

Table of Contents

General Notes

Claims	1
Returns	1
Storage	1
Handling	1
Foot Traffic	1
Safety	2
Field Cutting Panels	2
Condition of Substrate and Structure	2
Tools & Equipment	3
Roof Maintenance	3
Warranty	3
Installation	4
Fastener and Selection Guide	5-6
Material Specifications	7
Seaming Panels	8-9

Flashing Details

Trim Profiles	10-11
Hem Lengths	12
Style D Eave	13
Style A Eave	13
Vented Hip / Ridge	14
W - Valley	14
Locking Sidewall	15-16
Locking Endwall	16-17
Hip / Ridge	18
Locking Gable	18
Prow Gable	19
Style D As Gable	19
Standing Seam Front Cap	20
Style D As Front Cap	20
Standing Seam Upper Transition	21
Standing Seam Lower Transition	21
Locking Inside Corner	22
Locking Outside Corner	22
Standing Seam Window Drip	23
Standing Seam Base Trim	23
Jamb Trim	24
Header / Sill Trim	24
J- Metal Trim	25

*Please contact us for more information.



INFORMATION

This guide has been provided as a reference and helpful tool for installing Flatiron Steel's Snap Lock Panels. The installation details shown may not apply to all building designs, codes, or product applications. It is the responsibility of the installer to ensure the details meet code in his/her area.

Flatiron Steel reserves the right to change any information in this guide, at any time, without notice. If you have any questions or concerns, please contact your Flatiron Steel representative.

CLAIMS

It is the responsibility of the customer to review the condition and quantities of an order upon pick up or delivery. Claims for any shortages or damages must be filed immediately for orders picked up, or within 48 hours for orders delivered. Flatiron Steel will not be held responsible for any claims filed after these time frames.

RETURNS

Flatiron Steel does not accept returns of any custom ordered materials, special ordered accessories, or fabricated metal products. Only stock accessories may be returned if they are deemed to be in resalable condition. Stock items being screws (full bag quantities), flashers, closures, clips, underlayment, etc. A restocking fee of 15% may be applied to all returned merchandise.

STORAGE

If the metal panels or trim are not used immediately, the metal should be stored in a well ventilated, cool, dry place. This will inhibit moisture build up on the panels and trim, which can lead to white rust.

If the product cannot be stored indoors, elevate one end of the bundle to allow any moisture to run off the panels. Also, a tarp should be loosely wrapped around the bundle, ensuring there is good air flow around the panels. Never store panels in direct contact with the ground.

Flatiron Steel assumes no responsibility for materials that are not stored properly.

HANDLING

Handle all panels and trim with care to avoid damage. When unbundling panels, do not drag one panel against another. This can cause scratches across the panels. When moving the panels, they should be carried vertically to the ground by grasping the edge of the panel carefully to ensure that no excessive bending occurs. Note, the edge of the panel is sharp, and gloves should always be worn when handling all metal.

When handling trim it is important to do so with care and ease. Many trim profiles are fragile and can be easily damaged if not handled appropriately. It is recommended that the installer or whomever is handling trim wear gloves and use two hands at all times.

FOOT TRAFFIC

Care of metal panels and trim must be exercised throughout installation. Foot Traffic can cause distortion of the panel and damage the finish. Foot traffic should be kept to an absolute minimum. Installers should wear soft soled shoes that will help with traction on the roof and prevent scratching.

When walking on the panels is unavoidable, walk in the flats only. Walking on the major ribs can damage the panel.

SAFETY

Safety should be the main concern when installing any metal project. Each job site presents different hazards, on the ground and the roof; therefore, it is the responsibility of the installer to determine the safest way to install the metal.

Personal protective equipment should be used at all times when handling or installing metal panels and trim (i.e. gloves, safety glasses, pants, long sleeved shirts and hard hats).

Always be aware of your surroundings and use fall protection. Never install metal roofing during windy or stormy days. Metal roofing can become slippery when wet or dusty and extra care needs to be taken if these conditions are present. Wind can create hazardous working situations by getting under the metal panel and pulling the installer off the roof. Metal roofing is very sharp and can cause serious bodily injury if handled inappropriately.

If a safety concern exists on a job site, stop work immediately. Always comply with OSHA safety regulations.

FIELD CUTTING PANELS

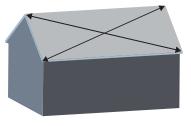
Tin Snips, a circular saw, or a nibbler is recommended for field cutting metal panels and trim. Always wear eye and ear protection when cutting metal. When cutting painted metal, ensure the metal particles and fragments do not end up on the painted surface. Metal particles on the painted surface will result in rusting and pitting in that area. Flatiron Steel recommends the panels to be turned upside down and all cutting be done looking at the backside of the material. Installers should immediately wipe away any debris from the material after cuts to prevent this problem. Panels should be cut in an area where metal particles do not end up on other panels or building materials.

Failure to remove the metal particles from the panel will void any warranty

CONDITION OF SUBSTRATE AND STRUCTURE

Before the installation process begins, it is critical that the framing and substrate are inspected to ensure that the structure is square and plumb. If it is not, it will have to be corrected. Make sure any structural fixes are done by someone with the proper experience and knowledge. Correct any objectionable warp, waves, or buckles in the substrate before proceeding with panel installation. The roof panels will follow the contour of the structure and may appear irregular if not corrected.

To check the structure for squareness, take two diagonal measurements from the corner to corner. The roof is square if the two measurements are equal.



If the roof is not square, follow the 3-4-5 method to ensure that the panel is being installed square. If the first panel is not installed square, all remaining panels will also be out of square when attached to the structure.

1.) To do this, pick a starting point at the bottom corner of the roof, about a foot away. Set a nail there.

2.) From the nail, measure exactly 3 feet in the opposite direction along the bottom edge of the roof. Insert another nail in that spot.

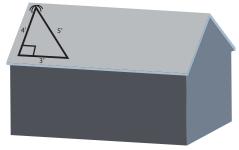
3.) From the first nail, measure exactly 4 feet up the slope of the roof and draw a small arc.

4.) Measure from the second nail up to the arc measuring exactly 5 feet, drawing another arc.

5.) Attach a chalk line to the first nail and extend it up the slope until it passes through the intersection of the two arcs.

6.) Snap the chalk line. This line is now square with the bottom edge of the roof .

7.) Use this line to properly install the first panel square on the roof. $\ensuremath{^1}$



¹For larger roofs, this method can be done with multiples of 3,4,5 Example 6', 8', 10'

TOOLS & EQUIPMENT

- Hard Hat
- Gloves
- Safety Glasses
- Ear Plugs
- Fall Protection

Screw Gun

- Tin Snips
- Tape Measure
- Chalk Line
- Electric Nibbler

- Circular Saw
- Angle Grinder
- Rivet Gun
- Rental or Purchase
 Hand Seamer
- Rental or Purchase
 Mechanical Seamer

ROOF MAINTENANCE

Roof maintenance should be done, at the minimum, annually. These steps will ensure that your roof will have a longer lifespan with less maintenance and help prevent costly repairs. It is best to perform roof maintenance when the weather permits safe working conditions.

- Clear all debris off the roof (dirt, rocks, branches, leaves, etc.)
- Clean out all drains and gutters to ensure proper drainage, to prevent water standing.
- Remove any overhanging branches or anything else that could penetrate the roof surface.
- Inspect all areas for leaks and deterioration pay attention to stains and discoloration of the roof edges and surrounding walls as they are possible indications of a leak.
- Check roof penetrations for possible leaks and cracks in caulking.
- If exposed fasteners have been used to install the roof, it is crucial they are inspected annually
 - 1. Check if they are installed correctly.
 - 2. Ensure that they are not fastened too tight or not tight enough.
 - 3. Inspect the integrity of the neoprene washer.

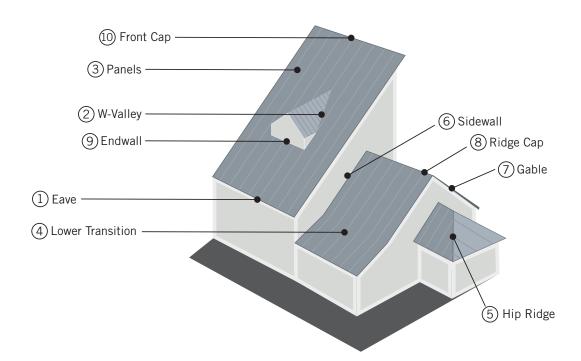
²Refer to Fastener selection guide on the following pages 5-6.

PAINT WARRANTY

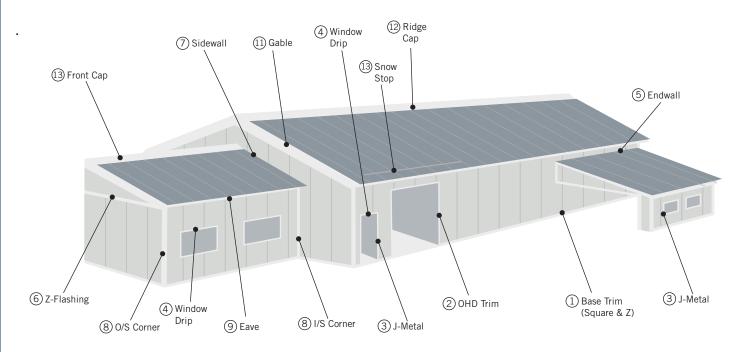
Warranty documents are available upon written request.

Please provide the following information to your local Flatiron Steel branch.

Product purchased - Including: panel type, width, color and gauge.
Where the product was purchased: Lumber yard, roofing wholesaler, contractor or direct.
When the product was purchased: Date of purchase (must be within 90 days of purchase date)
Owners Name:
Project Location: Physical address
Job Completion:

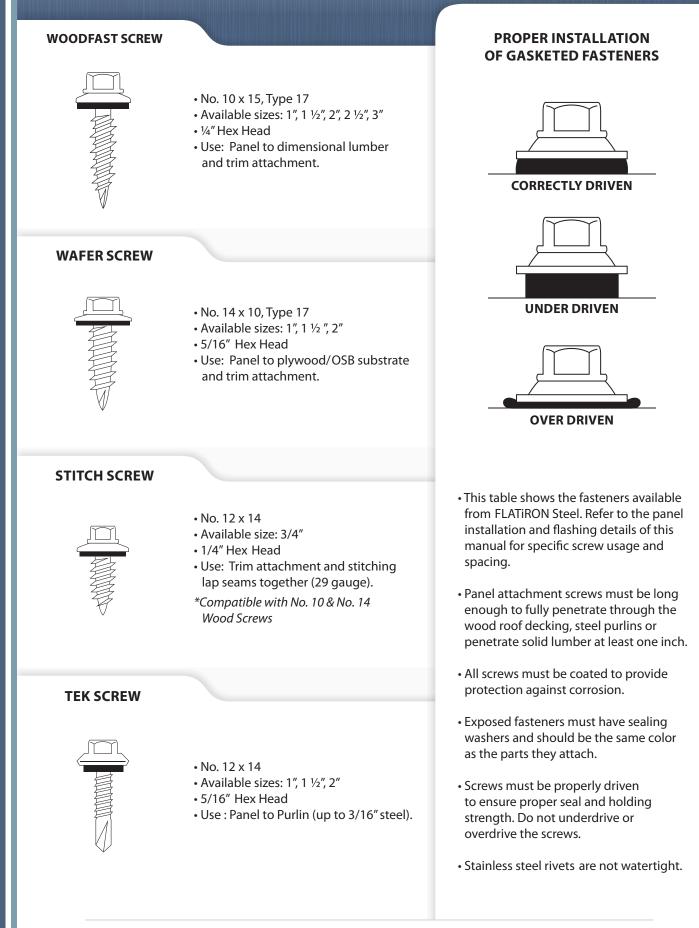


Installation over shingles is possible but is not recommended. It is best to remove shingles and install a new, synthetic underlayment to act as a vapor barrier between the substrate and the metal. If shingles will not be removed, furring strips need to be installed on the roof at 2'-0" centers. The metal panels will then be fastened to the furring strips.



*Components are listed in the order that they are installed. *Please contact us for more information.

FLATIRON STEEL fastener selection guide



FLATIRON STEEL fastener selection guide

LAP TEK



- No. 14 x 7/8″
- Available size: 7/8"
- 5/16" Hex Head
- Use: Trim attachment and stitching lap Seams together .
- *Compatible with No. 12 Tek Screw and No. 14 Wafer Screw

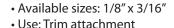


PANHEAD



- 10 x 12
 - Available sizes: 1", (1 ¹/₂" and 2" available by special order)
 - Phillips Head / Square Drive
 - Use: To fasten standing seam panels and trim to wood deck (unexposed).

STAINLESS STEEL RIVET POP RIVET



PROPER INSTALLATION OF GASKETED FASTENERS

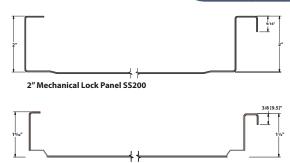






- This table shows the fasteners available from FLATIRON Steel. Refer to the panel installation and flashing details of this manual for specific screw usage and spacing.
- Panel attachment screws must be long enough to fully penetrate through the wood roof decking, steel purlins or penetrate solid lumber at least one inch.
- All screws must be coated to provide protection against corrosion.
- Exposed fasteners must have sealing washers and should be the same color as the parts they attach.
- Screws must be properly driven to ensure proper seal and holding strength. Do not underdrive or overdrive the screws.
- Stainless steel rivets are not watertight.

MATERIAL SPECIFICATIONS



1.5" Mechanical Lock Panel SS150

LOAD TABLES

Refer to Trim Pamphlet for Material Availability

DEFp = Positive Deflect Width : 14" Panels Alloy : 50 KSI Galvalume Thickness : 24 G/ Allowable Uniform Live Load (PSF) Span Length (Feet)									
Span Type	Load Type	2.00	2.50	3.00	3.50	4.00	4.50		
Simple &	LOAD	170.8	132.6	120.1	103.7	90.4	78.7		
Double Span	DEFp		1070.5	622.3	391.1	262.8	184.5		
Triple Span	LOAD	235.5	188.0	156.5	130.5	100.5	79.0		
	DEFp		1714.4	966.1	626.3	420.0	295.5		
Span Type	Load Type	5.00	5.50	6.00	6.50	7.00	7.50		
Simple &	LOAD	67.8	63.5	53.5	44.7	38.4	33.8		
Double Span	DEFp	134.2	101.0	77.8	61.1	48.9	39.8		
Triple Span	LOAD	64.4	51.8	44.0	40.4	34.7	29.7		
-	DEFp	214.9	161.8	124.5	97.8	78.3	63.7		

 Allowable total per deflection based on C/300
 Formula's used for flexure & deflection are as f Simple & double span, MP = 0.125WH, & Δ = 0.013WH/EI Triple span, MP = 0.08WF, & Δ = 0.069wH/EI

 Allowable uniform loads are determined per th a. Local & overall buckling - AISI C3.1.2 b. Allowable heraft space / AISI C3.2
 Combined bending & shear - AISI C3.3
 Gombined bending & shear - AISI C3.3

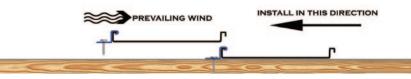
APPLICATION DETAILS:

1.5" Mechanical Lock Panel

Installation: : Can be installed on solid wood decking **Minimum Slope:** 2:12

2" Mechanical Lock Panel

Installation: Can be installed over open frame steel purlins, steel decking, steel decking with polyiso board, or solid wood decking **Minimum Slope:** $\frac{1}{2}''$ /12 :12 (*Hot melt required below 3:12*)



*Clip Spacing (solid deck) 2' on center



Available Widths:

1.5" Mechanical Lock: 12", 16", 20" **2" Mechanical Lock:** 14.1875" & 18.1875"

Available Gauges: 22, 24, & 26

Weight: 1.25lbs/SqFt (22), 1.00lbs/SqFt (24), .75lbs/SqFt (26)

Substrate: AZ-50, Grade D, 50,000ksi

Available Materials: Painted, Galvalume, Bonderized[®], Core-Ten[™], Cold Roll, 16 & 20 oz Copper

Paint Systems: Durapon70[™] PVDF, ULTRA CLAD[™] Kynar500[®]/Hylar5000[®] Valspar Fluropon[®]

Warranties: Durapon70[™] PVDF – 35 year ULTRA-CLAD[™] - 35 year Zincalume[®] AZ50 – 20 year Valspar[™] PVDF - 35 year

Production Options: Either factory made to length with protective film to ensure damage free transport or rolled to length on site*

On site production is subject to order minimums

Panel Options: Flat Panel, Striations, Bead Roll or Pencil Ribs (*flat panel requires a waiver*)

Testing For 2" Mechanical:



• UL 580 Wind Uplift (Class 90)

- UL 2218 Class 4 Hail Impact
- UL 790 Class A Fire Rating

•ASTM E1680 •ASTM E1646 •ASTM E1592

Please Note: It is the responsibility of the builder to ensure that they are compliant with current building codes.



Flatiron Steel is neither partially or soley responsible for improper installation or defects as a result of installation
Oil Canning is not a reason for rejection of panels

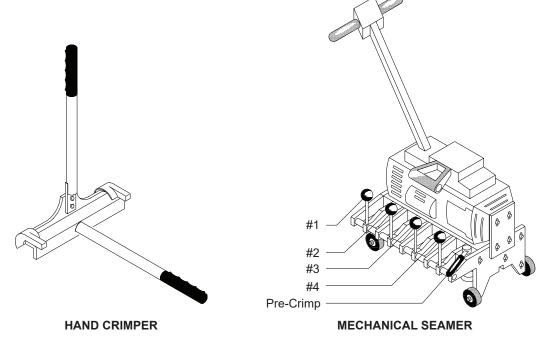
SEAMING PANELS

The Mechanical Lock panel system requires the use of a mechanical seamer for proper installation. The mechanical seamer runs from ridge to eave with the Mechanical Lock panels laid from left to right. This necessary seamer is designed to seam the panel clips and the vertical legs of the panel together for weather tightness and resistance to wind uplift loads.

- Rental or purchase of the Mechanical Lock seamer and hand crimpers for field seaming are the responsibility of the Installer.
- Read the field manual that is enclosed in the case with the seamer. The operator should adhere to all instructions for proper use of the seamer. Failure to follow the required instructions may result in damage to the panel and/ or seamer. Flatiron Steel will not be responsible for damage incurred by improper use of the seamer.
- All panel side laps should be seamed with mechanical seamer as soon as possible, after the panels have been installed. Hand crimping the panel side laps 8" at the eave, end lap, and ridge locations of the panel in place during normal erection, but will not prevent the panels from being blown off the roof by moderate strong winds.

Do not hand crimp panel at any clips or locations other than the ridge, endlap and eave locations.

- Prior to seaming panels check all seams making sure they are properly engaged. All dirt, debris, and excess sealant should be removed from flat part of panel and seams. At endlap conditions, panels must be hand crimped only.
- Run sufficient power to the roof to operate the seamer. If the job site is a long distance from the roof or if the roof is large, consider using a portable generator placed on the roof near the seam. Do not overload or damage the roof with the generator unit. Be sure to follow OSHA and local electrical codes when installing generator.



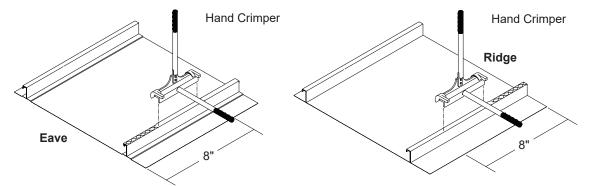
*Please contact us for more information.

SEAMING PANELS

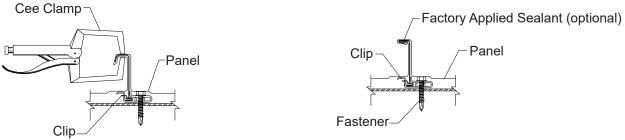
When panels are installed from left to right, electric seamer operates from ridge to eave.

Steps:

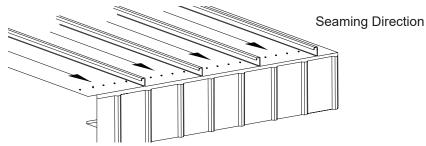
1. To start seaming, hand crimp first 8" of seam at eave, end lap, and ridge locations only. **Do not hand crimp at clip locations.**



2. Position mechanical seamer over hand crimped roof seam at ridge location so that the levers are on the same side of the seam that is to be crimped by the mechanical seamer.



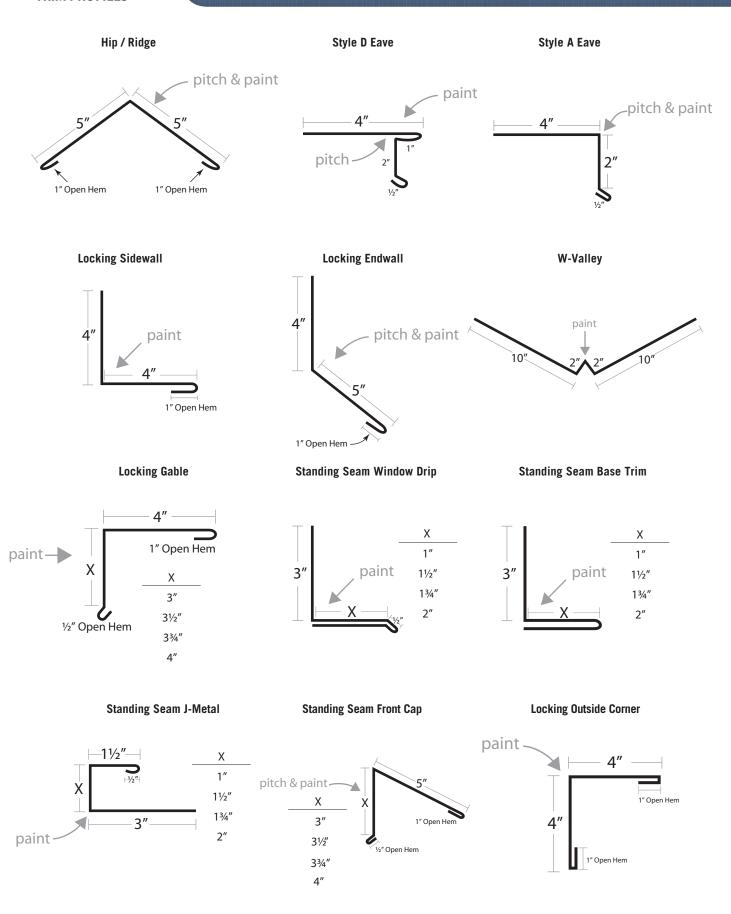
3. Engage roller levers in the following order: #1, #2, #3, #4 and then the roller lever. Pre crimp lever may need to be held down to avoid scratching the panel.



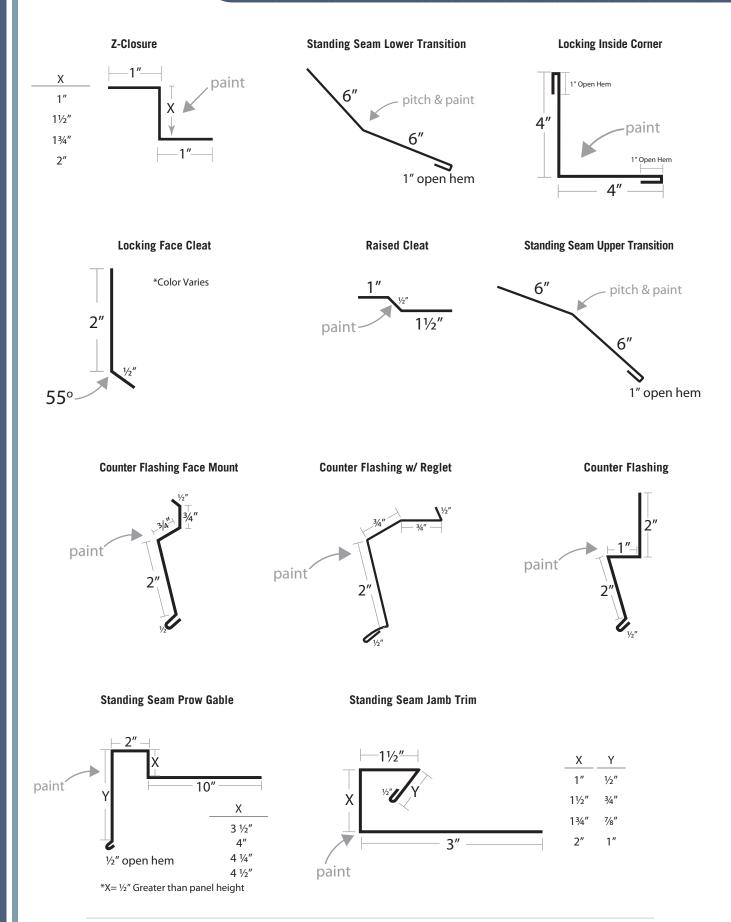
- 4. Prior to running seamer, check to make sure Mechanical Lock panels are full engaged along the entire run of the panel. Small c- clamps may be required on the horizontal portion of the seam to hold panel seam engaged while seaming.
- 5. Turn on the power to seamer and walk with the seamer as it seams the panel. Stop the seamer in the first few feet to ensure proper seam is being achieved. Turn the mechanical seamer off before the hand crimped area of the end lap. Remaining seam between hand crimped portion and mechanically seamed portion may have to be hand crimped for continuous tight seam.
- 6. At the end of the first run, remove the mechanical seamer and return to step #1 for remaining panels.
- 7. At completion of seaming, repack tool and return to the seamer company.

*CAUTION Do not run the seamer off the end of the panel. If the seamer is run off the end of the roof it could cause injury to personnel and damage the roof or the seamer.

TRIM PROFILES



TRIM PROFILES



11

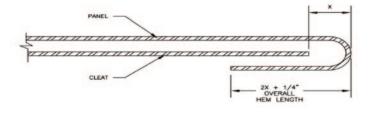
HEM LENGTHS

A standing seam roof panel experiences changes in panel length with changes in panel temperature. One end of the panel is fixed to the substrate while the other end is free to move. The panel end that is free to move requires a hem that engages a cleat that is fixed to the substrate. The hem and cleat permit the panel end to move along the plane of the roof while holding the panel flat.

FLATIRON STEEL

MECHANICAL LOCK

The thermal movement also requires proper design of the hem and cleat. The length of the hem needed at the end of a panel will vary with the temperature range that the panel experiences and the length of the panel. Unless a more exact analysis of the temperature during installation compared to the anticipated temperature range is conducted, use the following equation and the Thermal Movement Table. When installing panels, be sure to leave room at the end of the cleat. Be sure that the hem is not tight against the cleat (unless the panels are being installed in the coldest temperatures the panel will experience). Also be sure that the lower edge of the hem will not contact any flashings when the panels contract.

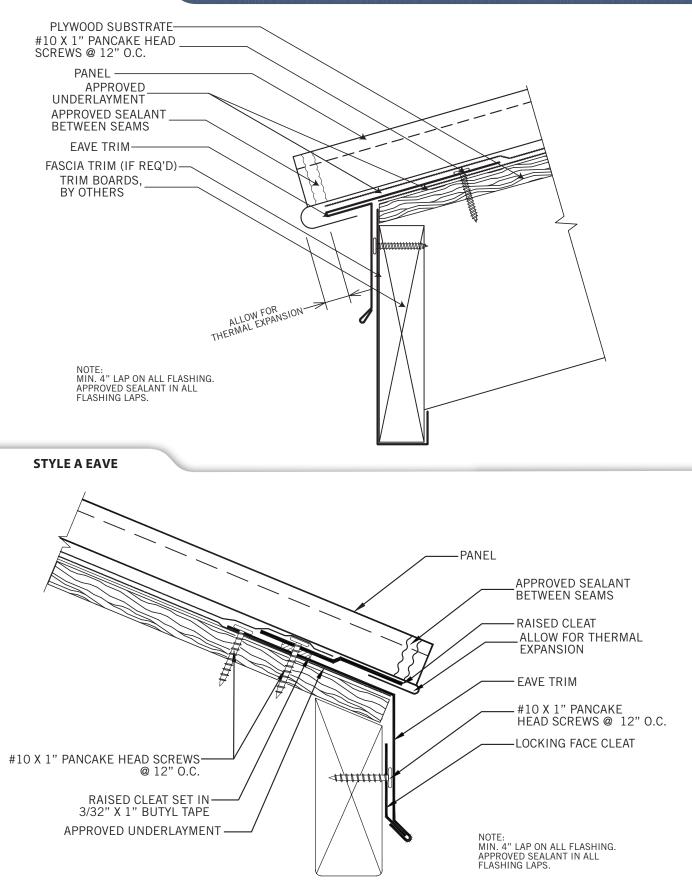


PANEL AND SUBSTRATE MATERIALS	PANEL LENGTH (FT.) 10' 50' 100'			
Steel on Rigid Insulation	1/8"	1/2"	7/8"	7
Steel on Wood	1/16"	3/8"	5/8"	REQUIRED
Steel on Steel	1/16"	3/8"	5/8"	JIRE
Steel on Concrete	1/16"	3/8"	1/2"	
Aluminum on Rigid Insulation	3/16"	7/8"	1 9/16"	
Aluminum on Wood	3/16"	11/16"	1 3/8"	SPACE
Aluminum on Steel	1/8"	5/8"	1 3/16"	$\overline{\mathbf{X}}$
Aluminum on Concrete	1/8"	5/8"	1 1/4"	

THERMAL MOVEMENT TABLE

This table assumes a temperature change of 100°F for the panel and 50°F for the substrate.

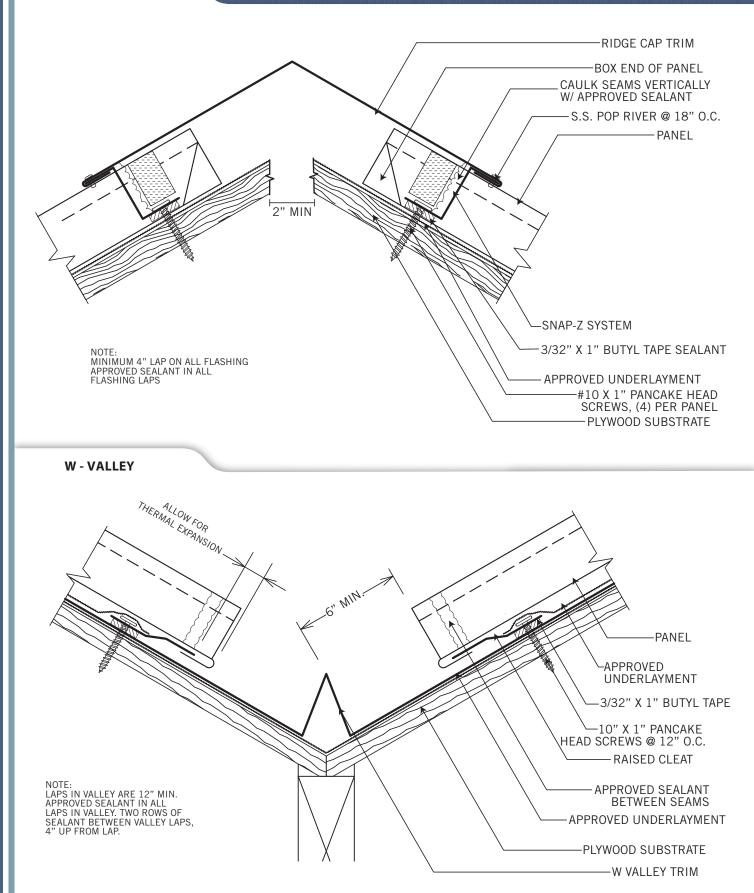
STYLE D EAVE



*Details are subject to change without notice.

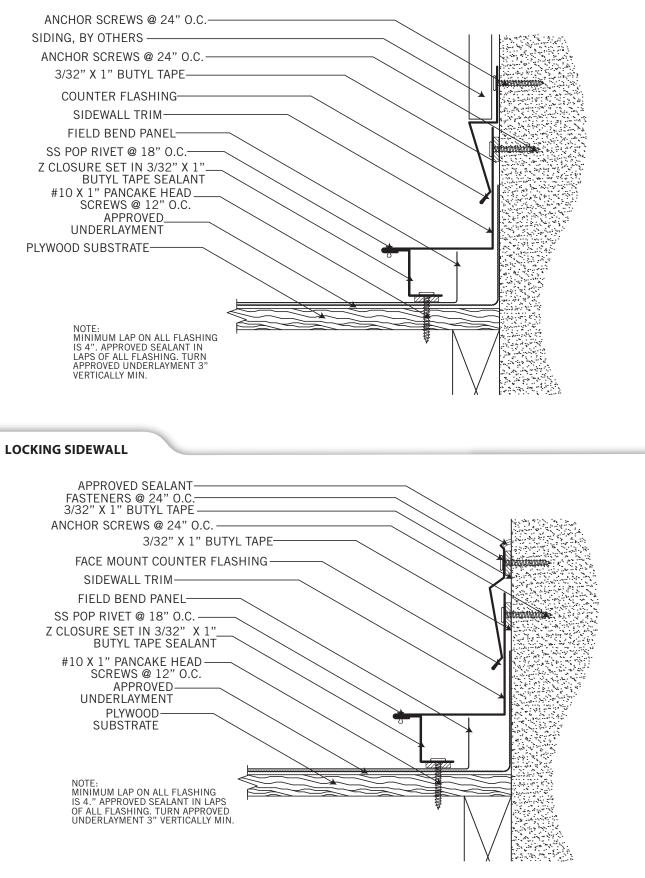
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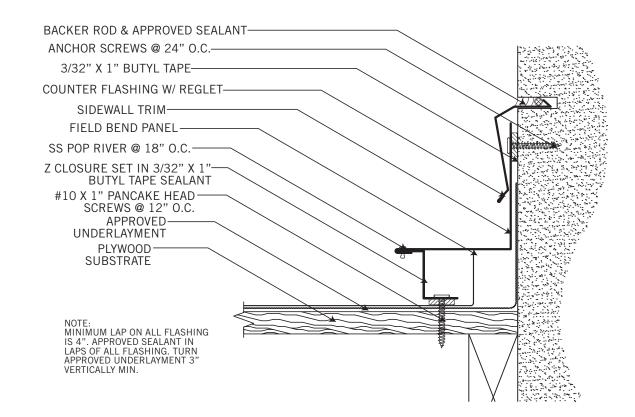


*Details are subject to change without notice.

LOCKING SIDEWALL



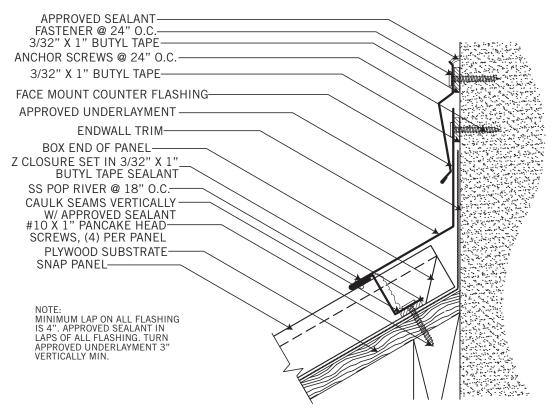
LOCKING SIDEWALL



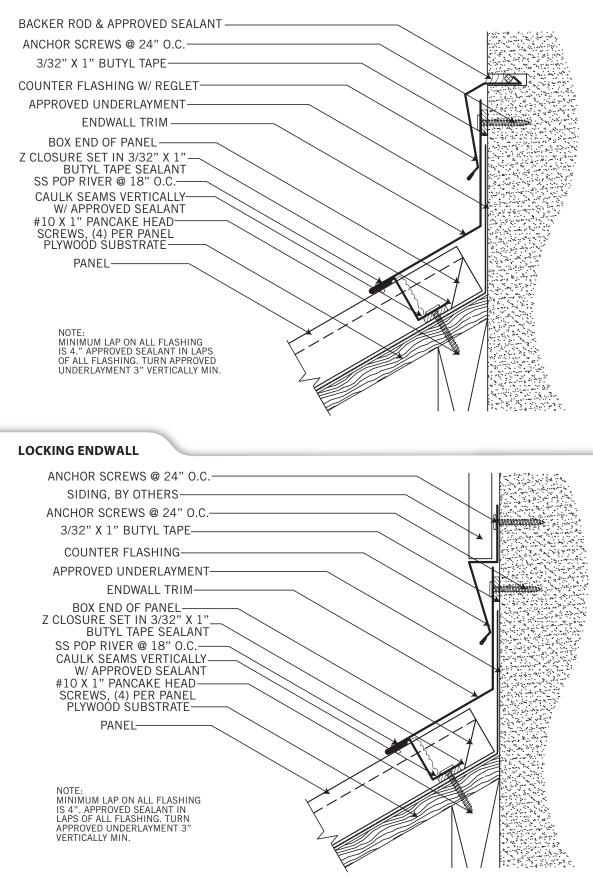
FLATIRON STEEL

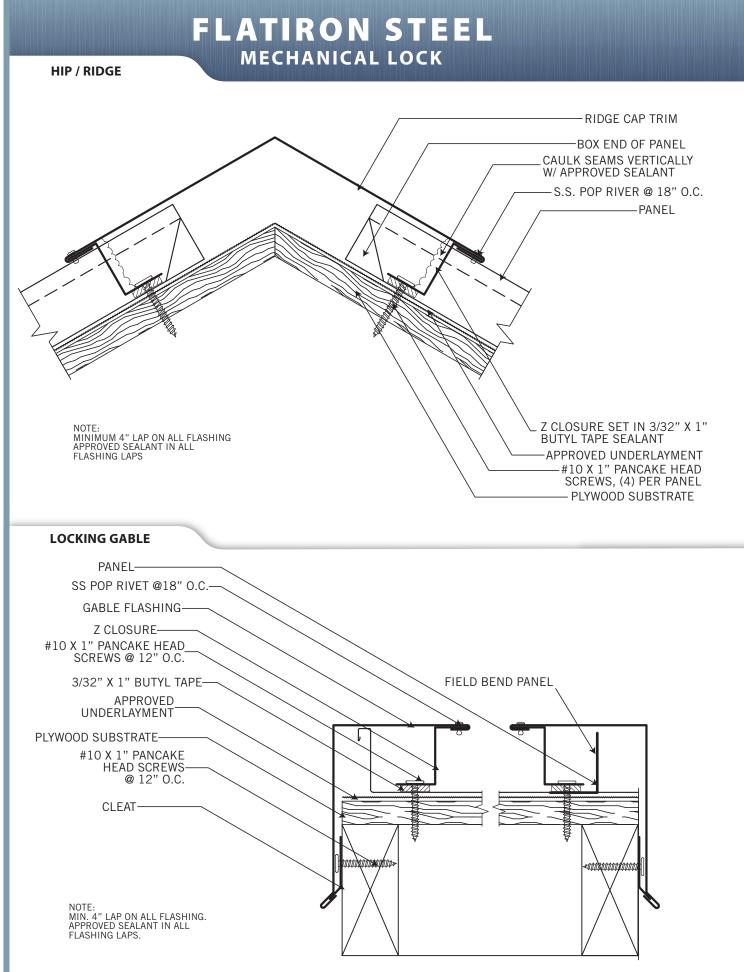
MECHANICAL LOCK

LOCKING ENDWALL

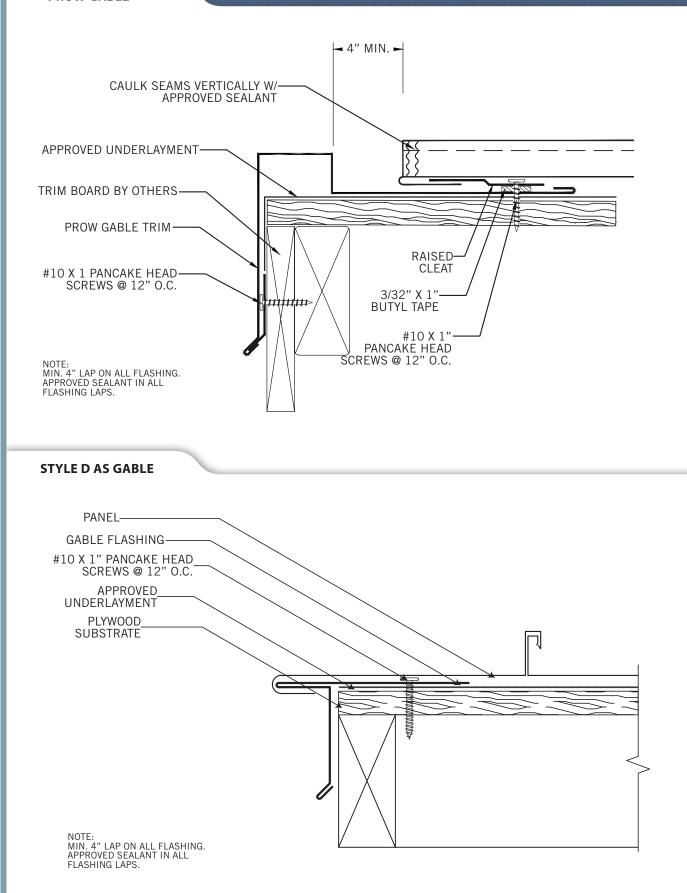


LOCKING ENDWALL



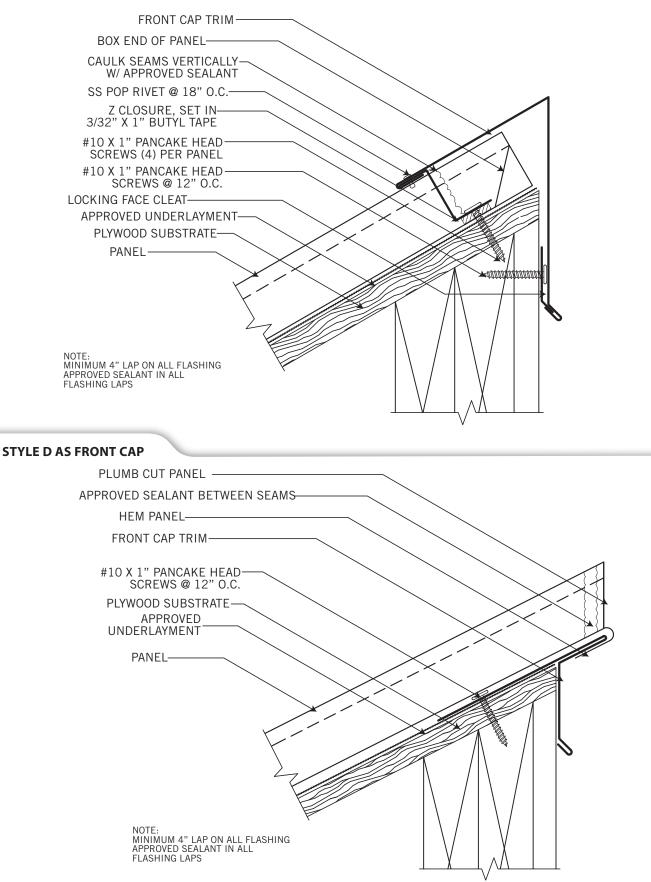


PROW GABLE



*Details are subject to change without notice.

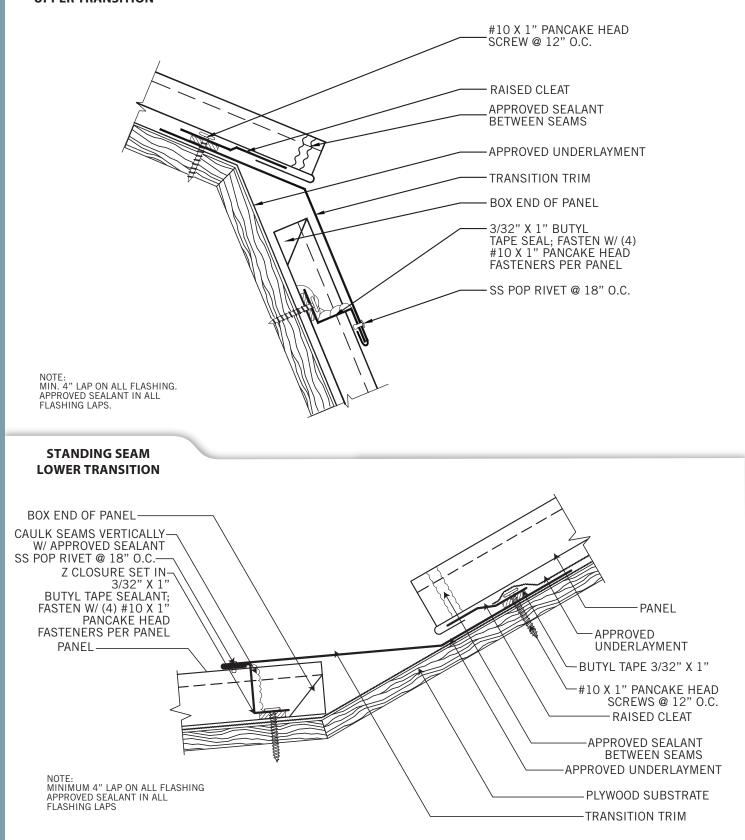
STANDING SEAM FRONT CAP



*Details are subject to change without notice.

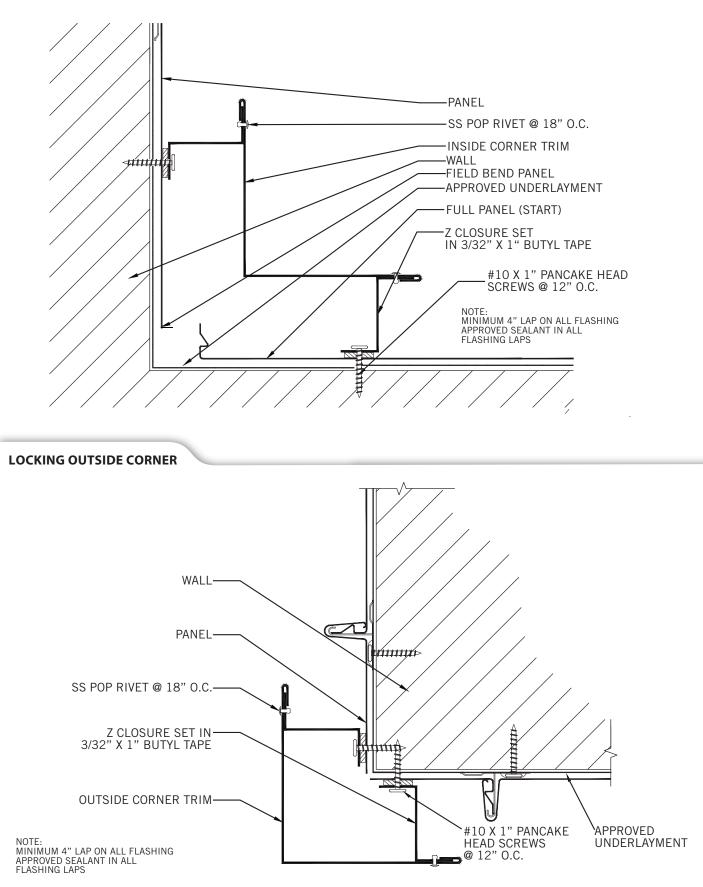
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STANDING SEAM UPPER TRANSITION



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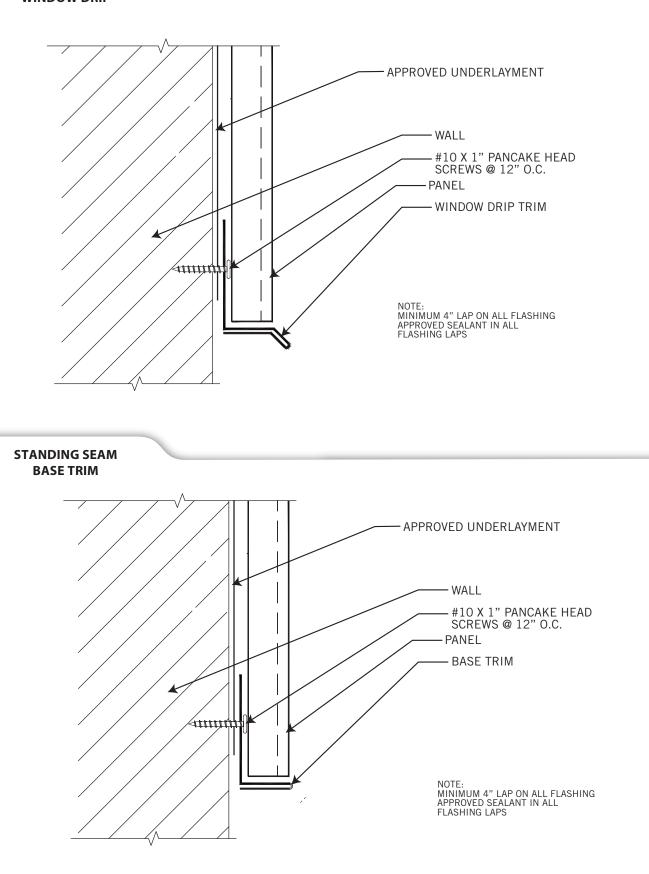
LOCKING INSIDE CORNER



*Details are subject to change without notice.

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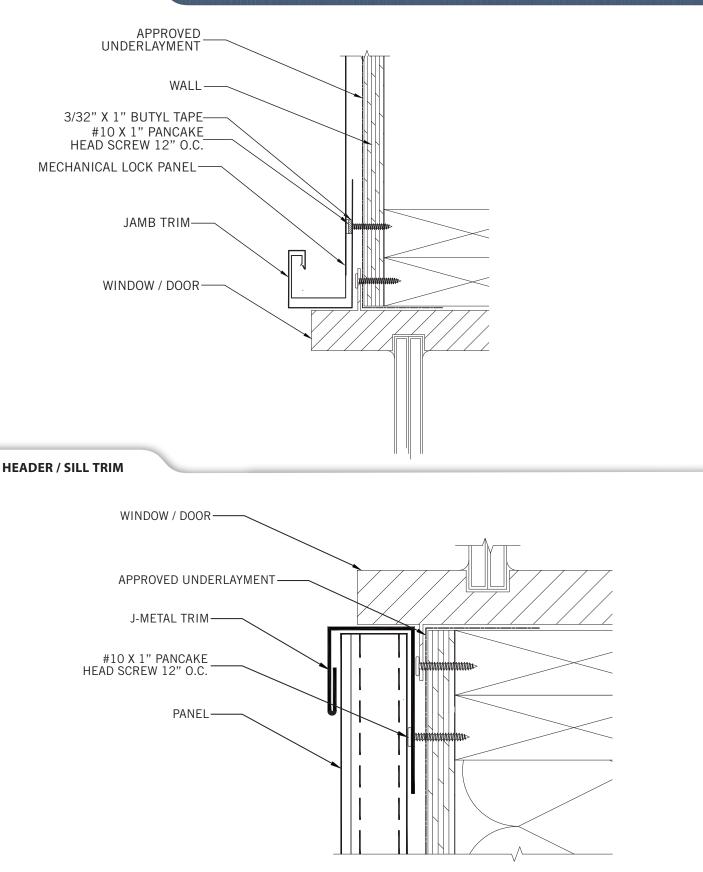
STANDING SEAM WINDOW DRIP



*Details are subject to change without notice.

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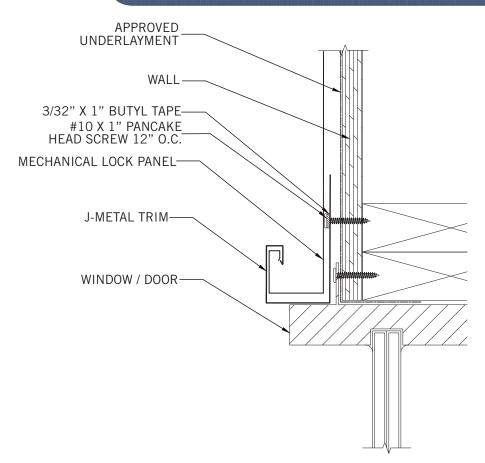
JAMB TRIM



*Details are subject to change without notice.

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J - METAL TRIM



*Details are subject to change without notice.

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