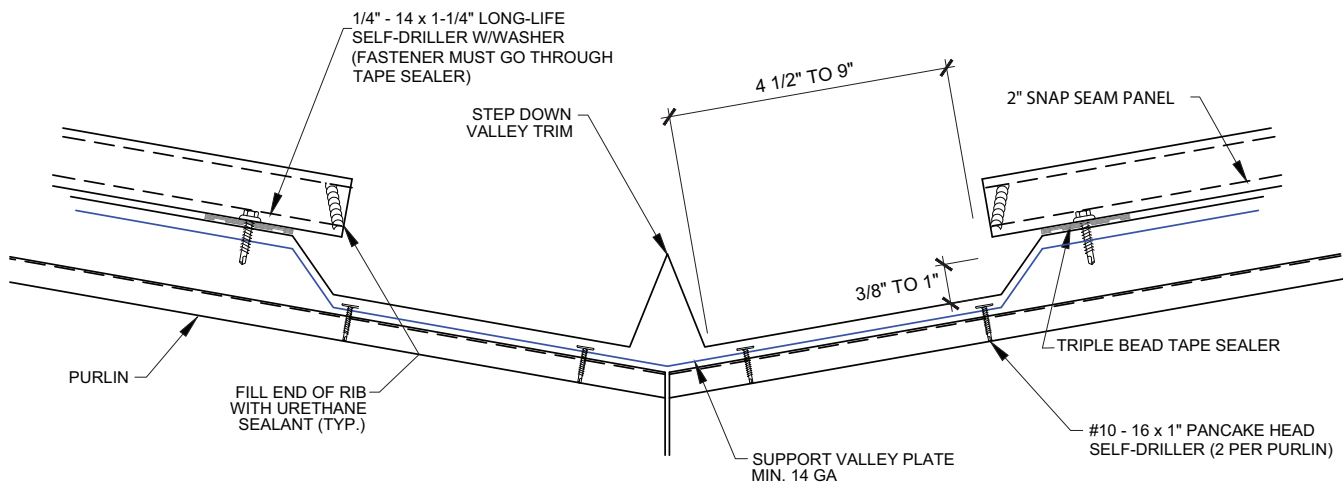
#### NOTES:

1. Do not use this detail with the offset cleat method of attachment at the eave or valley.
2. Bevel cut and install panels to follow slope of ridge.
3. Install Tri-Bead tape sealer to panels, running parallel to the ridge. Center of tape sealer should be 3-1/2\"/>



ISOMETRIC VIEW

FIXED DETAILS SHALL NOT BE USED WITH PANELS GREATER THAN 25'-0" IN LENGTH.

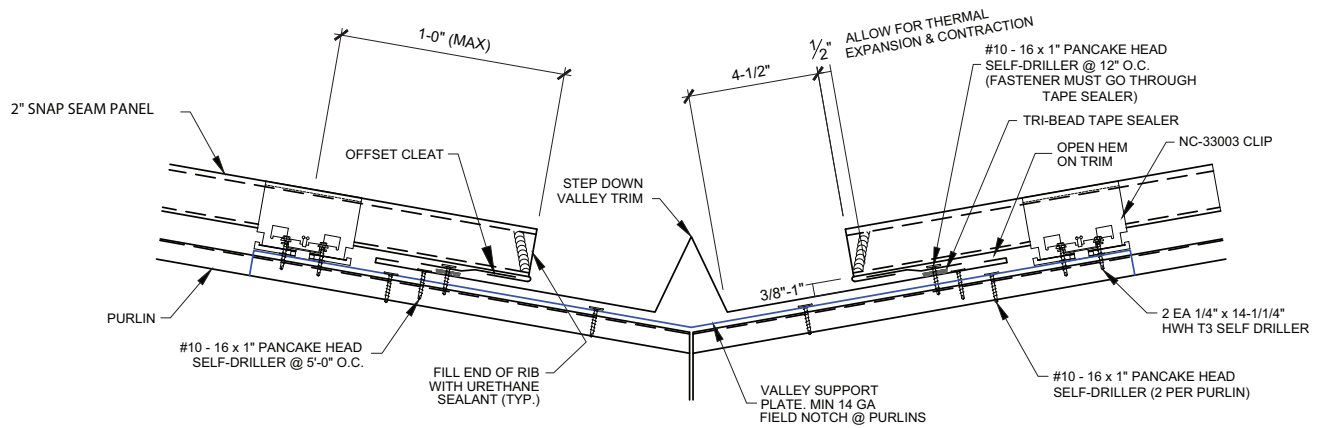
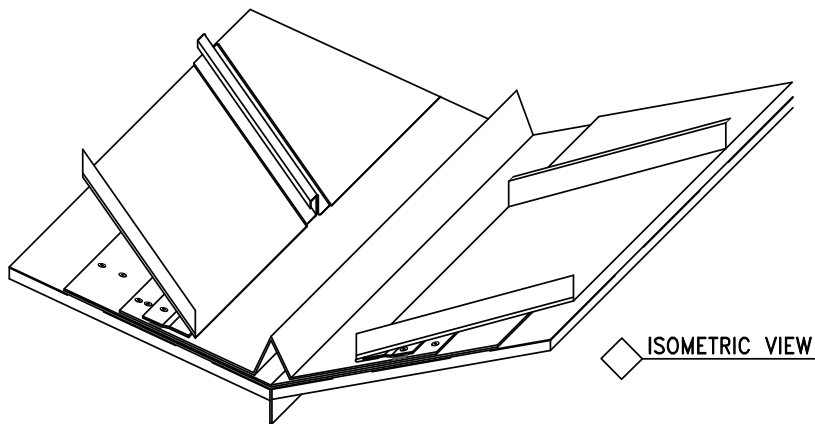


CROSS SECTION

NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]

### NOTES:

1. For valleys longer than 30'-0", use step down trim.
2. Do not use this detail with fixed ridge or hip details.
3. Ends of panels should be 4'- $\frac{1}{2}$ " minimum from the vertical leg of valley trim.
4. Install Triple Bead tape sealer continuously under panel.
5. Attach panel to support plate with Fastener  $\frac{1}{4}$ "-14x1- $\frac{1}{4}$ " Long Life Driller. Fasteners must go through tape sealer under panel.



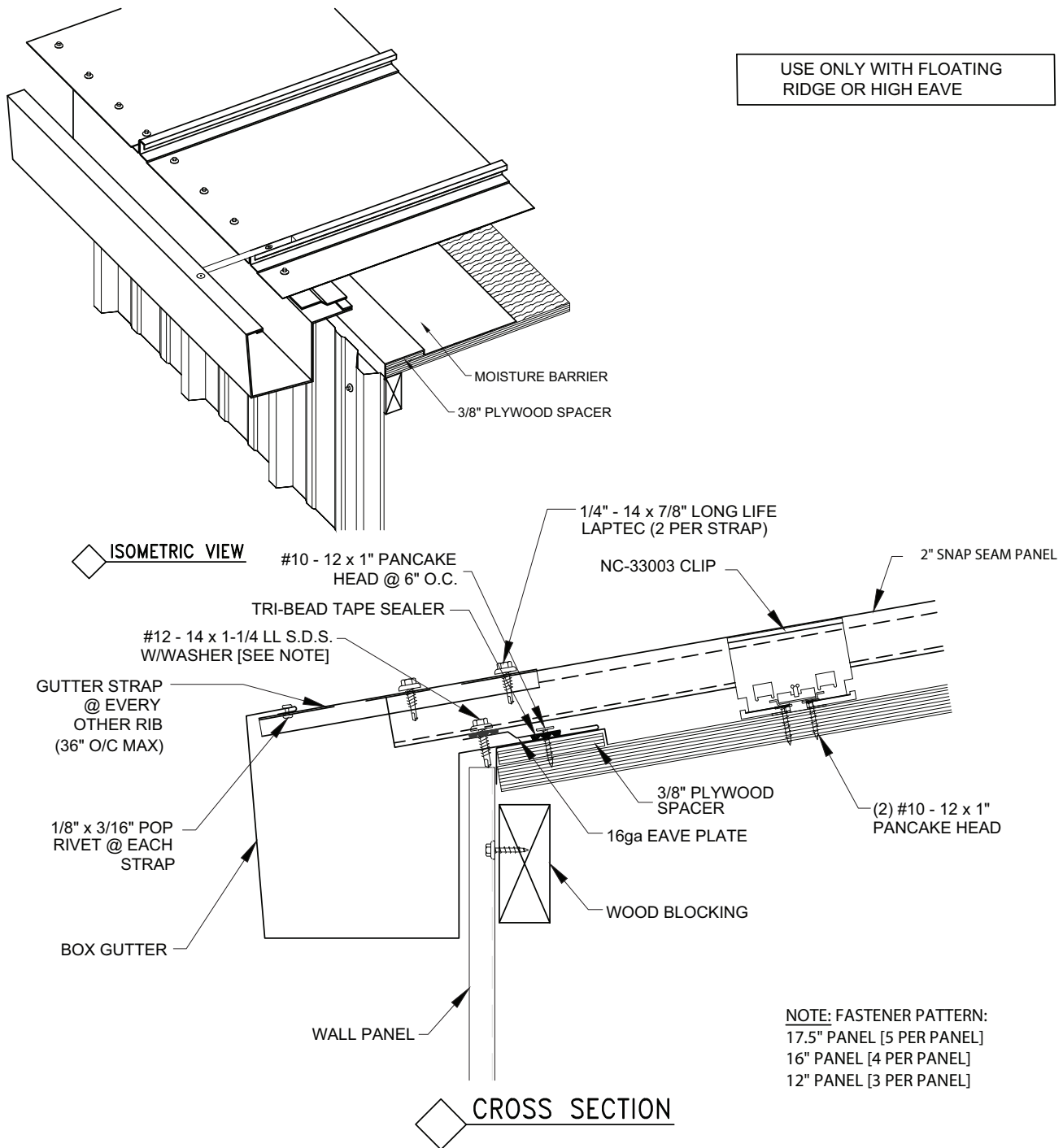
## CROSS SECTION

### NOTES:

1. For valleys longer than 30'-0", use step down valley trim and step down valley plate.
2. Panels must be attached to substructure at the ridge or hip to prevent them from sliding downslope.
3. Offset cleat is installed continuous along slope of valley over Tri-Bead tape sealer with Fastener #10 - 16 x 1" Pancake Head S.D. at 1'-0" o.c. Fasteners must go through tape sealer.
4. Clip spacing should not exceed 4'-0" o.c for 24 gauge panels or 5'-0" o.c. for 22 gauge panels.
5. Add 1 1/2" to panel length for the panel hem.

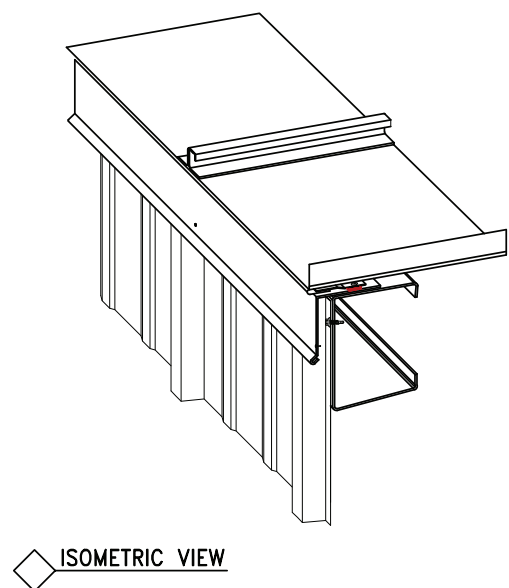
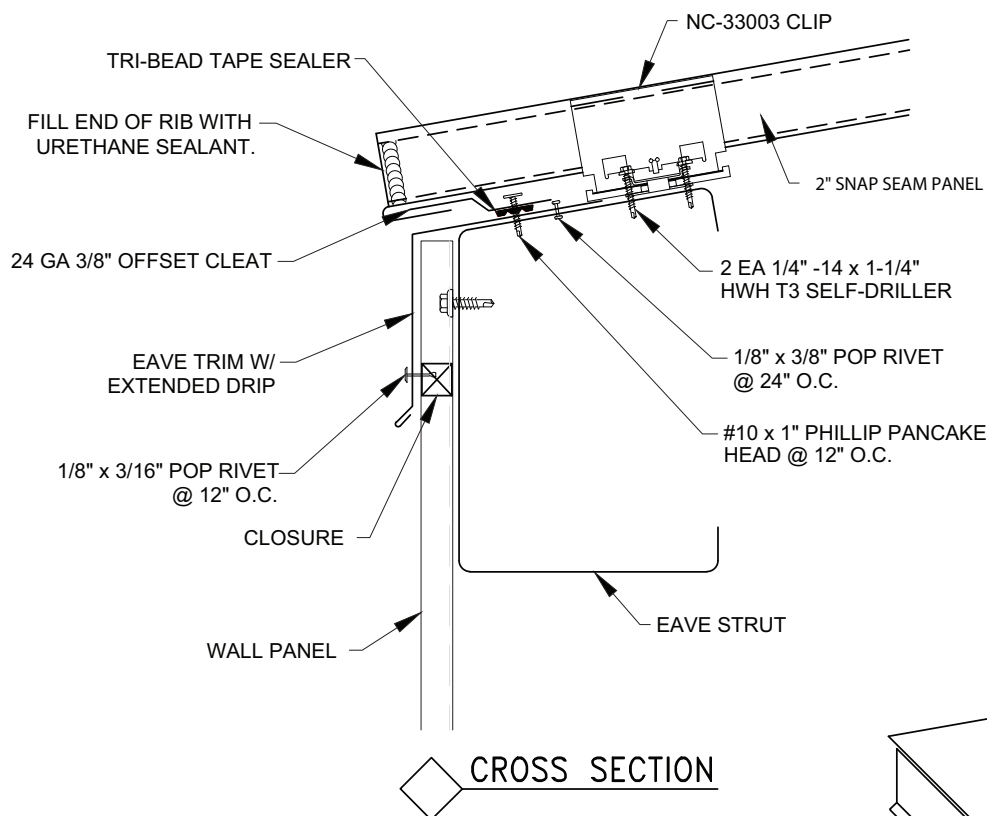
# TYPICAL DETAILS FIXED EAVE W/ GUTTER

Details over Steel Frame



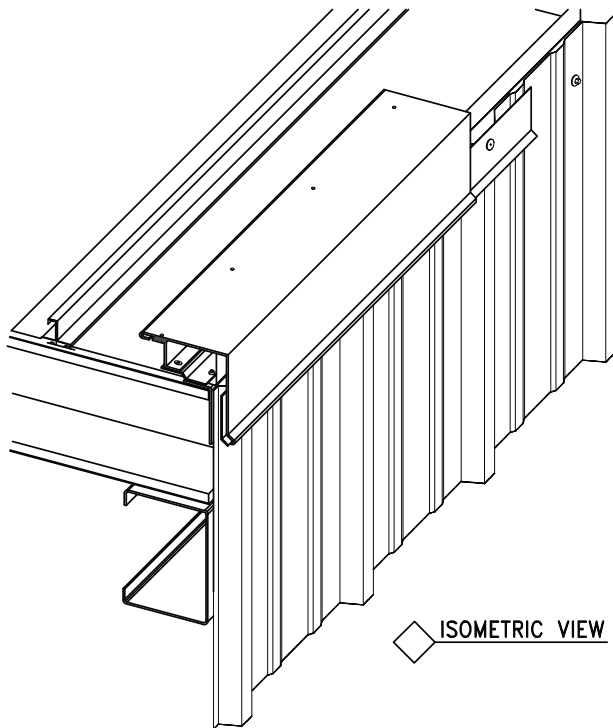
## NOTES:

1. The gutter with drip edge method of attachment should be used when ridge, peak or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
2. Install gutter to wood deck with Fastener  $\frac{1}{4}$ " - 14 x 1-1/4" LL Driller.
3. Attach gutter straps to gutter with Fastener  $\frac{1}{4}$ " - 14 x  $\frac{7}{8}$ " long life laptec
4. This detail may be used on roofs with pitches of 2:12 or less.
5. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher.



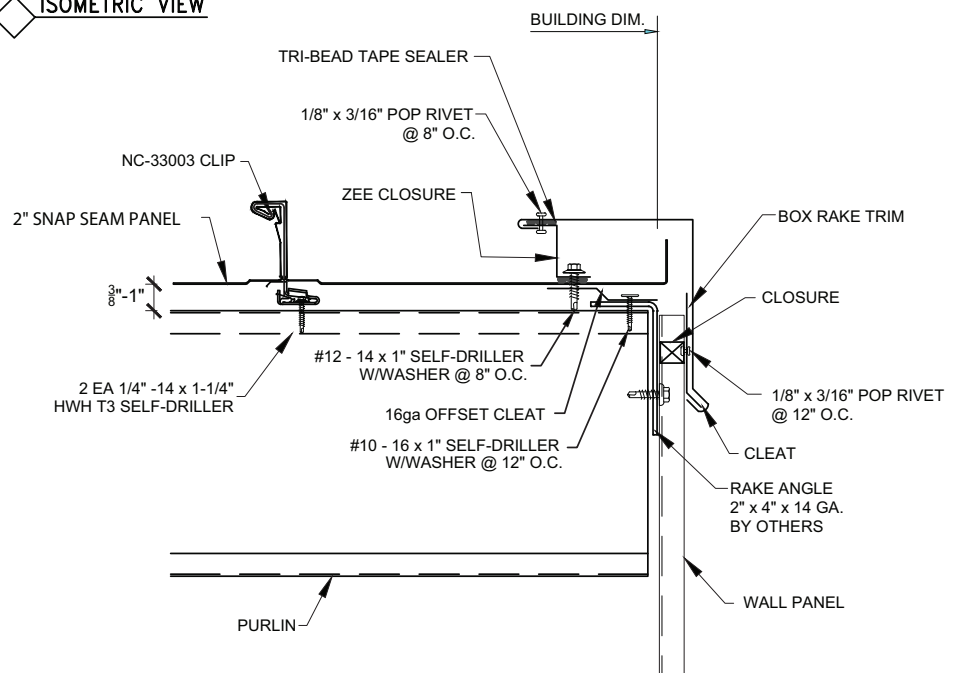
#### NOTES:

1. The offset cleat method of attachment should be used when ridge, high side eave or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
2. Attach offset cleat to eave strut with Fastener #10x1" Phillips Pancake Head at 1'-0" o.c.
3. Field notch male and female legs of panel 1-1/2".
4. Engage panel hemming tool onto protruding panel.
5. Bend panel down to form an open hem.
6. Hem may be tightened with a pair of vise grip "duck bills"
7. Panel engagement shown is for panel runs up to 100'-0" long.



ISOMETRIC VIEW

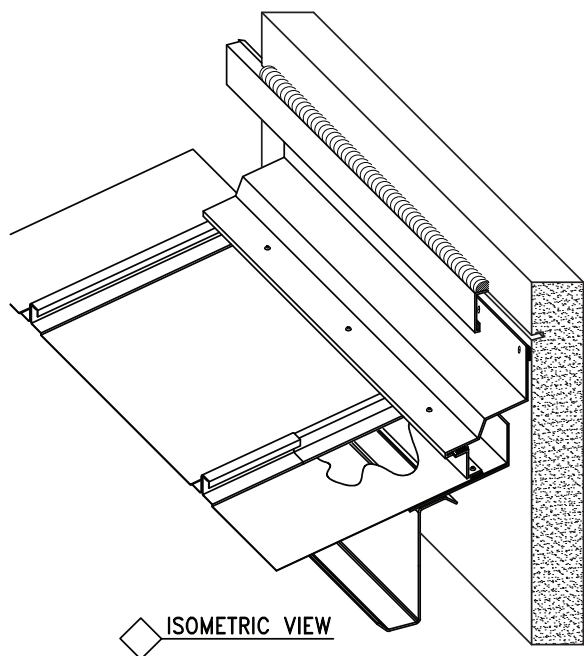
FIXED DETAILS SHALL  
NOT BE USED WITH  
PANELS GREATER THAN  
25'-0" IN LENGTH.



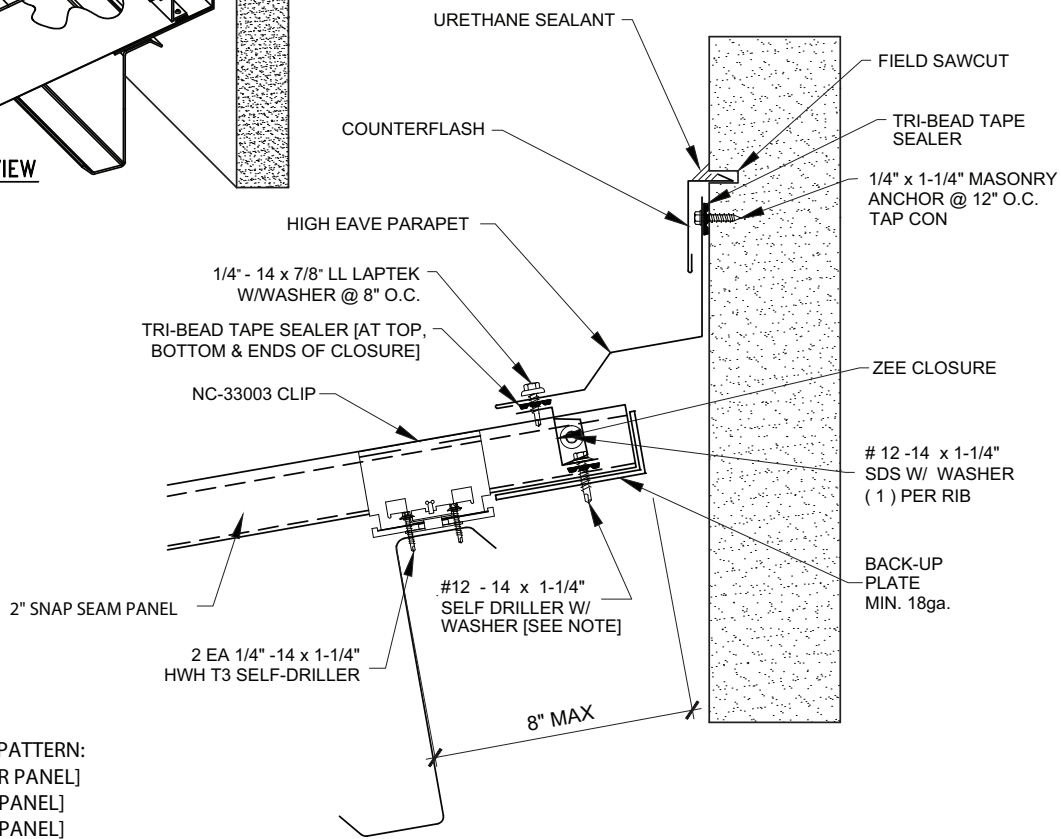
CROSS SECTION

NOTES:

1. Do not use this detail on panel lengths over 25'-0".
2. Using a wall panel other than 1- $\frac{1}{4}$ " "R" Panel will affect the top dimension of the box rake.
3. Install "Z" closure to panel with Fastener #12 - 14 x 1" Tek2 at 8" o.c. on top of Tri-Bead tape sealer. Apply additional tape sealer to top leg of "Z" closure. Offset fasteners from purlins below.
4. Lap all "Z" closures 2". seal laps with urethane sealant.
5. If roof finishes on module, finishing rake detail will be similar to starting detail. If roof finishes off module, field cut and bend panel and install "Z" closure using Fastener #12 - 14 x 1" Tek2 at 1'-0" o.c.
6. Attach rake trim to "Z" closure with Fastener  $\frac{1}{8}$ " x  $\frac{3}{16}$ " pop rivet.



ISOMETRIC VIEW



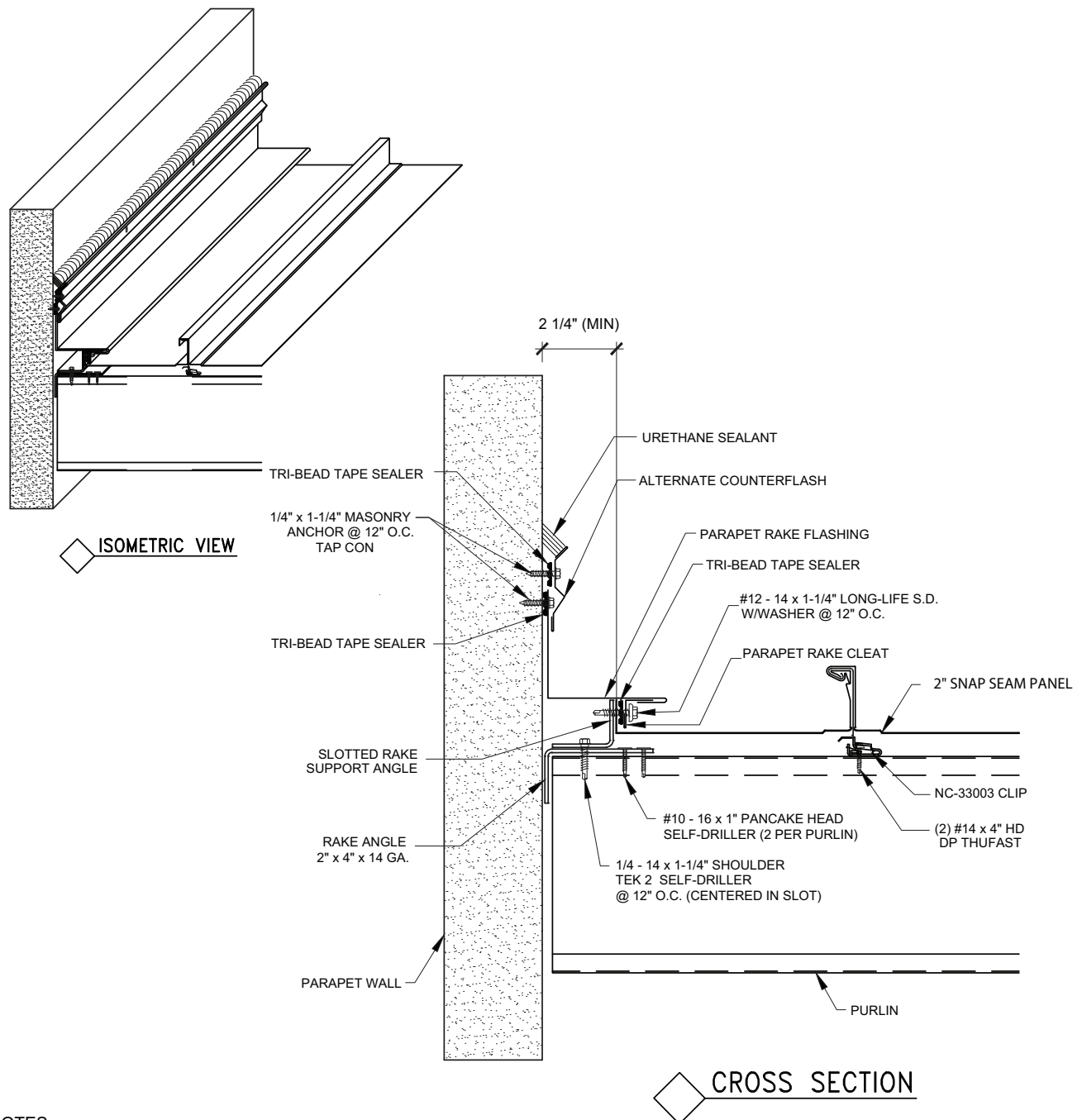
CROSS SECTION

NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]

NOTES:

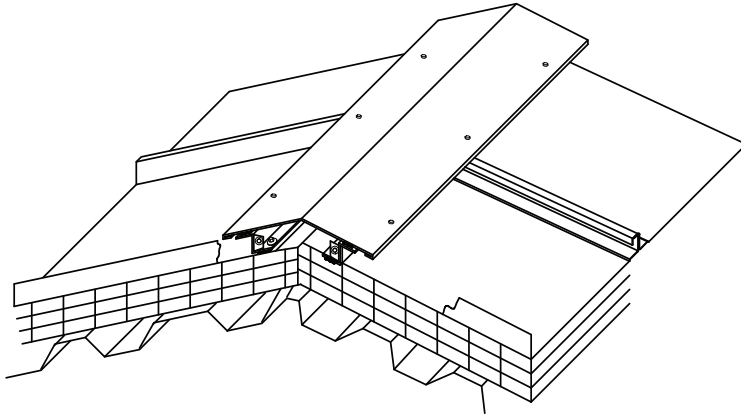
1. Do not use this detail with the offset cleat method of attachment at the eave or valley.
2. Install back-up plate onto end of panel.
3. Field cut "Z" closures to fit panel width.
4. Apply Tri-Bead tape sealer to panels. Center of tape sealer should be 1-1/2" from end of panel.
5. Install "Z" closures to panels with Fastener #12 - 14 x 1-1/4" Self-Driller.
6. Seal ends of "Z" closures to the panel seams with urethane sealant. Apply Tri-Bead tape sealer to the top leg of "Z" closures.
7. Attach parapet high side eave trim to "Z" closure with Fastener 1/4" - 14 x 7/8" Long life laptek 8" o.c.
8. Seal counterflash to parapet wall with urethane sealant.



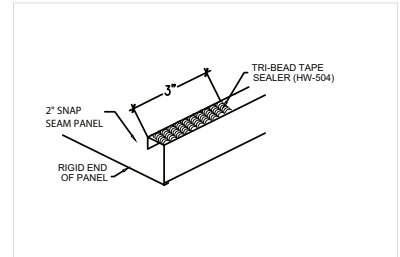


## NOTES:

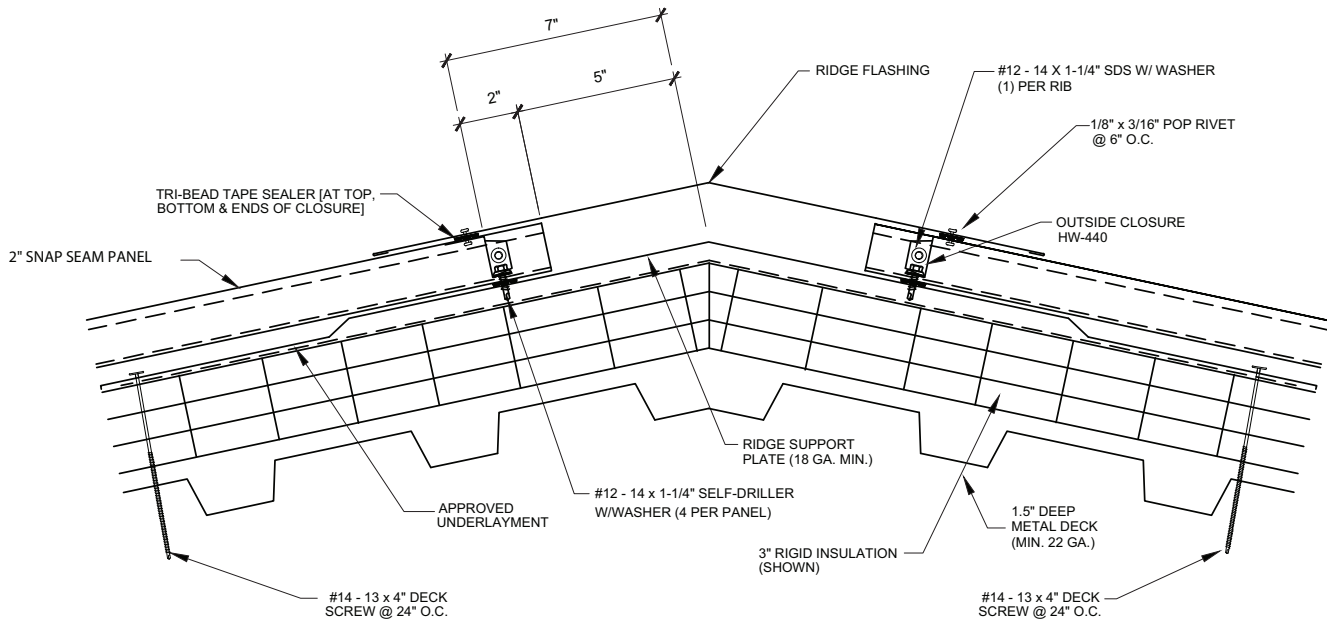
1. Install floating rake support with Fastener  $\frac{1}{4}$ " - 14 x  $1\frac{1}{4}$ " Shoulder Tek 2.
2. Engage female leg of panel over rake support.
3. Apply Tri-Bead tape sealer to vertical leg of panel. Install parapet rake cleat to panel leg with Fastener  $\frac{1}{4}$ " x 14 x  $1\frac{1}{4}$ " Long Life Driller at 12" o.c. Fasteners must go through rake support.
4. Engage open hem of parapet rake flash onto parapet rake cleat and fasten top leg to parapet wall with Fastener  $\frac{1}{4}$ " x  $1\frac{1}{4}$ " Tap Con Masonry Anchor
5. If roof finishes on module, finishing detail will be similar to starting detail. If roof finishes off module, field cut and bend last panel run to fit against floating rake support. Install parapet rake cleat, tape sealer, and parapet rake flash as previously described.
6. If parapet rake flash is not to be immediately installed, temporarily fasten panels to rake support to prevent wind damage.



FIXED DETAILS SHALL  
NOT BE USED WITH  
PANELS GREATER  
THAN 25'-0" IN LENGTH.



ISOMETRIC VIEW



CROSS SECTION

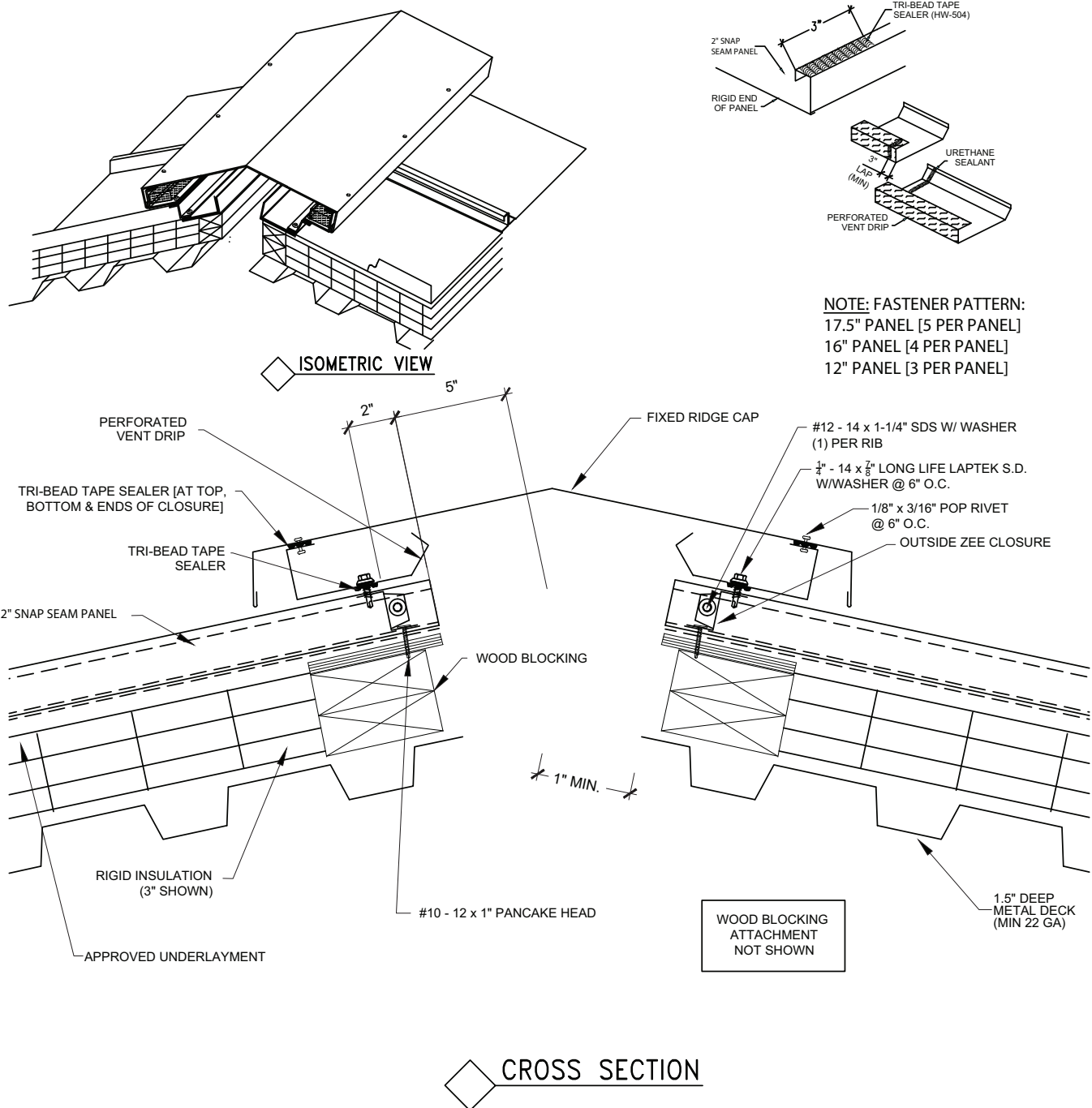
NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]

#### NOTES:

1. Ridge must have an offset support plate.
2. Install Tri-Bead tape sealer to top leg of outside closure,
3. Attach ridge/hip flash to outside closures with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " POP RIVET @ 6" O.C.

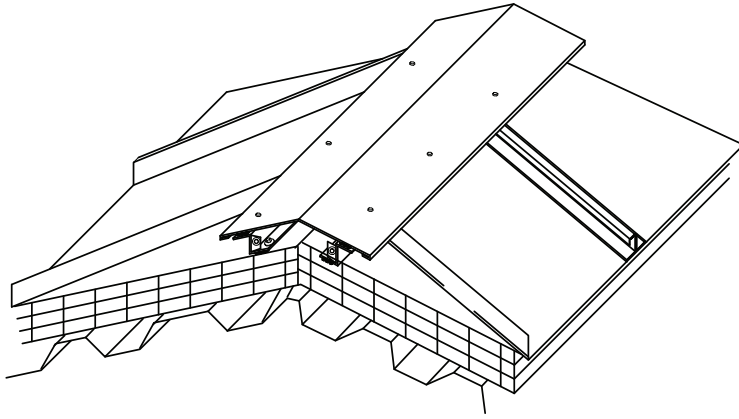
# TYPICAL DETAILS FIXED VENTED RIDGE

## Details over ISO over Metal Deck

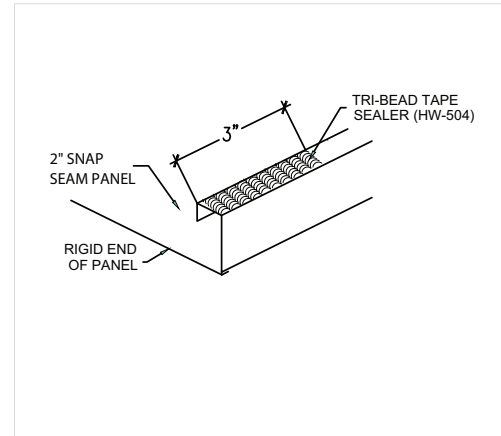


### NOTES:

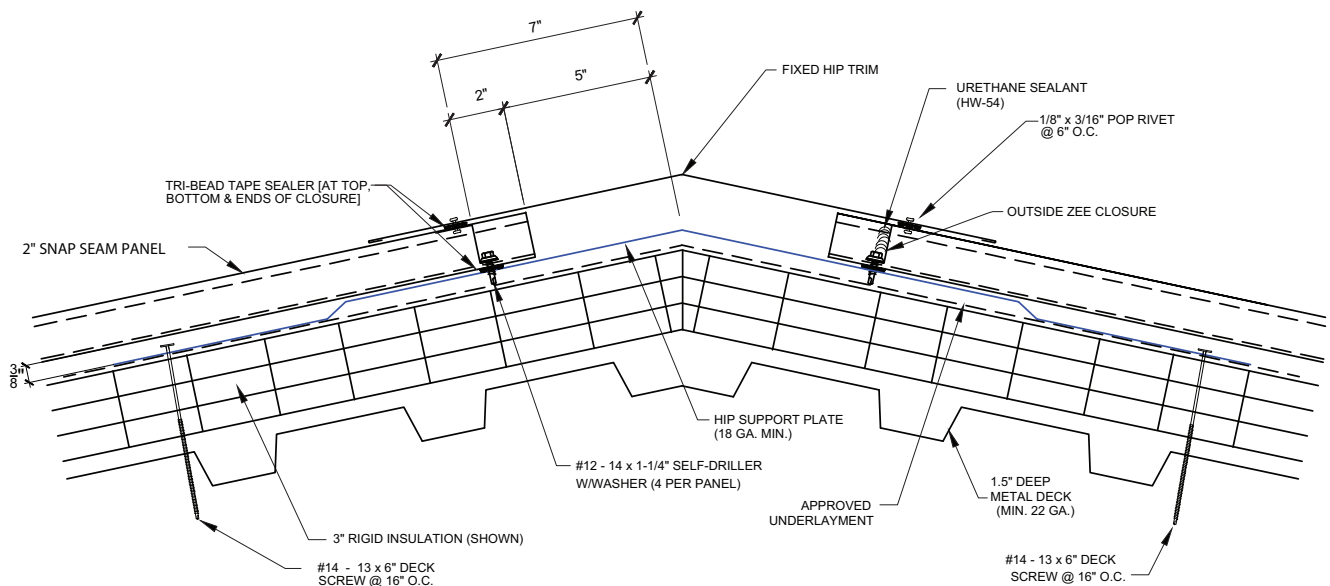
1. Ridge must have an offset support plate (leaving opening at ridge to allow ventilation).
2. Install Tri-bead tape sealer to top of outside closure.
3. Attach perforated vent drip to outside closure with 1/4" - 14 x 7/8" Long Life Laptek S.D. w/ washer at 6" O.C. Seal laps in vent drip with urethane sealant.
4. Attach ridge flash to vent drip with 1/8" x 3/16" Pop Rivet @ 6" O.C.



ISOMETRIC VIEW



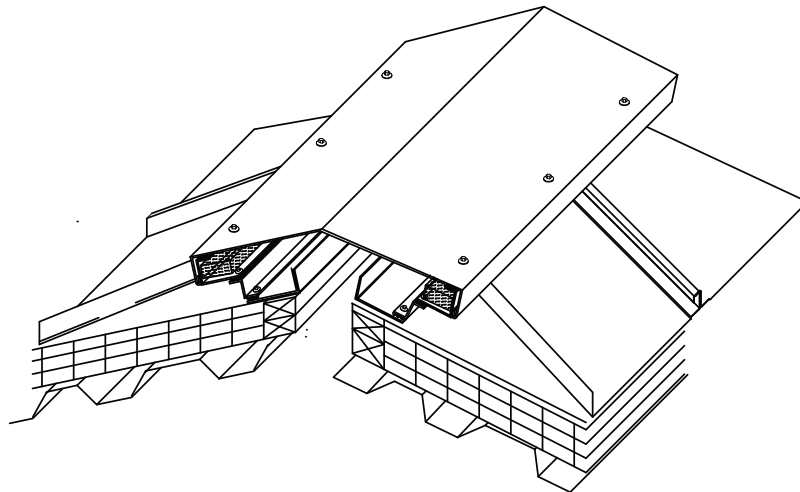
**NOTE: FASTENER PATTERN:**  
 17.5" PANEL [5 PER PANEL]  
 16" PANEL [4 PER PANEL]  
 12" PANEL [3 PER PANEL]



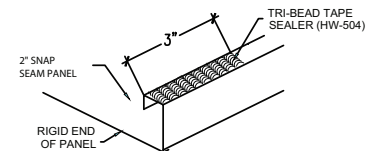
CROSS SECTION

**NOTES:**

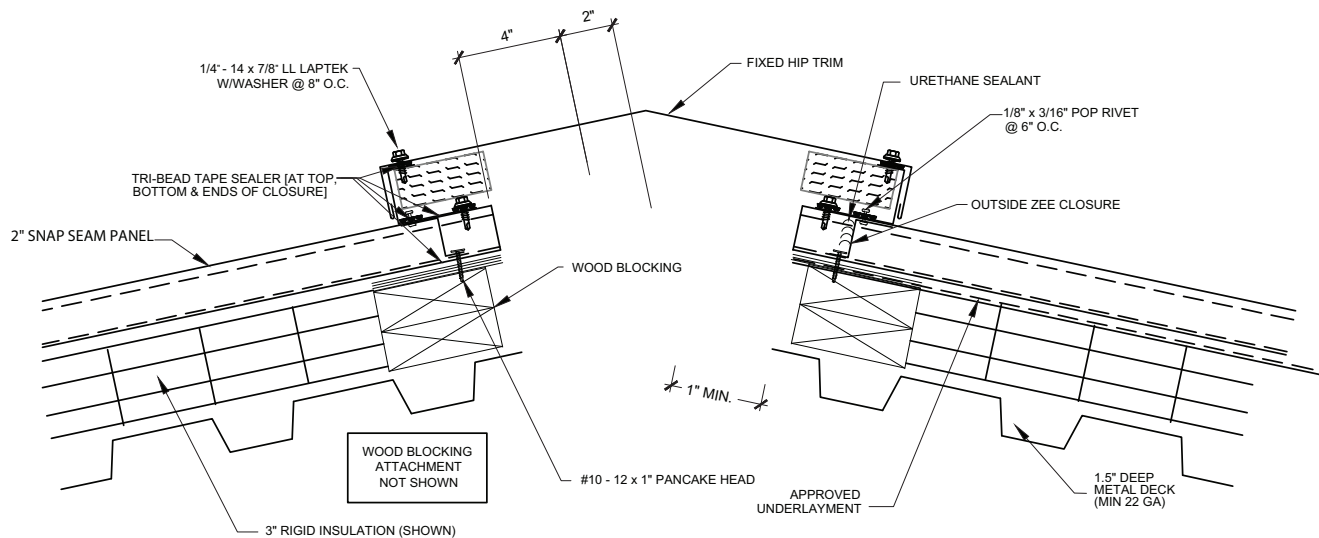
1. Hip must have an offset support plate to reinforce panels between purlins.
2. Bevel cut and install panels to follow slope of hip.
3. Install Tri-bead sealer to pans of panels, running parallel to the hip. Center of tape sealer should be 1- $\frac{1}{2}$ " from end of panels.
4. Bevel cut and install "Z" closures to panel and hip plates with #12 - 14 x 1" S.D.w/ washer at 6" O.C. (max). Vertical leg of "Z" closure should be 4" from center of hip. Seal sides and top of "Z" closures to panel seems with urethane sealant.
5. Attach ridge/hip flash to outside closures with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " pop rivet @ 6" O.C.



ISOMETRIC VIEW



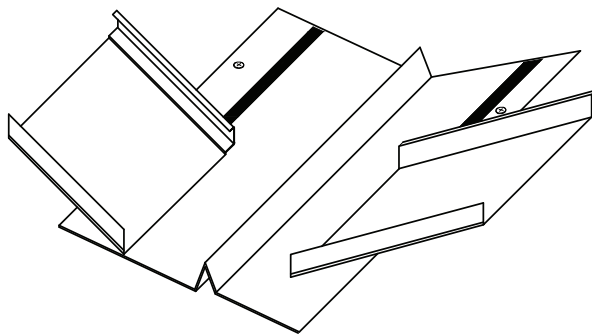
NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]



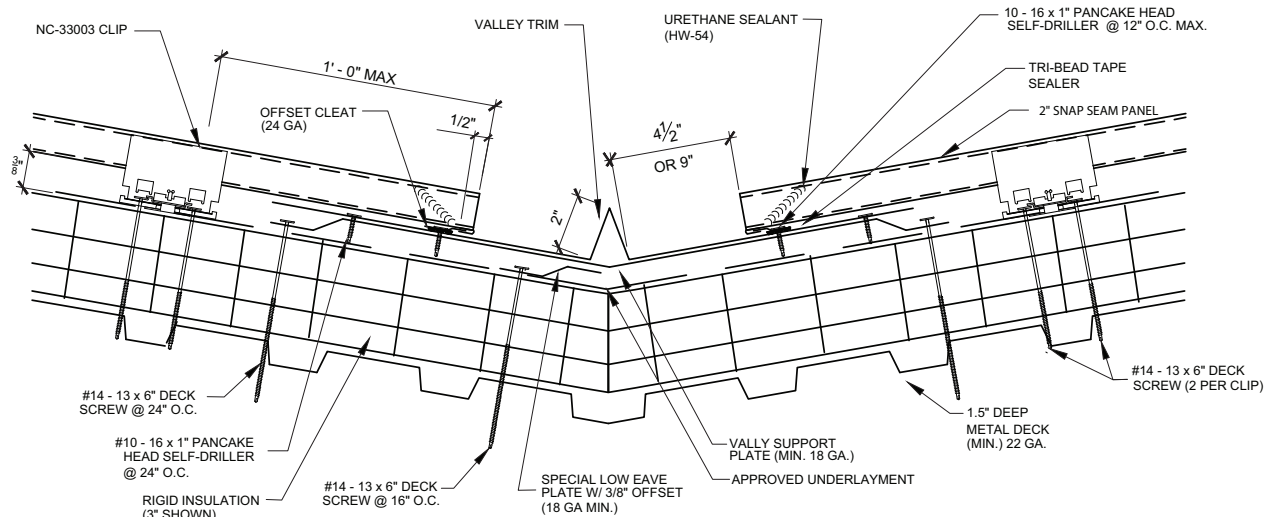
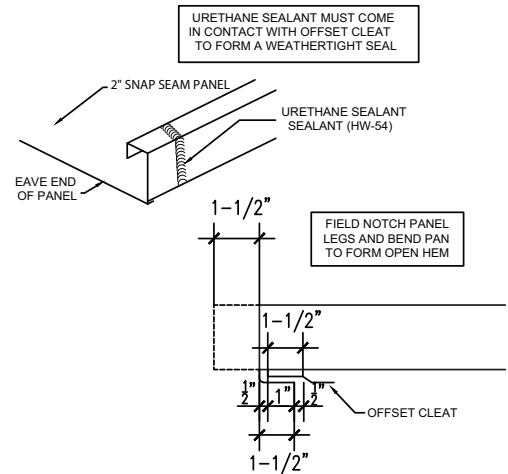
CROSS SECTION

### NOTES:

1. Hip must have an offset support plate to reinforce panels between purlins.
2. Bevel cut and install panels to follow slope of hip.
3. Install Tri-bead sealer to pans of panels, running parallel to the hip. Center of tape sealer should be 1- $\frac{1}{2}$ " from end of panels.
4. Attach ridge/hip flash to outside closures with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " pop rivet @ 6" O.C.



ISOMETRIC VIEW



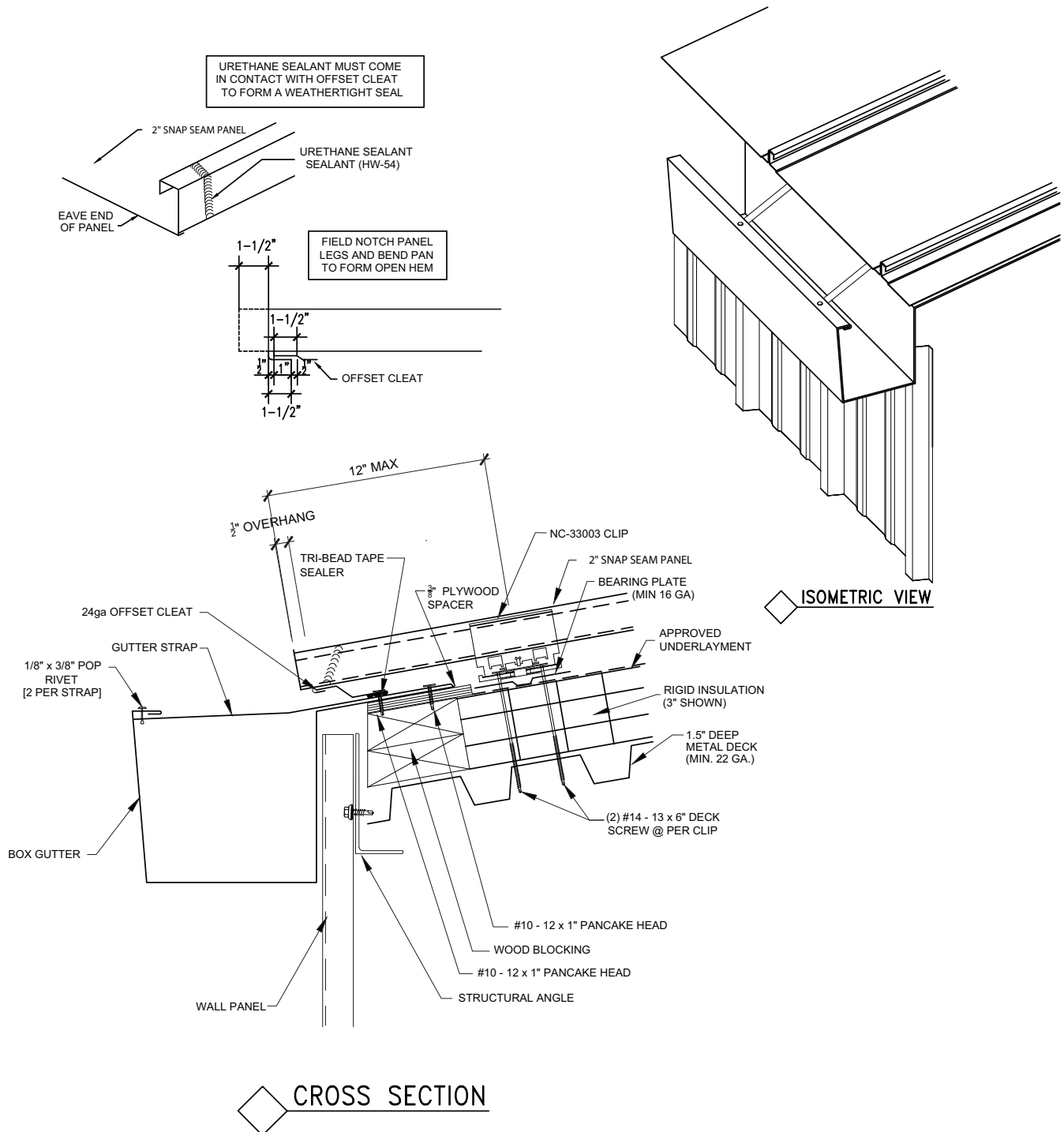
NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]

CROSS SECTION

1. For valleys longer than 30', use extended valley trim.
2. The hemmed panel method of attachment should be used when ridge, high side eave or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
3. Add 1-1/2" to panel length for the panel hem.
4. Do not use this detail on roof slopes less than 3:12.
5. On high systems, overhang the panel 1/2" downslope from the 1" vertical leg of the valley trim to keep water off of upper leg of valley trim.

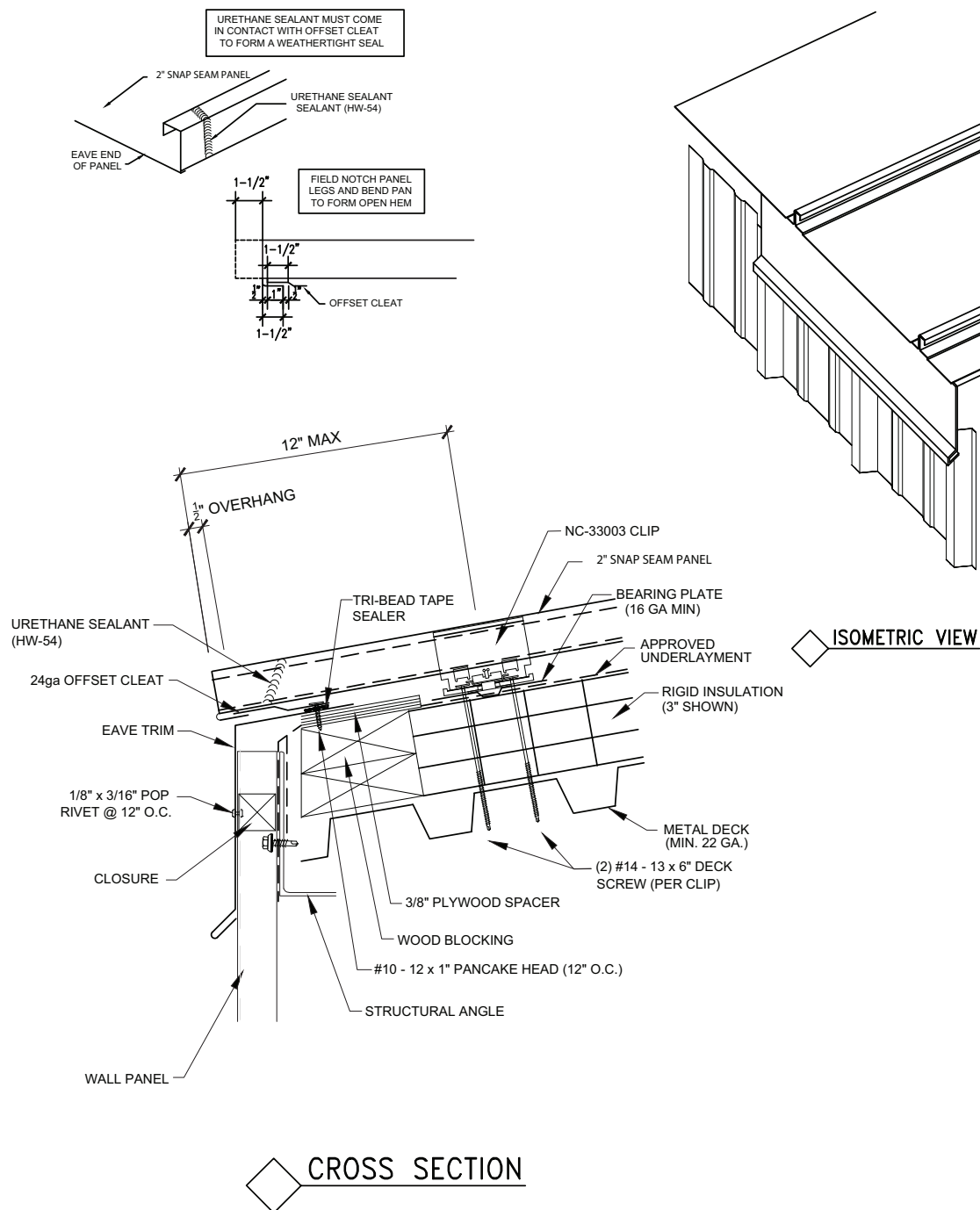
# TYPICAL DETAILS FLOATING EAVE WITH GUTTER

Details over ISO over Metal Deck



## NOTES:

1. The hemmed panel method of attachment should be used when ridge, high side eave or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
2. Attach offset cleat with #10 - 12 x 1" Pancake Head @ 12" O.C.
3. Add 1-1/2" to panel length for the panel hem.
4. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher.
5. Do not use this detail on roof slopes less than 3:12.



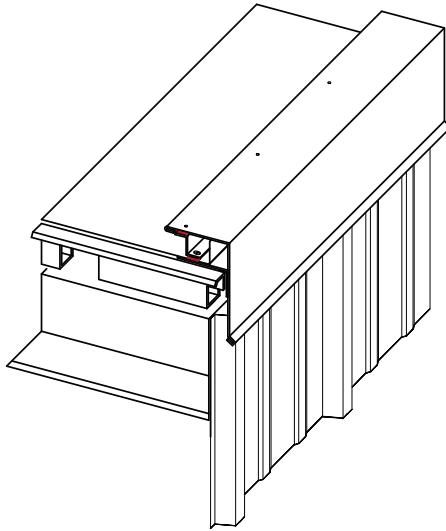
**NOTES:**

1. The hemmed panel method of attachment should be used when ridge, high side eave or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
2. Attach offset cleat with #10 - 12 x 1" Pancake Head at 1'-0" O.C.
3. Add 1-1/2" to panel length for the panel hem.
4. Do not use this detail on roof slopes less than 3:12.

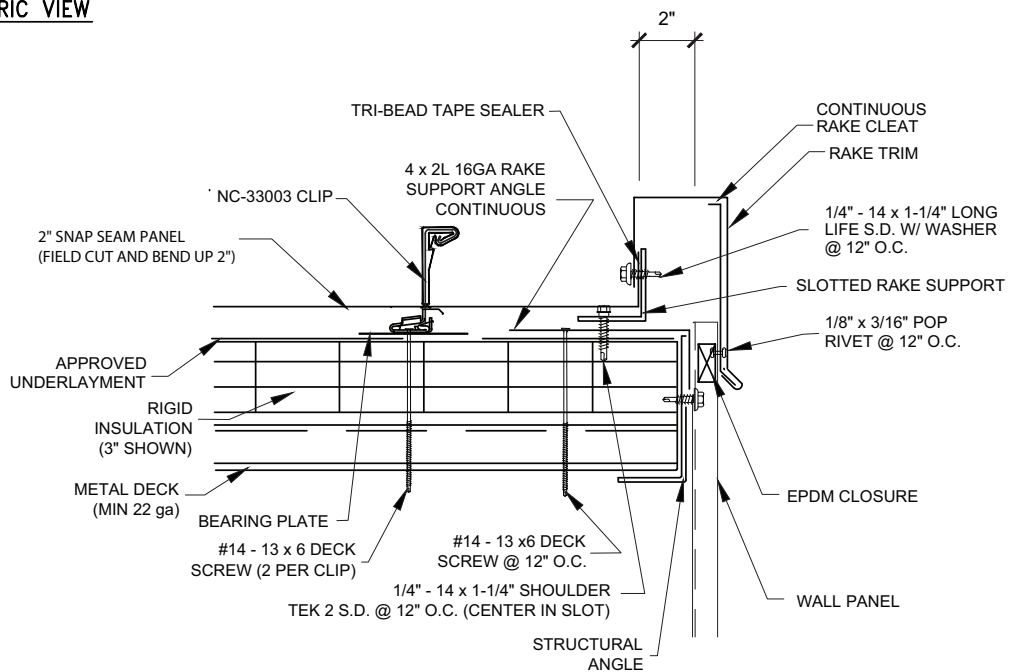


# TYPICAL DETAILS FLOATING RAKE

## Details over ISO over Metal Deck



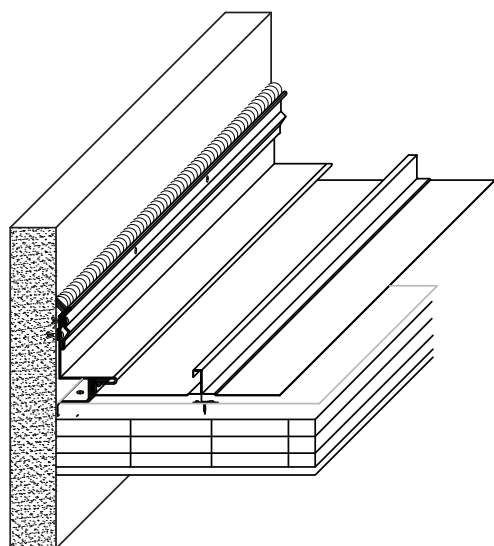
ISOMETRIC VIEW



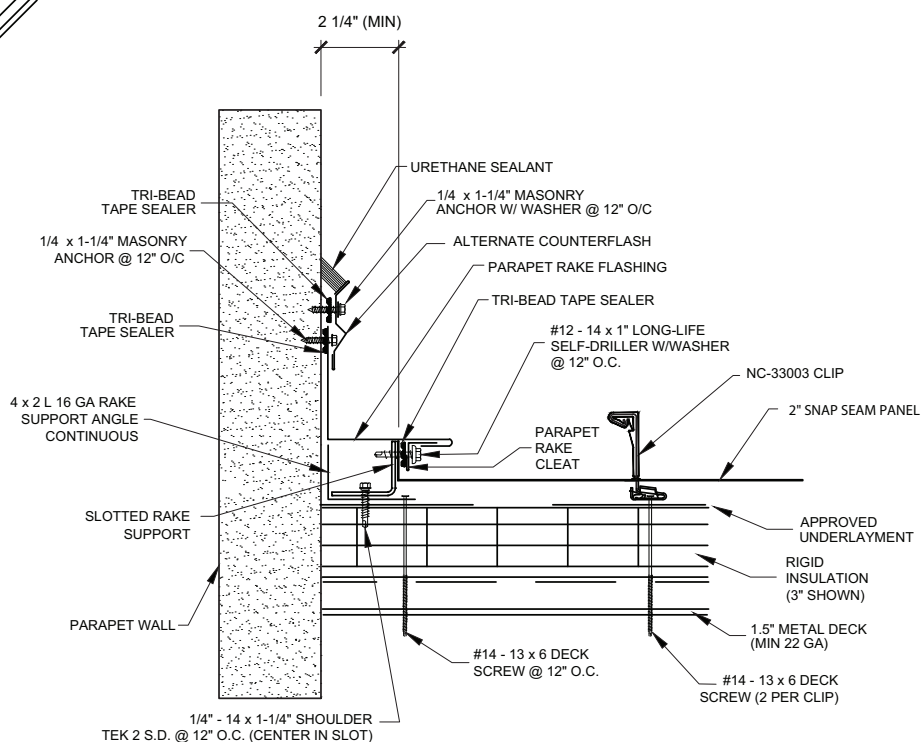
CROSS SECTION

### NOTES:

1. Install rake support with  $\frac{1}{4}$ " - 14 x 1-1/4" Shoulder Tek 2 S.D. @ 24" O.C. (centered in slot)
2. Engage female leg of panel over rake support.
3. Apply Tri-Bead tape sealer to vertical of panel.
4. Attach continuous cleat to wall panels with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " Pop Rivet @ 12" O.C. at each high rib.
5. Install rake trim with  $\frac{1}{4}$ " - 14 x 1-1/4" Long Life S.D. w/ washer @ 12" O.C. **Fastener must go through rake support.**
6. If roof finishes on module, finishing detail will be similar to starting detail except, field cut top of panel rib so only the vertical leg of panel remains. If roof finishes off module, field cut and bend last panel to fit against rake support.



ISOMETRIC VIEW



CROSS SECTION

#### NOTES:

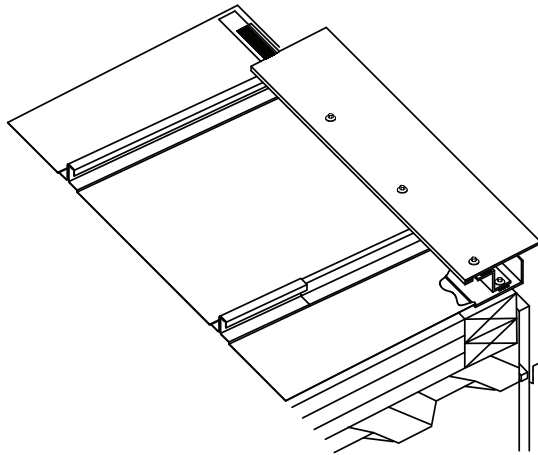
1. Install rake support with  $\frac{1}{4}$ " - 14 x 1-1/4" Shoulder Tek 2 S.D. @ 24" O.C. (centered in slot)
2. Engage female leg of panel over rake support.
3. Apply Tri-Bead tape sealer to vertical of panel.
4. Attach continuous cleat to wall panels with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " Pop Rivet @ 12" O.C. at each high rib.
5. Install rake trim with  $\frac{1}{4}$ " - 14 x 1-1/4" Long Life S.D. w/ washer @ 12" O.C. **Fastener must go through rake support.**
6. If roof finishes on module, finishing detail will be similar to starting detail except, field cut top of panel rib so only the vertical leg of panel remains. If roof finishes off module, field cut and bend last panel to fit against rake support.

# TYPICAL DETAILS FIXED HIGH SIDE EAVE

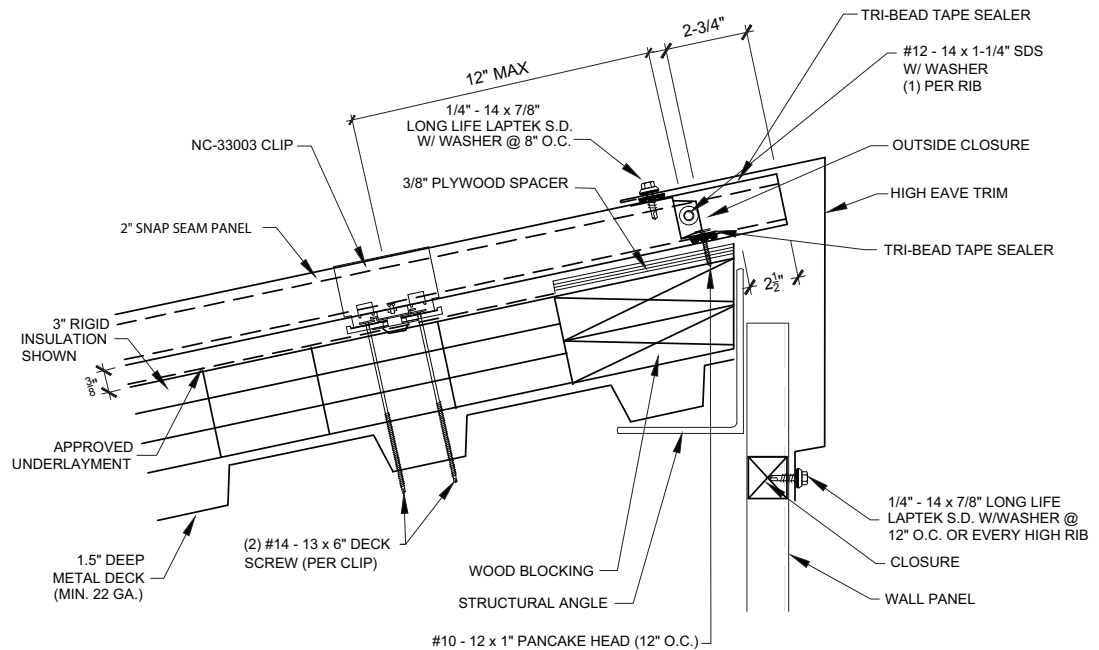
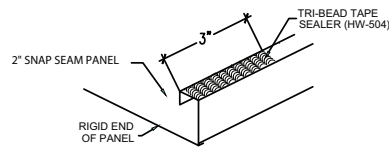
## Details over ISO over Metal Deck



FIXED DETAILS SHALL NOT BE USED WITH PANELS GREATER THAN 25'-0" IN LENGTH.



ISOMETRIC VIEW

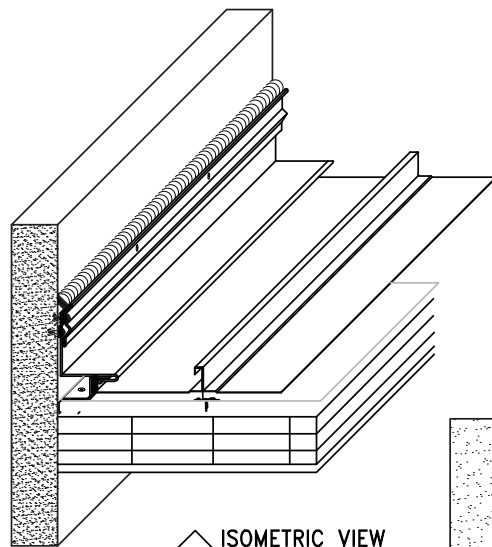


CROSS SECTION

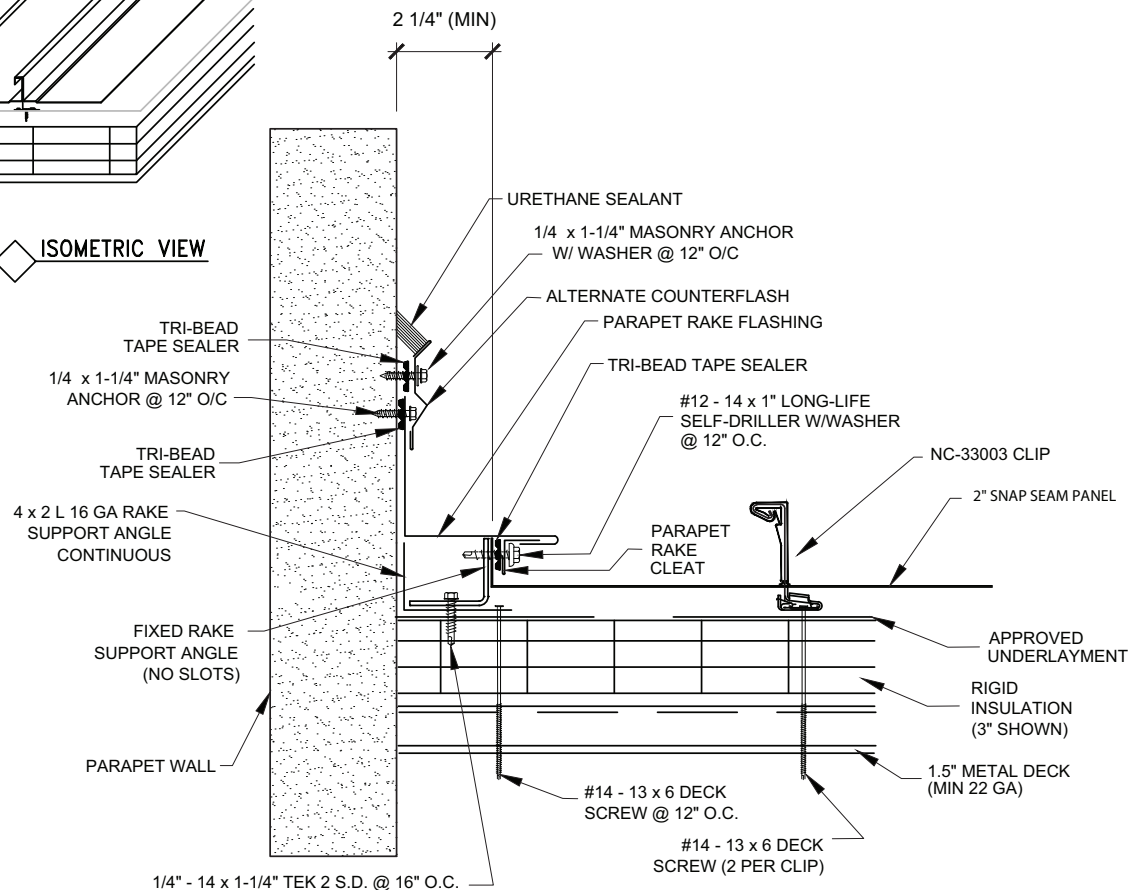
### NOTES:

1. High side eave must have a plywood spacer
2. Install Tri-Bead tape sealer to top leg of outside closure.
3. Attach high eave trim to outside closure with  $\frac{1}{4}$ " - #14 x  $\frac{7}{8}$ " Long Life Laptek S.D. w/ Washer @ 8" o.c.
4. Blocking attachment by Others.

NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]



ISOMETRIC VIEW

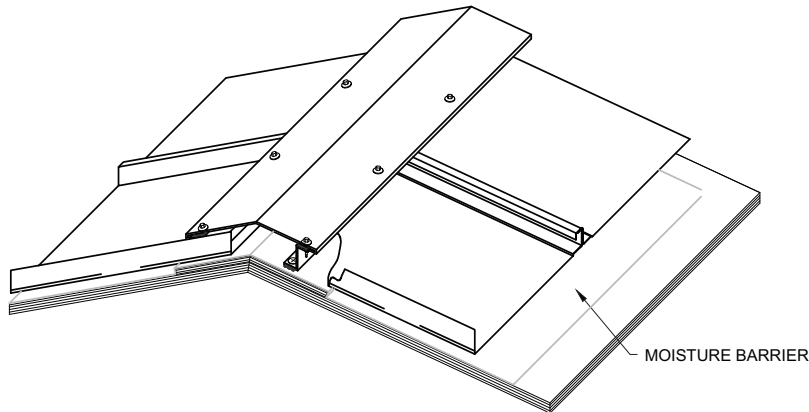


CROSS SECTION

FIXED DETAILS SHALL  
NOT BE USED WITH  
PANELS GREATER  
THAN 25'-0" IN LENGTH.

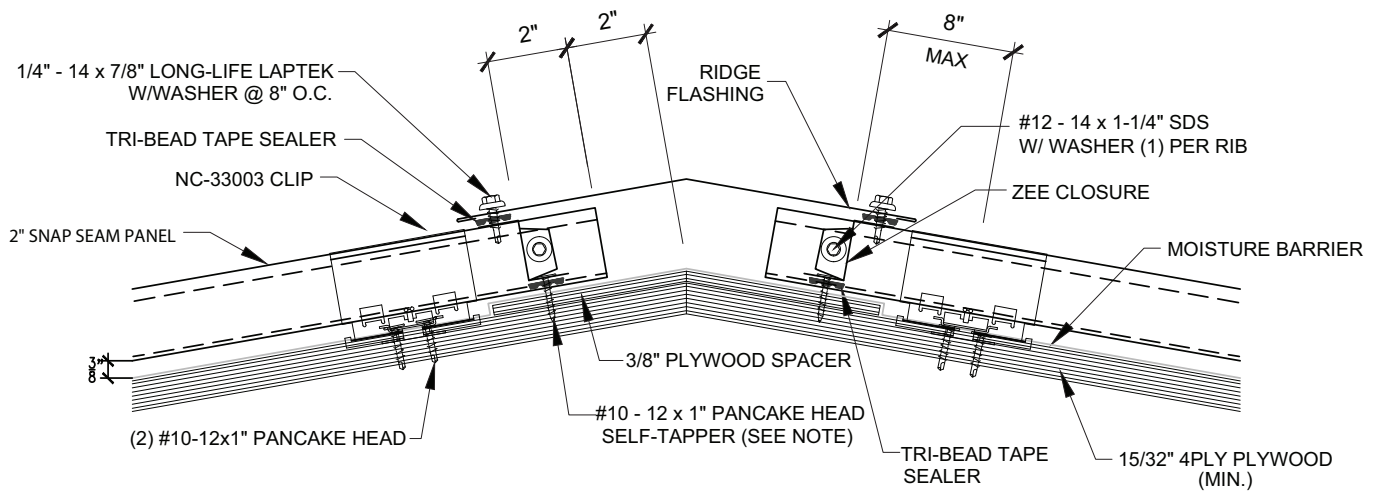
#### NOTES:

1. install rake support with  $\frac{1}{4}$ " - 14 x 1-1/4" Shoulder Tek 2 S.D. @ 16" O.C.
2. Engage female leg of panel over rake support.
3. Apply Tri-Bead tape sealer to vertical of panel.
4. Attach continuous cleat to wall panels with  $\frac{1}{8}$ " x  $\frac{3}{16}$ " Pop Rivet @ 12" O.C. at each high rib.
5. Install rake trim with  $\frac{1}{4}$ " - 14 x 1-1/4" Long Life S.D. w/ washer @ 12" O.C. **Fastener must go through rake support.**
6. If roof finishes on module, finishing detail will be similar to starting detail except, field cut top of panel rib so only the vertical leg of panel remains. If roof finishes off module, field cut and bend last panel to fit against rake support.



USE ONLY WITH FLOATING  
EAVE OR FLOATING VALLEY

ISOMETRIC VIEW

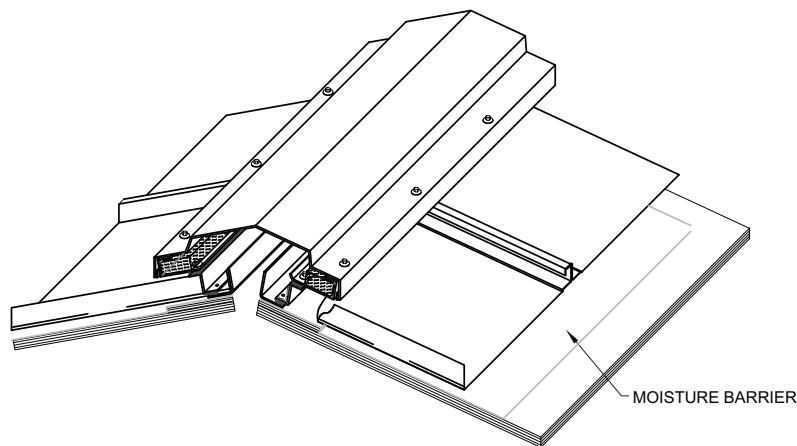


CROSS SECTION

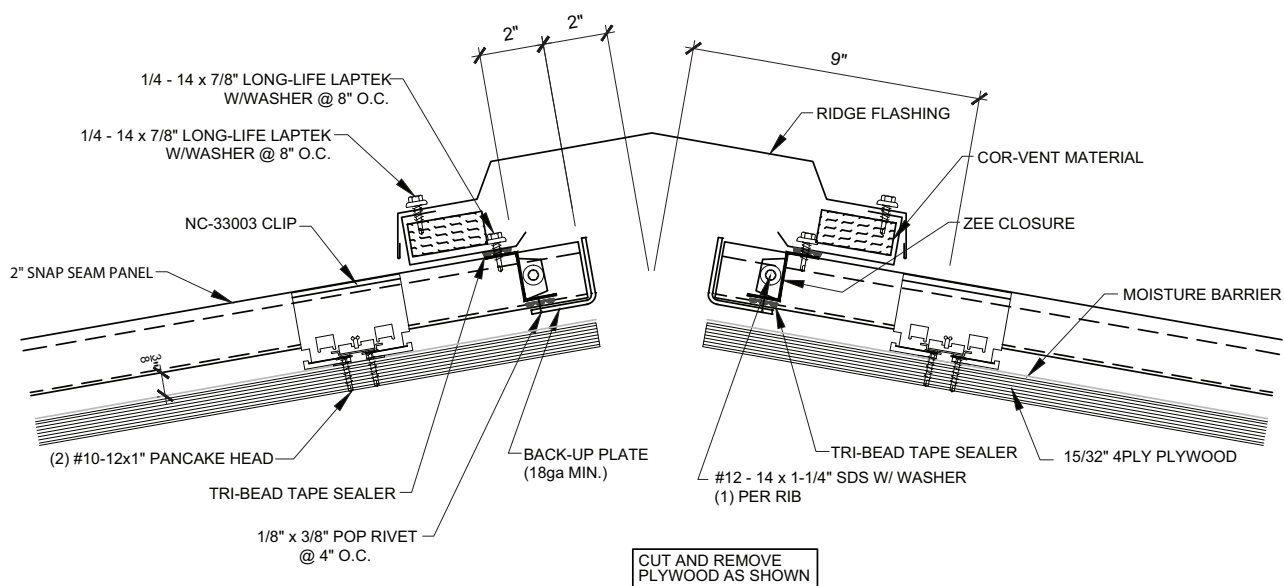
NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]

### NOTES:

1. Do not use this detail with the fixed eave or valley details.
2. Field cut "Z" closures to fit panel width.
3. Install Tri-Bead tape sealer to panels. Center of tape sealer should be 1-1/2" from end of panel.
4. Install "Z" closures to panel with Fastener #10 - 12 x 1" Pancake Head.  
Fasteners must go through tape sealer.
5. Seal end of "Z" closure to panel seams with urethane sealant.



◇ ISOMETRIC VIEW



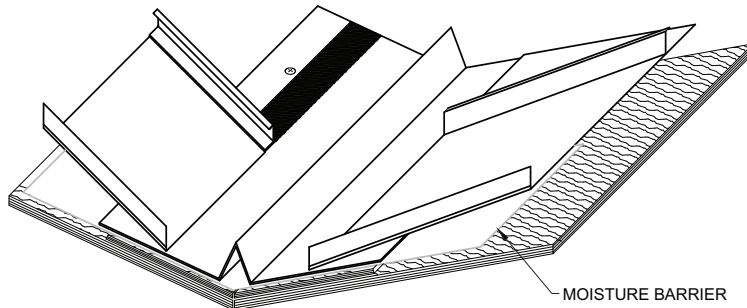
◇ CROSS SECTION

#### NOTES:

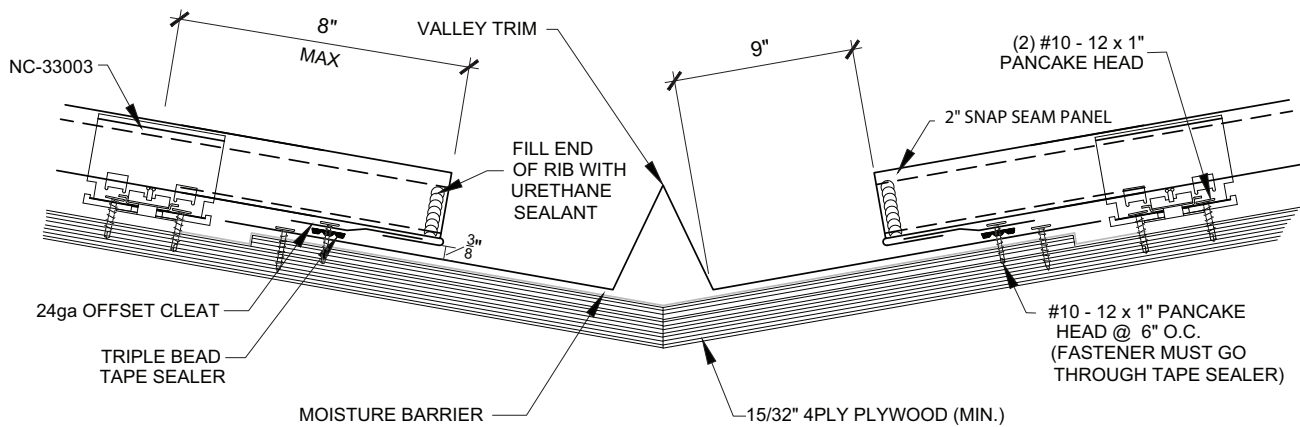
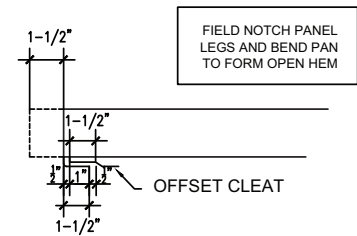
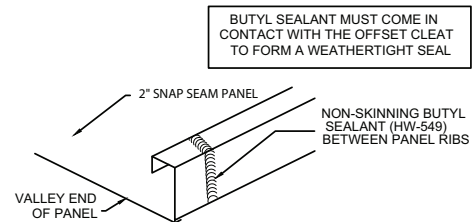
1. Do not use this detail with the fixed eave or valley details.
2. Field cut "Z" closures to fit panel width.
3. Install Tri-Bead tape sealer to panels. Center of tape sealer should be  $1-\frac{1}{2}$ " from end of panel.
4. Install "Z" closures to panel with Fastener  $\frac{1}{8}$ " x  $\frac{3}{8}$ " Pop Rivet.  
Fasteners must go through tape sealer.
5. Seal end of "Z" closure to panel seams with urethane sealant.
6. Clip spacing should not exceed 4'-0" o.c. for 24 gauge panels or 5'-0" for 22 gauge panels.
7. Install vented metal to outside closures with Fastener  $\frac{1}{4}$ " x  $14$  x  $\frac{7}{8}$ " Lap Tek at 2'-0" o.c.
8. Balance vent exhaust at ridge with vent intake at eave or soffit.

# TYPICAL DETAILS FLOATING VALLEY

## Details over Wood Deck



ISOMETRIC VIEW

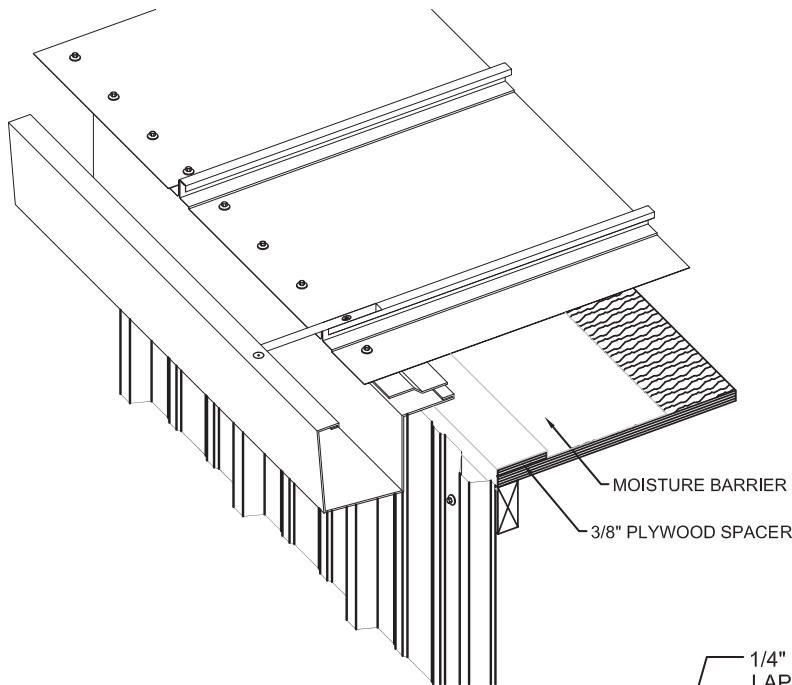


CROSS SECTION

NOTES: DO NOT USE THIS DETAIL ON ROOF SLOPES LESS THAN 3:12

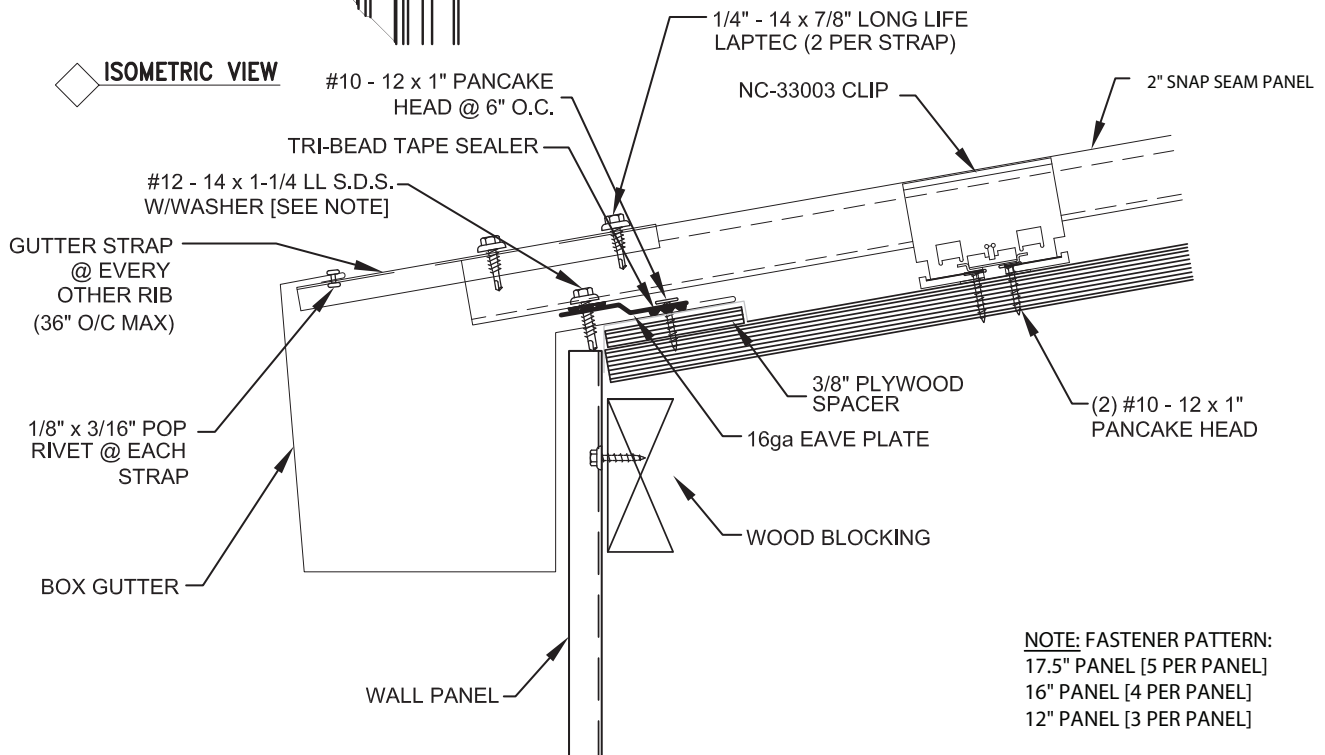
### NOTES:

1. For valleys longer than 30', use extended valley trim.
2. Panels must be attached to substructure at the ridge or hip to prevent them from sliding downslope.
3. Offset cleat is installed continuous along slope of valley do not use this detail with the fixed eave or valley details.
2. Field cut "Z" closures to fit panel width.
3. Install Tri-Bead tape sealer to panels.
4. Install "Z" closures to panel with Fastener.  
Fasteners must go through tape sealer.
5. DO NOT USE THIS DETAIL ON ROOF SLOOPS LESS THAN 3:12



- USE ONLY WITH FLOATING RIDGE OR HIGH EAVE

### ISOMETRIC VIEW



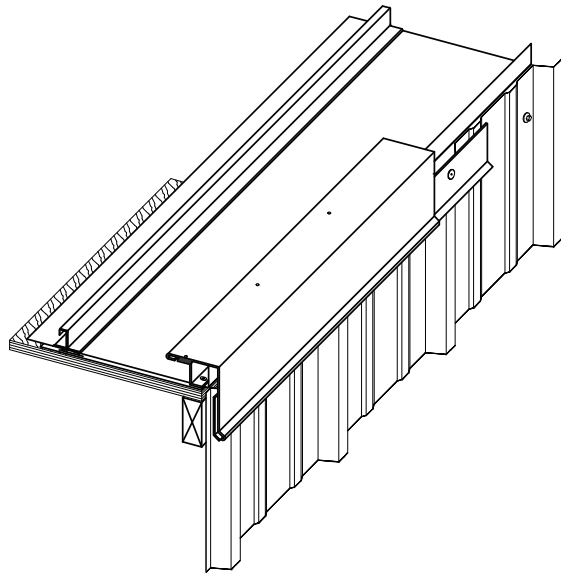
**NOTE: FASTENER PATTERN:**  
 17.5" PANEL [5 PER PANEL]  
 16" PANEL [4 PER PANEL]  
 12" PANEL [3 PER PANEL]

### CROSS SECTION

#### NOTES:

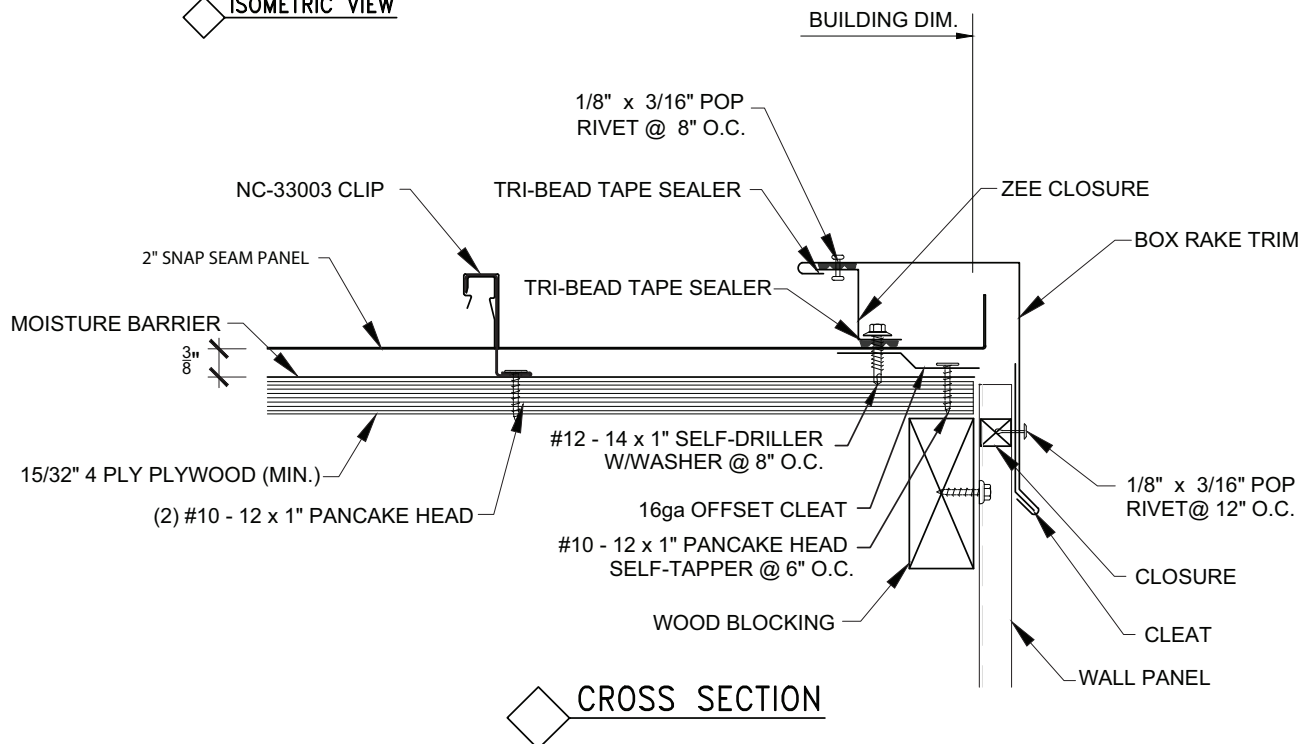
1. The gutter with drip edge method of attachment should be used when ridge, peak or endlap is fixed to the substructure. Panels must be attached at one of these points to prevent them from sliding downslope.
2. Install gutter to wood deck with Fastener 1/4" - 14 x 1-1/4" LL Driller.
3. Attach gutter straps to gutter with Fastener 1/4" - 14 x 7/8" long life laptec
4. This detail may be used on roofs with pitches of 2:12 or less.
5. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher.





◇ ISOMETRIC VIEW

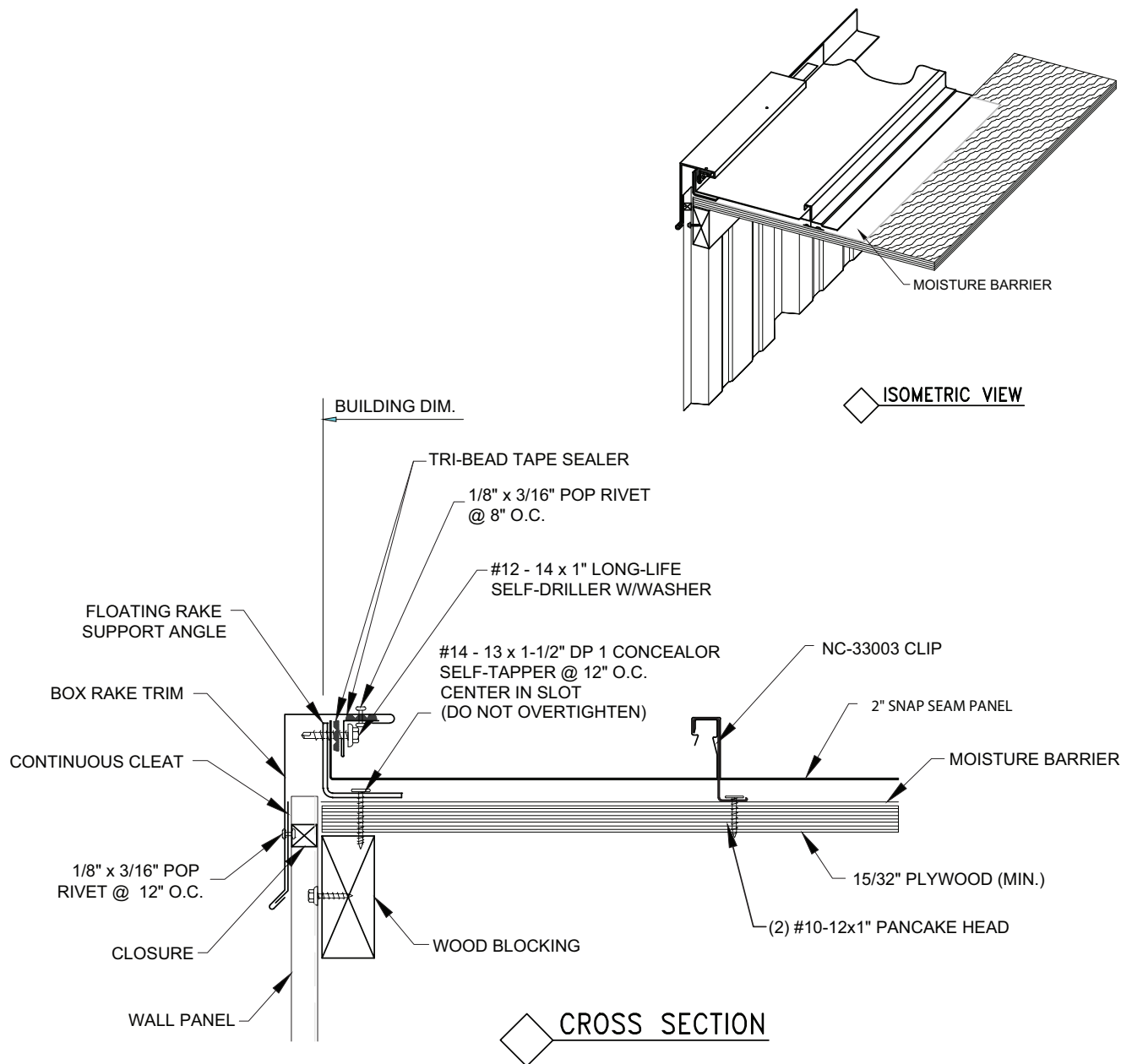
FIXED DETAILS SHALL  
NOT BE USED WITH  
PANELS GREATER THAN  
25'-0" IN LENGTH.



◇ CROSS SECTION

#### NOTES:

1. Using a wall panel other than a 1- $\frac{1}{4}$ " "R" Panel will affect the top dimension of the box rake.
2. Apply Tri-Bead tape sealer to top of parapet rake cleat and attach rake trim to parapet rake cleat with Fastener  $\frac{1}{8}$ "  $\varnothing$  x  $\frac{3}{16}$ " Pop Rivet.
3. Use continuous cleat to hold bottom of rake trim in place. Fasten continuous cleat to each high rib of wall panel.  
The bottom hem of the rake trim is "open"
4. If roof finishes on module, finishing detail will be similar to starting detail. If roof finishes off module, field cut and bend last panel run to fit against fixed rake support. Install parapet rake cleat, tape sealer and rake trim as previously described.
5. If rake trim is not to be immediately installed, temporarily fasten panels to rake support to prevent wind damage.
6. The top dimension of the rake trim will be affected by the wall panel thickness.

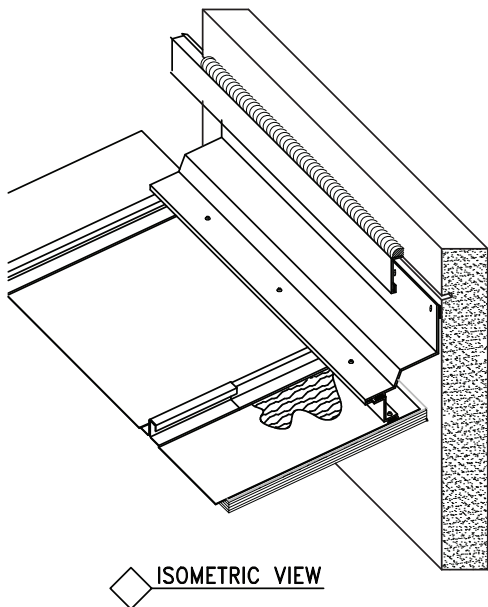


**NOTES:**

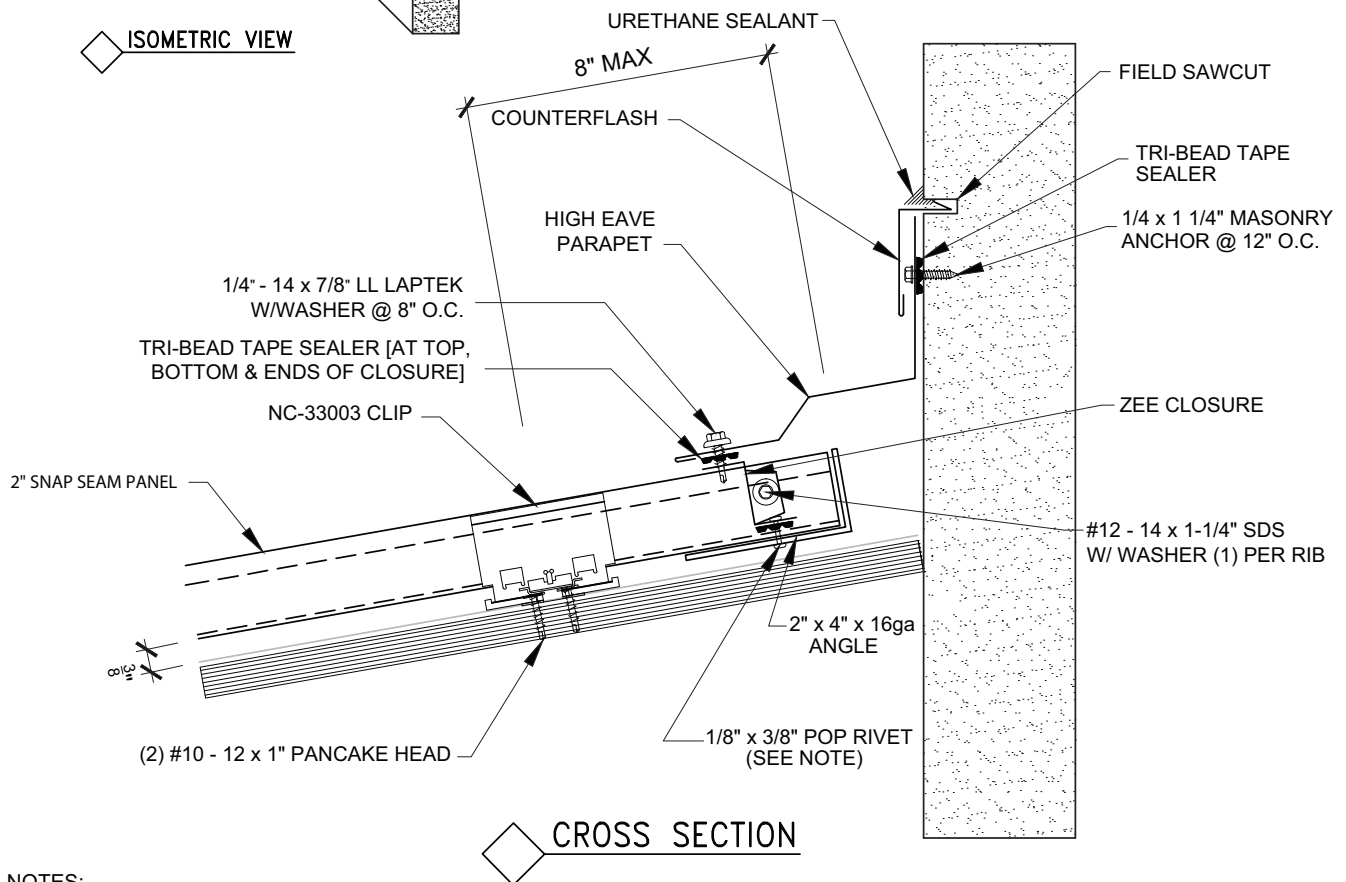
1. Using a wall panel other than a 1- $\frac{1}{4}$ " "R" Panel will affect the top dimension of the box rake.
2. Install floating rake support with Fastener #10 x 12 x 1" Pancake Head Self-Tapper.
3. Engage female leg of panel over rake support.
4. Apply Tri-Bead tape sealer to vertical leg of panel. Install parapet rake cleat to panel leg with Fastener  $\frac{1}{4}$ " - 14 x 1- $\frac{1}{4}$ " Long Life Driller at 1'-0" o.c. Fastener must go through rake support.
5. Apply Tri-Bead tape sealer to top of parapet rake cleat and attach rake trim to parapet rake cleat with Fastener  $\frac{1}{8}$ "  $\varnothing$  x  $\frac{3}{16}$ " Pop Rivet.
6. Use continuous cleat to hold bottom of rake trim in place. Fasten continuous cleat to each high rib of wall panel. The bottom hem of the rake trim is "open".
7. If roof finishes on module, finishing detail will be similar to starting detail. If roof finishes off module, field cut and bend last panel run to fit against fixed rake support. Install parapet rake cleat, tape sealer and rake trim as previously described.
8. If rake trim is not to be immediately installed, temporarily fasten panels to rake support to prevent wind damage.
9. The top dimension of the rake trim will be affected by the wall panel thickness.

# TYPICAL DETAILS FLOATING PARAPET HIGH SIDE EAVE

## Details over Wood Deck

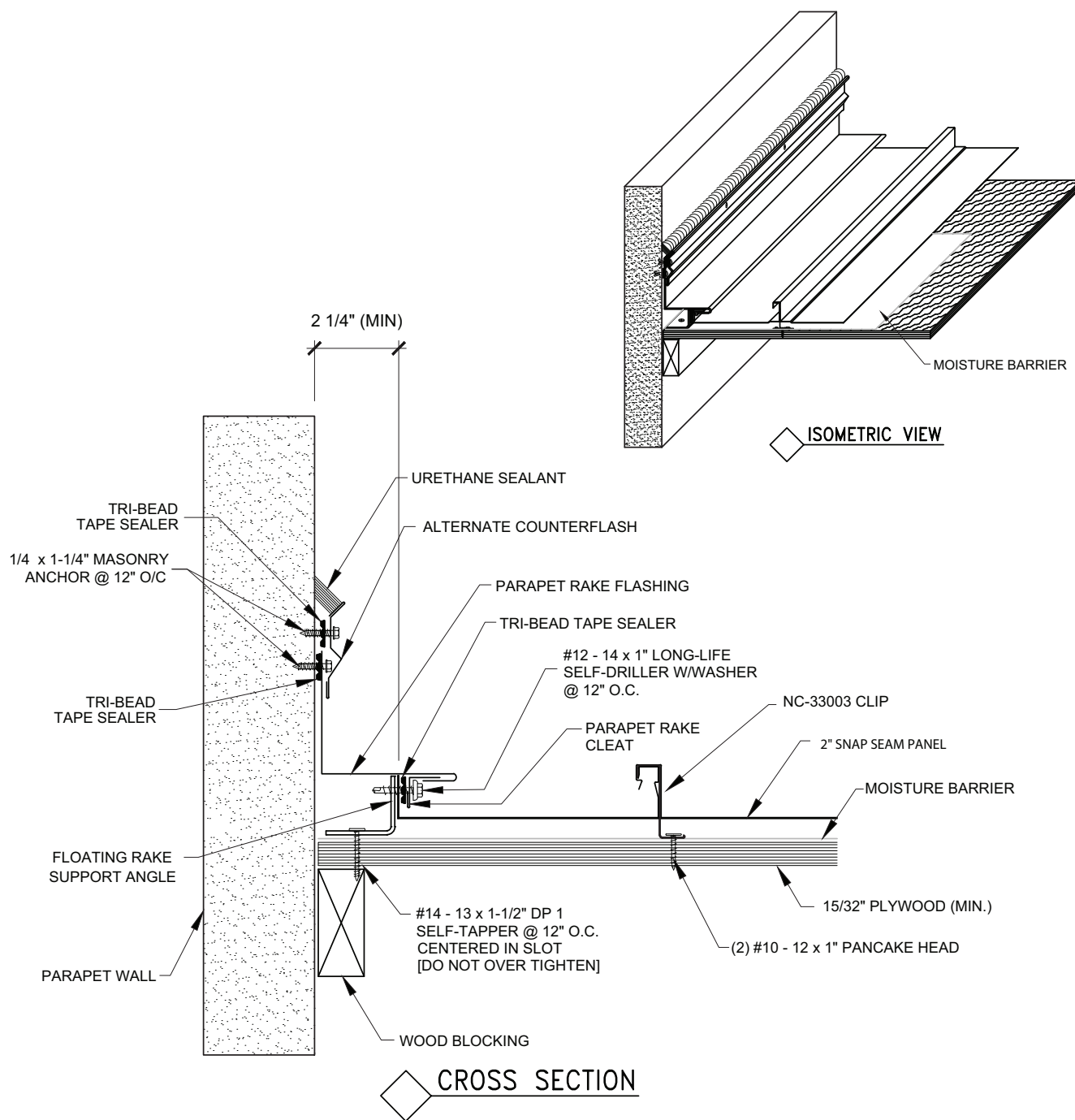


NOTE: FASTENER PATTERN:  
17.5" PANEL [5 PER PANEL]  
16" PANEL [4 PER PANEL]  
12" PANEL [3 PER PANEL]



### NOTES:

1. Do not use this detail with the fixed eave or valley details.
2. Field cut "Z" closures to fit panel width.
3. Apply Tri-Bead tape sealer to panels. Center of tape sealer should be 1-1/2" from end of panel.
4. Install "Z" closures to panel with Fastener 1/8" x 3/8" Pop Rivet.
5. Seal end of "Z" closure to panel seams with urethane sealant. Apply Tri-Bead tape sealer to the top leg of "Z" closures.
6. Attach parapet high side eave trim to "Z" closure with Fastener 1/4" - 14 x 7/8" LL Laptek.
7. Seal counterflash to parapet wall with urethane sealant.

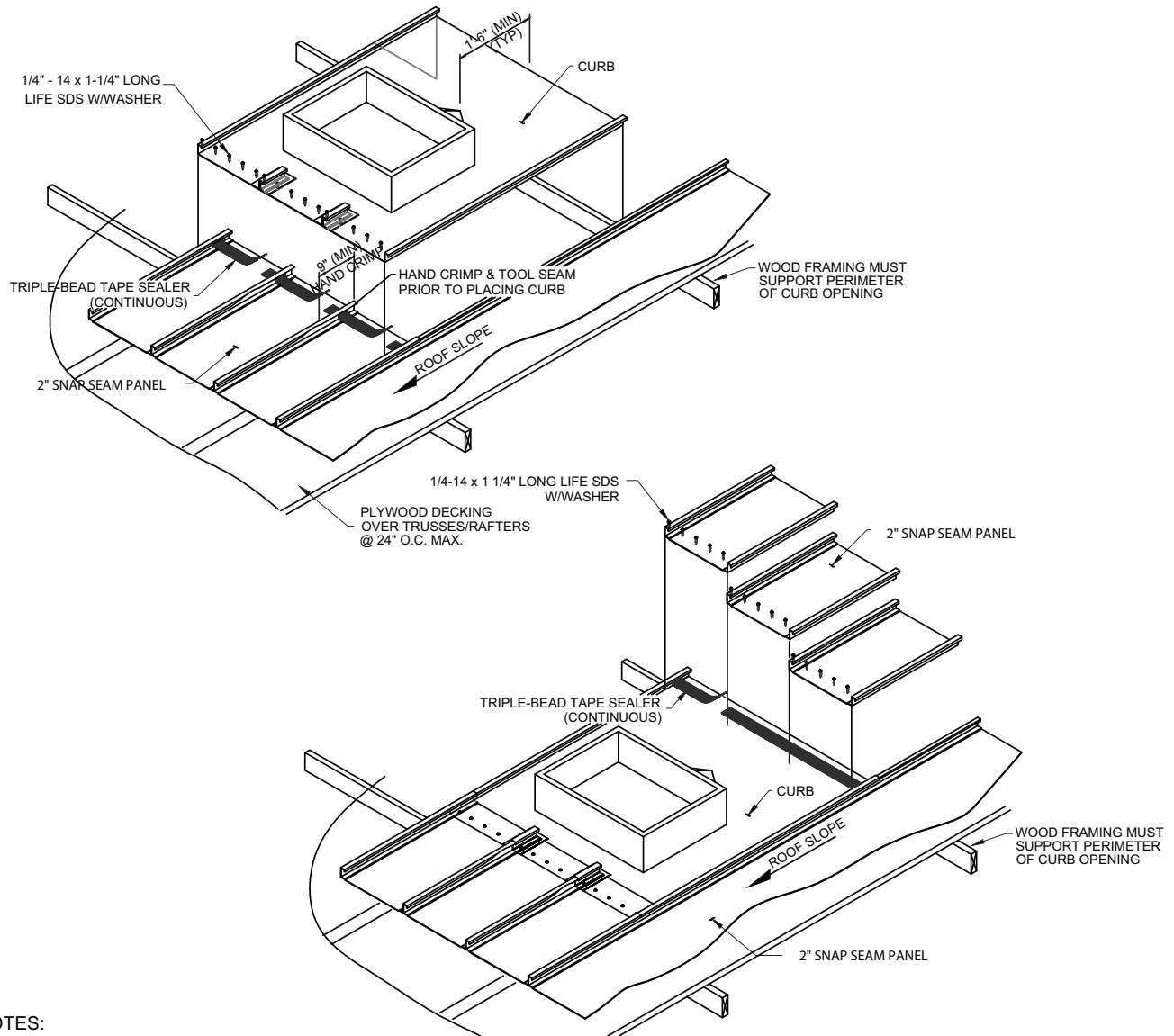


#### NOTES:

1. Install floating rake support with Fastener #10 - 12 x 1" Pancake Head Self-Tapper.
2. Engage female leg of panel over rake support.
3. Apply Tri-Bead tape sealer to vertical leg of panel. Install parapet rake cleat to panel leg with Fastener  $\frac{1}{4}$ " - 14 x 1-1/4" Long Life Driller at 2'-0" o.c. Fasteners must go through rake support.
4. If roof finishes on module, finishing detail will be similar to starting detail. If roof finishes off module, field cut and bed last panel run to fit against floating rake support. Install parapet rake cleat, tape sealer and parapet rake flash as previously described.
5. If parapet rake flash is not to be immediately installed, temporarily fasten panel to rake support to prevent wind damage.

# ROOF CURB INSTALLATION INSTRUCTIONS

## Details over Wood Deck



### NOTES:

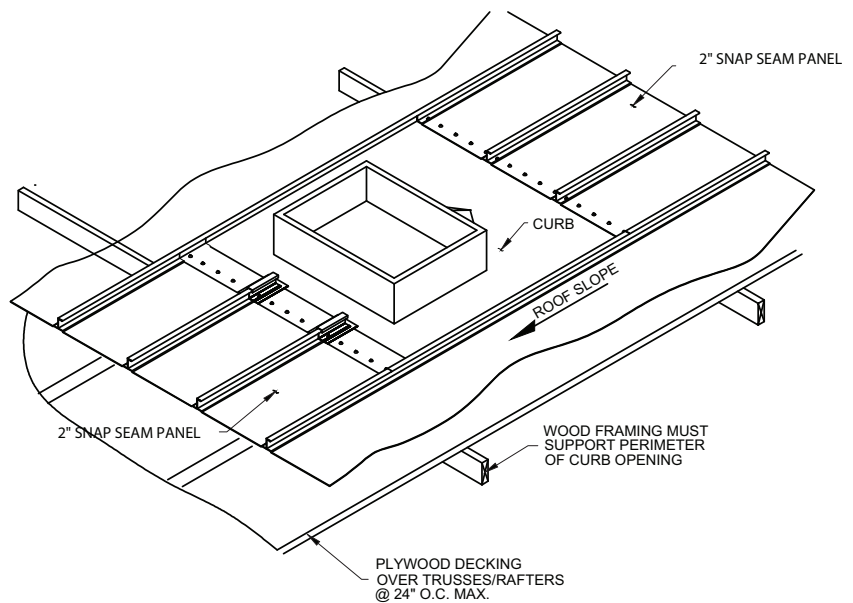
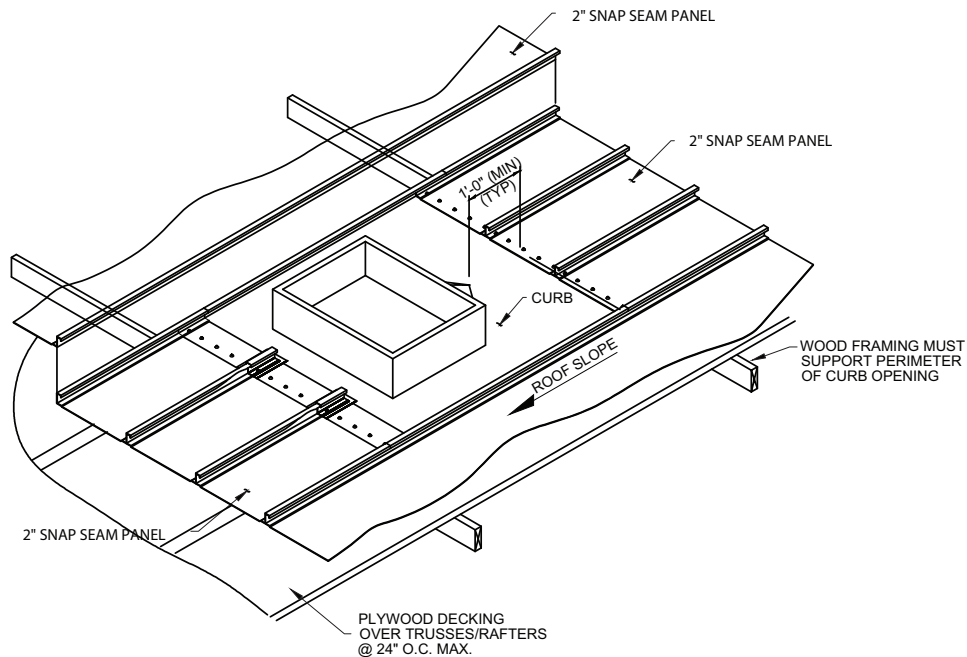
The roof curb will be installed under the roof panels on the upslope end and over the panels at the downslope end. To accomplish this, the roof panels must be endlapped at the upslope and downslope end of the curb. This allows both ends of the curb to shed water and places the heavier gauge metal of the curb under the roof panels for better resistance to foot traffic. The exception is at the downslope end where the curb is on top of the roof panels. Since there are endlaps at this area, back-up plates provide support. Cinch straps furnished by the curb manufacturer are used at the sides of the curb to form a compression seal.

Outside cap cells (for bottom) are used to seal the panel to the roof curb. If curb placement is not critical (within 12"), the cap cells may be factory attached to the curb. If the curb must be located in a precise location, order the cap cells loose for field installation.

Full length panels may be installed up to the curb location. All panel runs affected by a roof curb must have field endlaps at the upslope and downslope end of the curb. Provisions must be made for this condition by ordering two panels 12" longer than the panels immediately adjacent to the curb. The panels do not need to be ordered with prepunched holes. Install all bottom panels, engaging back-up plates and apply triple bead tape sealer to each panel as it is being installed. It is critical that the tape sealer be installed across the full panel width. Failure to follow this procedure will cause the curb to leak during rains coupled with high winds.

The first downslope panel immediately adjacent to the last full length panel will require field notching of the female leg for a distance of 6". Notch the panel just above the lock in the female leg. The remaining portion of the female leg will need to be crimped with "duckbill" vise grips.

The last downslope panel immediately adjacent to the first full length panel after the curb will require field notching of the male leg for a distance of 6". Notch the panel by removing the male "lock" leg only. Apply two beads of urethane sealant vertically to the downslope end of the notch.



#### NOTES:

- Install curb on top of bottom panels and curb support framing. When using a loose cap cell, the curb flange must be notched out to accept the panel rib. Apply triple bead tape sealer to the sides and upslope end of curb. Fasten the downslope end of curb to the bottom roof panels and back-up plates with  $\frac{1}{4}$ "x14x1  $\frac{1}{4}$ " Long Life Driller at 3" o.c. Fasteners must go through the tape sealer.
- Install the top run of panels cutting the panels at each side of the curb to fit. Apply urethane sealant to seams of all panels on the upslope end of the curb. End of top panels should be a minimum of 12" from the point of the water diverter. The top panels should lap onto the curb 6".
- Install cinch straps at sides of curb to form a compression seal. Fasten cinch straps and top panels with Fastener  $\frac{1}{4}$ "x14x1  $\frac{1}{4}$ " Long Life Driller at 3" o.c. Fasteners must go through the triple bead tape sealer.

