METL SPAN®
CANADA | A DIVISION OF ROBERTSON BUILDING SYSTEMS
INSULATED METAL PANELS

Installation Guide

CFR SERIES

CONTENTS

Disclaimer

This guide is intended to be used in conjunction with the project's installation drawings. The installation drawings should identify the applicable roof conditions, specify the components and the required arrangement of the components. Specific building design and construction conditions may require variations from the information in this guide.

Metl-Span does not guarantee and is not liable for the quality of installation. Metl-Span is not responsible for defects that may be attributed to improper installation, the negligence of other parties, or for materials not provided by Metl-Span.

All safety procedures including but not limited to fall protection and material handling are the exclusive responsibility of the installing contractor.

Unless specified in writing, Metl-Span makes no expressed or implied warranties pertaining to the fitness of the panels or components for any particular purpose, and shall not be responsible for any indirect or consequential damages, such as to building contents, nor for any further loss of any kind to the owner or contractor.

Metl-Span does not warrant any product or material as meeting the ordinances, laws or regulations of any particular state or local municipality, and Metl-Span is not responsible for conformance by the owner or contractor to such ordinances, laws or regulations.

1. INTRODUCTION

Welcome to Metl-Span, the dynamic industry innovator dedicated to manufacturing and marketing the highest quality insulated building panel products. Since our origination in 1968, we have been pioneers in research, design, production and sales of state-of-the-art insulated metal panels and building materials serving the commercial, industrial and cold storage industries.

Our mission is clearly defined: Deliver the highest quality energy-efficient solutions to insulate and protect our world.

This installation guide is designed to provide step by step instructions for the CFR standing seam insulated metal roof panel.

For more information regarding proper panel installation, please contact Metl-Span Technical Services:

1720 Lakepointe Drive, Suite #101
Lewisville, Texas 75057
TEL: (972) 221-6656
Fax: (972) 436-7028
E-mail: info@metlspan.com
Website: www.metlspan.com

1. INTRODUCTION

Installation Drawings

Installation drawings (also known as shop drawings) are usually prepared by the installation contractor, Metl-Span or some other party depending on preferences or contractual requirements.

Installation drawings must be "approved" by the customer or customer's representative before they are to be used for construction. *It is critical that the approved installation drawings are in agreement with the final architectural and structural drawings as well as all addenda.* It is the responsibility of Metl-Span's customer to review the architects's comments and *sign off* on the approved installation drawings.

Approved installation drawings (labeled "for construction" or "for production") must be available at the job site during the preparation, installation and inspection of the roof support framing, roof panels, flashings and other related construction.

The installation drawings must be reviewed for differences with field conditions, and discrepancies should be resolved before proceeding with panel installation.

In case of conflict between this guide and "for construction/for production" installation drawings, the drawings govern.

CFR Unique Features

Our roof system is provided with extensive factory preparation and installation aids, making it the most installer friendly insulated metal panel standing seam on the market.

- factory cut-back panel ends for eaves and endlaps
- factory notched and swaged panel ends for endlaps
- integral panel backer plates for endlaps, ridge and high eave assemblies
- fastener template for endlaps
- factory clamps for panel sidejoints and endlap assembly
- die formed metal ridge closures for ridge and high eaves
- profiled sealant tapes for panels and flashing
- optional factory installed interior joint sealant

1. INTRODUCTION

Safety

In the USA, the Occupational Safety and Health Act (OSHA) governs regulations with the objective of protecting workers from injury or accident. “Part 1926, Safety and Health Regulations for Construction” are applicable to the wall installation.

In Canada, Occupational Safety and Health (OSH) regulation is under the jurisdiction of the local provinces and territories. Federal employees and Crown agencies may be subject to federal OSH jurisdiction.

The OSHA and OSH regulations should be recognized as job site requirements and fully complied with. Safe installation practices may be further defined and made mandatory by state or local ordinances.

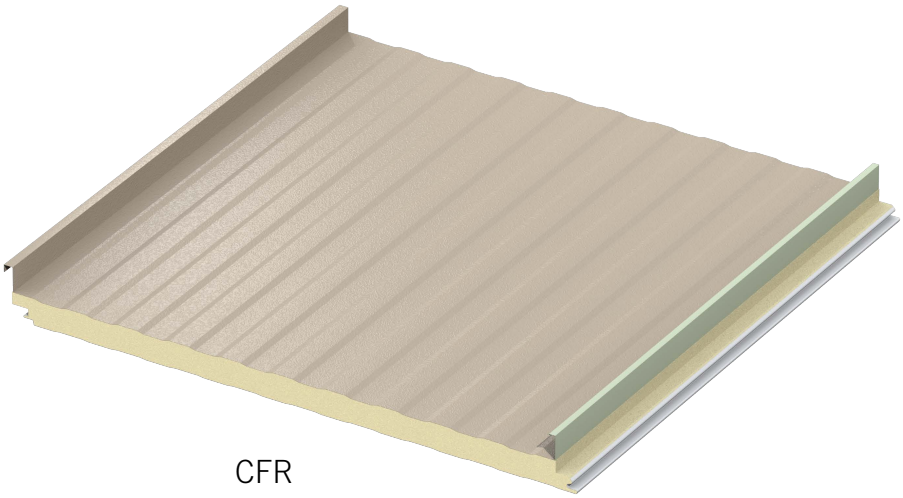
All safety procedures are the responsibility of the panel installation contractor. If the installer determines that they cannot safely install the panels in accordance with the installation drawings or this guide, it is their responsibility to determine appropriate alternative procedures.

Owner’s Responsibilities

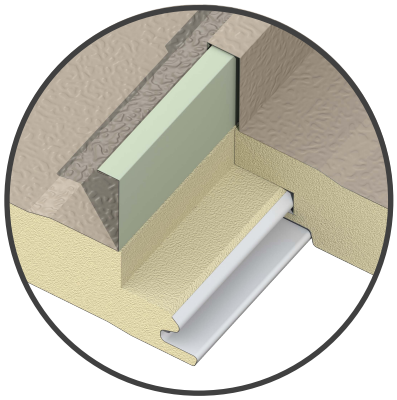
“Owner” as used throughout this guide refers to the project’s owner and/or his representatives, such as the project’s architect, design engineer and general contractor. These parties are responsible for determining the following:

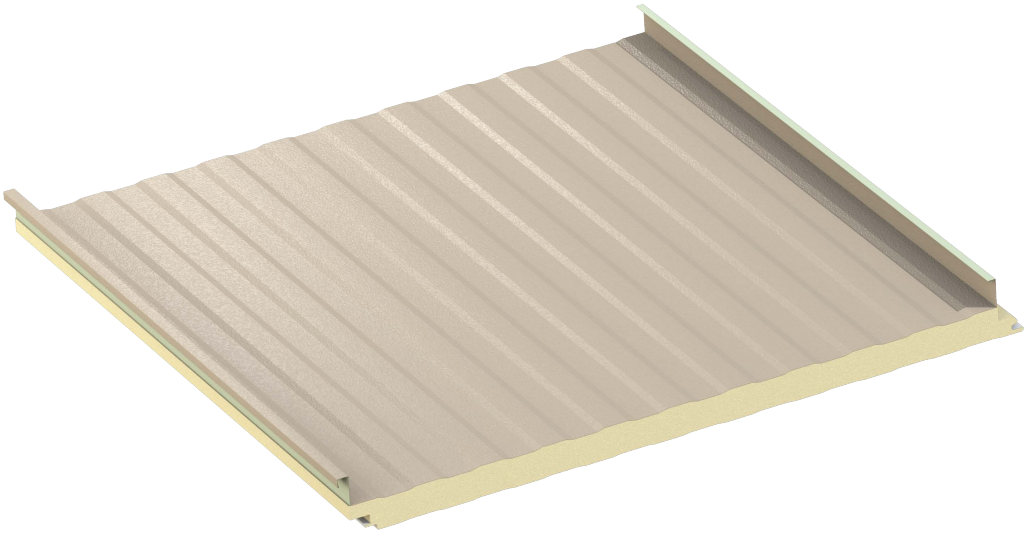
- Selection of a competent installer who is qualified and experienced in the proper installation of insulated metal panels and related construction.
- Installer has reviewed and understands the project’s installation drawings and this guide *prior* to installation.
- Panels and related components are installed in accordance with the project’s installation drawings and the applicable portions of this guide.
- Panels are suitable for the purpose intended.
- Project’s structural framing is properly designed and in satisfactory condition to accept the installation and design loads imposed by the panels.
- Location of interior and/or exterior panel joint and perimeter seals are properly specified for the project’s moisture and vapor control requirements.
- Panels and related components are installed in compliance with the applicable codes, regulations, service conditions and good engineering and construction practices.

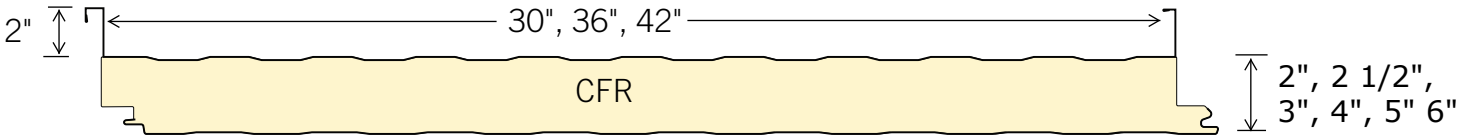
2. CFR PANEL PROFILES



CFR







3. FRAMING ALIGNMENT

3.1 Framing alignment should be checked *before* panels are installed.

3.2 Compare structural and panel installation drawings to ensure roof supports are in correct location. Field measure support spacing and overall building dimensions.

WARNING: RESOLVE ALL DIMENSIONAL DIFFERENCES BETWEEN BUILDING AND DRAWINGS BEFORE PANEL INSTALLATION BEGINS!

3.3 All supports not in alignment must be corrected by the responsible party *before* panel installation begins.

3.4 Standard framing tolerances are as follows:

Roof plane flatness: ± 1/8" in 5', ± 1/4" in 20' and ± 1/2" over the entire roof area
Length: ± 2" rake to rake
Width: ± 1" eave to ridge/high eave
Eave, endlap and ridge straightness: ± 1/2"
Out of square: ≤ 1/4" sawtooth between adjacent panels

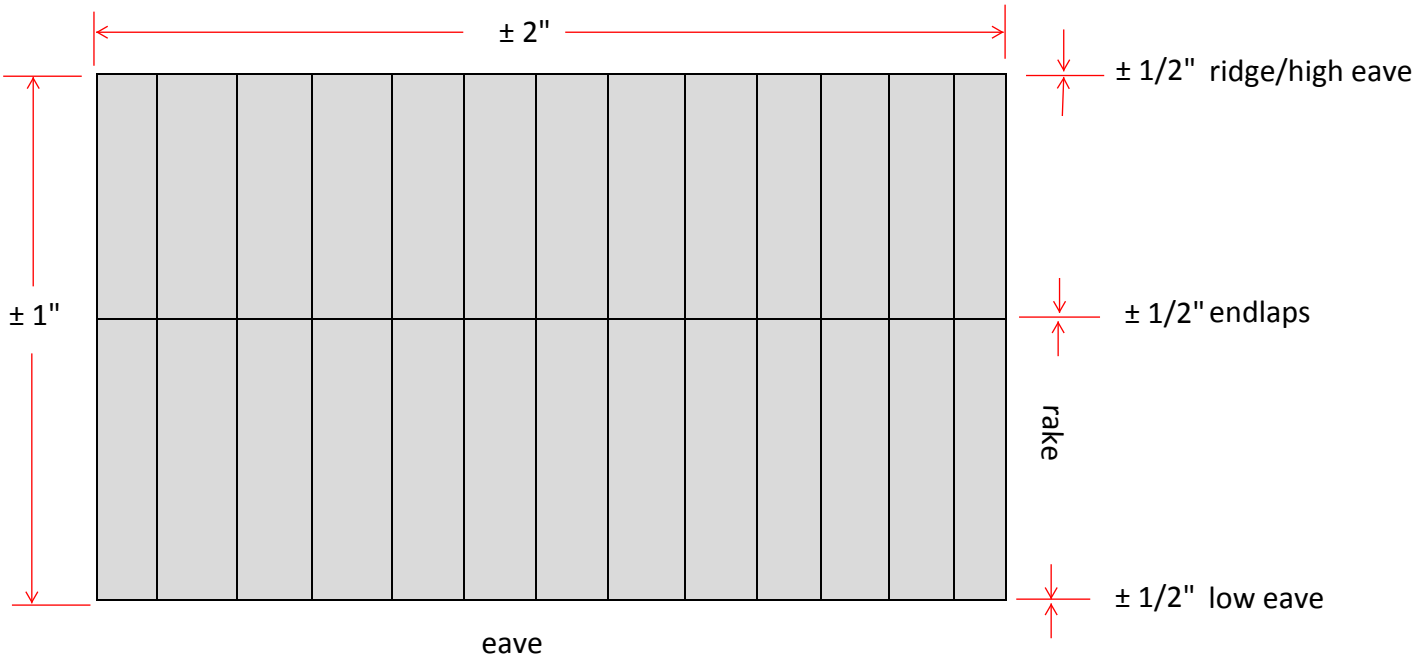
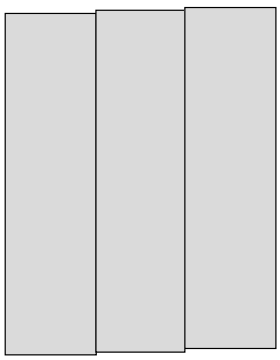


Figure 3.4

WARNING: ABOVE TOLERANCES ALLOW FOR PROPER INSTALLATION, BUT EXTREMES MAY RESULT IN OBJECTIONABLE AESTHETICS.

WARNING: IMPROPER FRAMING ALIGNMENT CAN CAUSE DIFFICULTY WITH PANEL ENGAGEMENT AND RIPPLING OR BUCKLING OF THE PANEL FACES.



≤ 1/4" sawtooth between adjacent panels

4. RECEIVING

4.1 Proper off-loading equipment must be on site *prior to arrival of panels and accessories.* All bundles and crates are packaged for side unloading by forklift or by crane. Maximum bundle weight is 5,000 lbs.

4.2 Check all materials immediately upon arrival for freight damage. Inspect for strap damage, forklift damage or packaging/bundle wrap damage.

4.3 Verify that the order number, quantities and descriptions of all bundles, crates and pallets on the bill of lading match those on the truck.

METL SPAN
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STRAIGHT BILL OF LADING

DUPLICATE (COPY OF ORIGINAL).

BOL #	123456
Job #	54321

Ship Date: July 17, 2015
Delivery Date: July 17, 2015 08:00 am

Consignee: IMP EXPERTS
HQ BUILDING
123 PEMB AVENUE
ANYTOWN, US 00123

Shipper: METL-SPAN
4700 Engineers Way
North Las Vegas, NV 89081

Contractor:

PO Number: 12345678

Panels			Accessories		
Bundle	*Qty in Bundle*	*Weight*	*Number*	*Type*	*Weight*
6-1	11	1275	NV-1	8' Box	750
6-2	11	1247	NV-2	20' Box	600
6-3	8	824	NV-3	Skid	300
6-4	7	721	NV-4	10' Box	1100
6-5	8	936	NV-5	20' Box	400
6-6	8	936			
6-7	6	702			
6-8	6	615			
6-9	1	88			

Total Weight: 10494

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby stated by the shipper to be not exceeding $_____ Per _____. Subject to Section 7 of the conditions, if the shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement. RECEIVED: subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above is in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier(the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry its usual place of delivery at said destination, if on it route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject toa all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns. Where applicable tariff provisions specify a limitation of the carrier's liability (NMFC Item 172), if there is no release of value declaration by the shipper, and the shipper does not declare a value or release the carriers' liability, that liability shall be limited to the extent provided by NMFC Item 172. California intrastate shipments must comply with NMFC Item 173. This is to certify that the above - named materials are properly classified, describe, packages, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

IN CASE OF ANY DELAYS PLEASE CONTACT I.M. Panel at (987) 654-3210. FAILURE TO REPORT ANY DELAYS MAY SUBJECT CARRIER TO BACK CHARGE.	***RETURN THIS COPY WITH INVOICE***	***Site Contact: BILL DOZER (123) 456-7890***
Shipper: METL-SPAN	***Carrier: IMPHAULER***	
	Truck #: 4321	
Per: _____	***Driver:*** _____	***Received By:*** _____
Date: _____	***Date:*** _____	***Date:*** _____

Figure 4.3

4.4 List all *visible* damages and/or shortages on the bill of lading, obtain the signature of the truck driver and an authorized representative of the Metl-Span customer.

4.5 Keep a copy of the marked-up bill of lading and send it with digital photos of the damage to Metl-Span Customer Relations.

4.6 Concealed damages/shortages must be reported to Metl-Span within 15 days of delivery.

4. RECEIVING

4.7 The panel bundling and accessories report lists the specific contents of each bundle, crate and pallet listed on the bill of lading.

METL SPAN®
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Customer: *IMP EXPERTS*
Project: *HQ BUILDING*

Job# 54321
BOL# 123456
PO# 12345678

Panel Bundling Report

Bundle #	Qty	Item #	Weight	Item Desc.	Thickness	Length	Panel Type
6-1	2	2	244	CFS1-1	4	11'-10 "	CF42F
	2	4	226	CFS1-2	4	10'-11 "	CF42F
	3	5	393	CFS1-3	4	12'-8 "	CF42F
	4	9	412	CFS3-1	4	10'-0 "	CF42F
6-2	2	6	226	CFS2-1	4	10'-11 "	CF42F
	2	7	244	CFS2-2	4	11'-10 "	CF42F
	2	8	262	CFS2-3	4	12'-8 "	CF42F
	5	9	515	CFS3-1	4	10'-0 "	CF42F
6-3	3	9	309	CFS3-1	4	10'-0 "	CF42F
	5	11	515	CFS4-1	4	10'-0 "	CF42F
6-4	7	11	721	CFS4-1	4	10'-0 "	CF42F
6-5	8	1	936	CFR-1	5	10'-7 3/4"	CF42R
6-6	8	1	936	CFR-1	5	10'-7 3/4"	CF42R
6-7	6	1	702	CFR-1	5	10'-7 3/4"	CF42R
6-8	3	1	351	CFR-1	5	10'-7 3/4"	CF42R
	3	3	264	CFR-2	5	8'-0 "	CF42R
6-9	1	3	88	CFR-2	5	8'-0 "	CF42R

Accessories

Item #	Part #	(Alt #)	Weight	Qty	Description	Pkg Type	Pkg #
23	F294		1100	6	Low Eave Trim	10' Box	NV-4
24	F3243		1100	6	4" Head Trim	10' Box	NV-4
25	F3243		1100	1	4" Head Trim	10' Box	NV-4
26	F3243		1100	1	4" Head Trim	10' Box	NV-4
27	F3243		1100	1	4" Head Trim	10' Box	NV-4
30	F3432		1100	1	Rake Trim	10' Box	NV-4
32	F3434		1100	2	Rake Trim	10' Box	NV-4
33	F3434		1100	2	Rake Trim	10' Box	NV-4
34	F3444		1100	6	Rake Zee	10' Box	NV-4
36	F3510		1100	10	Rake Angle Lap Cover	10' Box	NV-4
38	F3700L		1100	4	Rake Closure/Left	10' Box	NV-4
39	F3700R		1100	4	Rake Closure/Right	10' Box	NV-4

Figure 4.7

4. RECEIVING

4.8 Every bundle and trim/accessory crate has a shipping label that contains information on the contents.

JOB NUMBER								PACKAGE NUMBER	
54321								6-1	
CUSTOMER NAME:	IMP EXPERTS							PANEL:	4CF42F/LM
JOB NOTES:								FACE 1:	Brownstone 433R600 Kynar 500 Non-directional Embossing 24 Gauge
SPECIAL REQUIREMENTS:									
	LEED (BAA) Compliant								
P.O. Number:	12345678							FACE 2:	Snow White (K5) 431R539 Kynar 500 Non-directional Embossing 26 Gauge
CAULKING REQUIREMENT:	EXTERIOR:		INTERIOR:		PHASE NUMBER:	1	OF 1		

ITEM NUMBER	ITEM DESC.	PANEL LENGTH	QUANTITY	EXTRA	
2	CFS1-1	11'- 10"	2	0	
4	CFS1-2	10'- 11"	2	0	
5	CFS1-3	12'- 8"	3	0	
9	CFS3-1	10'- 0"	4	0	

OPERATOR:		SHIFT:		PROD DATE:	07/13/15	TIME:	10:15 am	*TOTAL PACKAGED: 11*

Figure 4.8

5. MATERIAL HANDLING - Bundles

Forklifts

5.1 Identify and mark off unloading area prior to material delivery.

5.2 Verify adequate material handling equipment with the proper reach and capacity is on site. Bundle weights are listed on the bill of lading, and have a maximum weight of 5,000 lbs.

5.3 Pre-determine the panel storage area prior to material delivery. It must be secure, flat, well-drained and reasonably level.

5.4 Panels are shipped via flatbed trailer, and can be off-loaded from the side of the trailer using forklifts.

5.5 Guidelines for off-loading are as follows:

Panel thickness	Bundle length	
2-2.5" thick	<36' = 1 forklift	≥36' = 2 forklifts
3" thick	<40' = 1 forklift	≥40' = 2 forklifts
4-6" thick	<48' = 1 forklift	≥48' = 2 forklifts

5.6 Tape foam blocks on forks to prevent over-engagement of panel bundles.

Figure 5.6a

WARNING: USE PADDING OR BLOCKING ON FORKLIFT MASTS TO PROTECT PANEL EDGES AND PREVENT OVERENGAGEMENT INTO ADJACENT BUNDLES!

Figure 5.6b

Figure 5.6c

Figure 5.6d

5. MATERIAL HANDLING - Bundles

Forklifts

5.7 Forklift blades must be level and centered under the weight of the bundle.

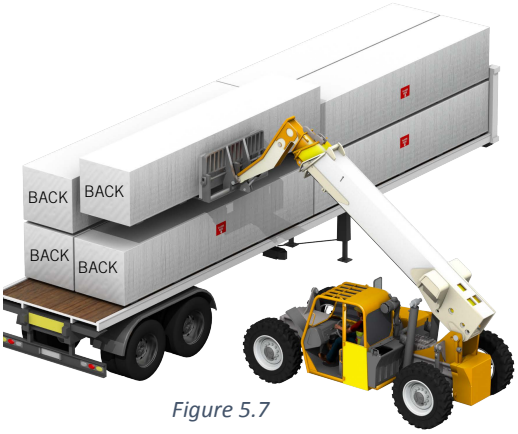


Figure 5.7

WARNING: LIFT ONE BUNDLE AT A TIME

5.8 Longer bundles are pre-marked with two lift points at the factory. Each forklift should straddle one lift point (see figure 5.8)

Figure 5.8

Two Forklifts REQUIRED

Forklift HERE

5.9 Inspect travel route to make sure path is reasonably level, compacted and free of ruts. Move bundles into position as required for efficient installation.

5.10 Secure open bundles with straps before moving with forklifts. Spread forks as far as possible and center under the load. Use caution to prevent excessive bending as damage to panels may result. Avoid bumpy terrain.

WARNING: USE EXTREME CARE WHEN MOVING OPEN BUNDLES, ESPECIALLY THOSE WITH 2-3 INCH PANELS LONGER THAN 20'.

WARNING: WHEN RELOADING BUNDLES, MAKE SURE THE END MARKED "BACK" FACES THE BACK OF THE TRAILER. USE DUCT TAPE TO REPAIR TEARS IN THE BUNDLE WRAP.

5. MATERIAL HANDLING - Bundles

Lifting by crane

WARNING: WHEN USING CRANES, STAY CLEAR OF ALL POWER LINES, SERVICES AND EQUIPMENT

5.11 Use wood spreaders (1.5" minimum thickness, width as required for straps) on top and bottom of bundles *at all pick points.*

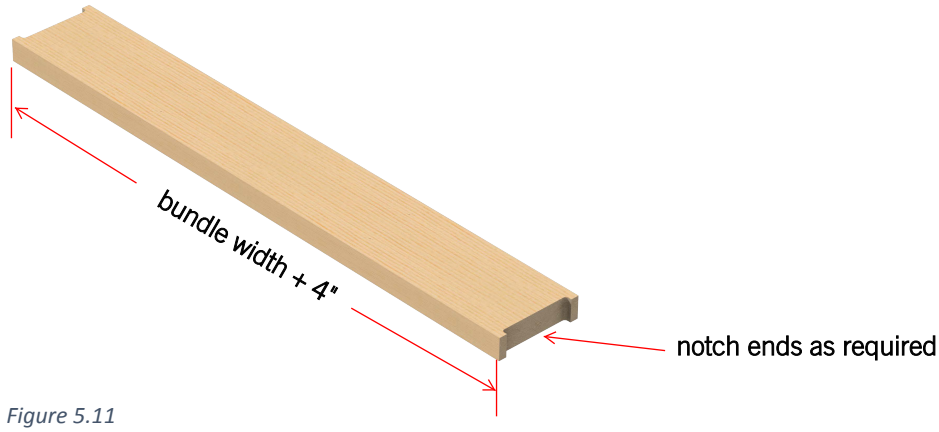
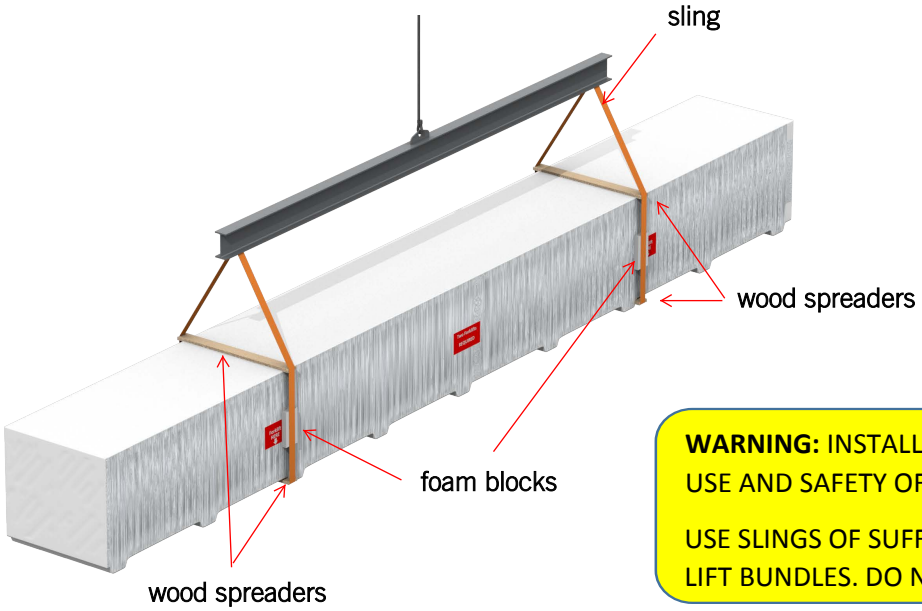


Figure 5.11

5.12 Place foam blocks on sides of bundles at all sling locations as shown in figure 5.12.

5.13 Bundles *under 4,000 lbs. and less than 44'* may be lifted as shown in figure 5.12.



WARNING: INSTALLER IS RESPONSIBLE FOR DESIGN, USE AND SAFETY OF RIGGING EQUIPMENT!

USE SLINGS OF SUFFICIENT SIZE AND STRENGTH TO LIFT BUNDLES. DO NOT USE CABLES OR CHAINS!

Figure 5.12

5. MATERIAL HANDLING - Bundles

Lifting by crane

5.14 Bundles over ***4,000 lbs. and less than 44'*** may be lifted as shown in figure 5.14

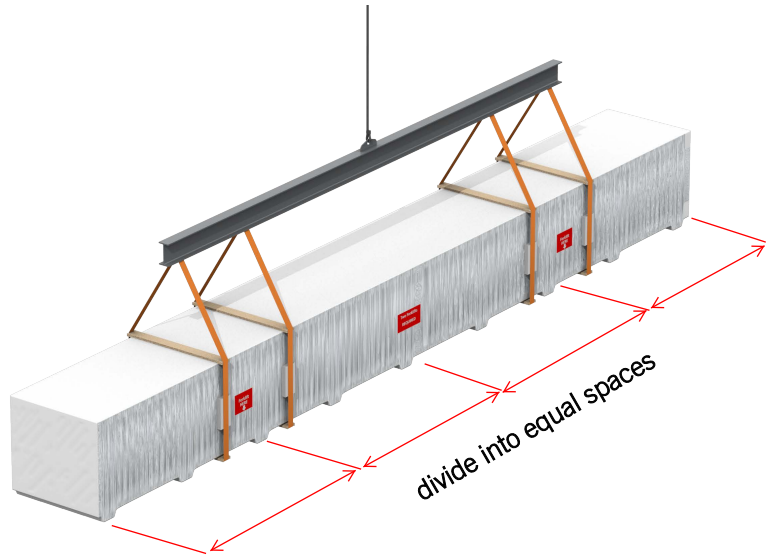


Figure 5.14

5.15 Bundles over ***4,000 lbs. and/or over 44'*** may be lifted as shown in figure 5.15

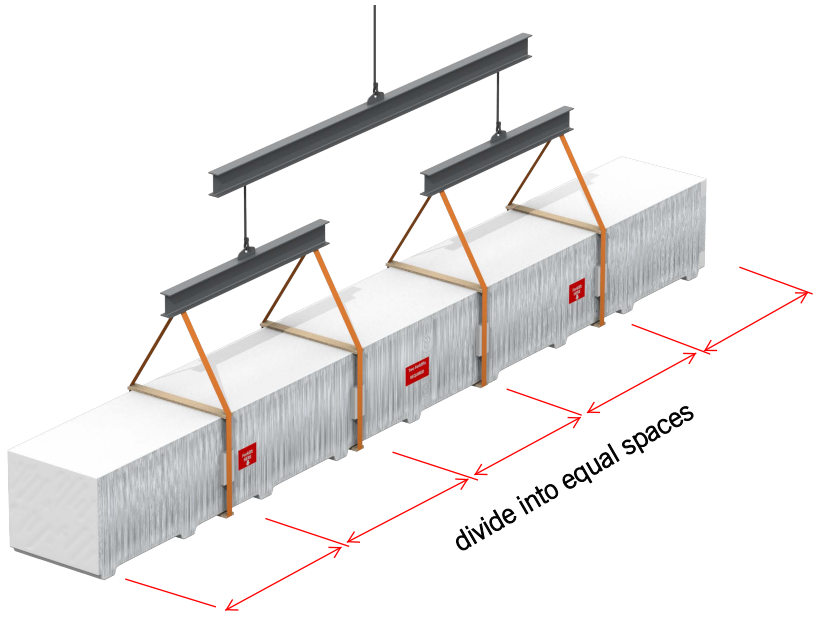


Figure 5.15

5. MATERIAL HANDLING – Individual Panels

Manual Lifting

5.16 Lift panels from the bottom skin…

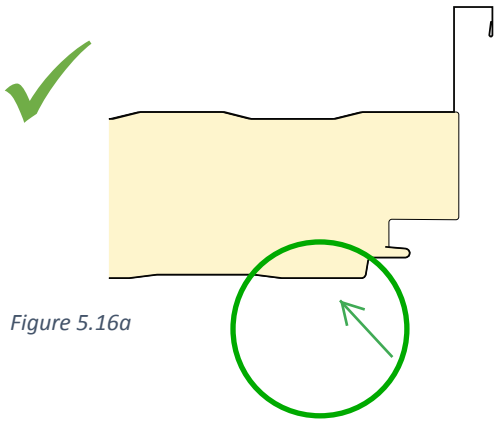


Figure 5.16a

NOT from the top skin…

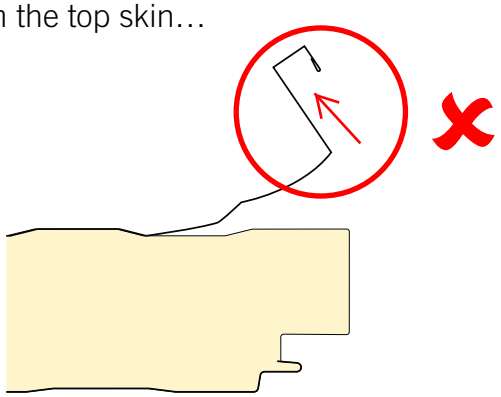


Figure 5.16b

5.17 Rotate panels onto the leading edge (side with clip shelf) before carrying. Use foam blocks (from bundles) to prevent panel edge damage.

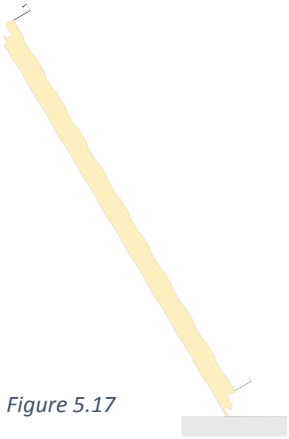


Figure 5.17

WARNING: TO AVOID SCRATCHING, DO NOT SLIDE PANELS OFF BUNDLES – ***ALWAYS LIFT THEM.***

5.18 Carry panels on edge with one worker at each end, plus a worker at 10' maximum intervals.

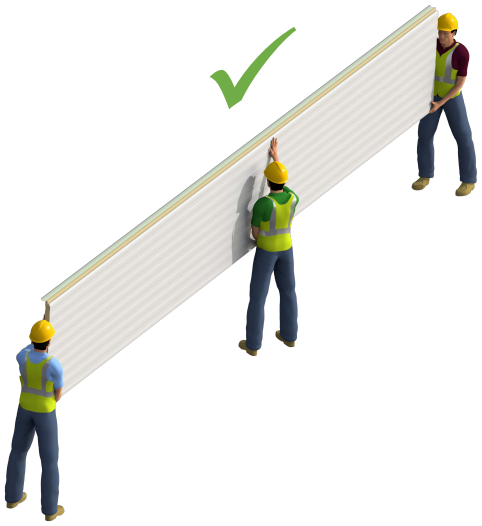


Figure 5.18a

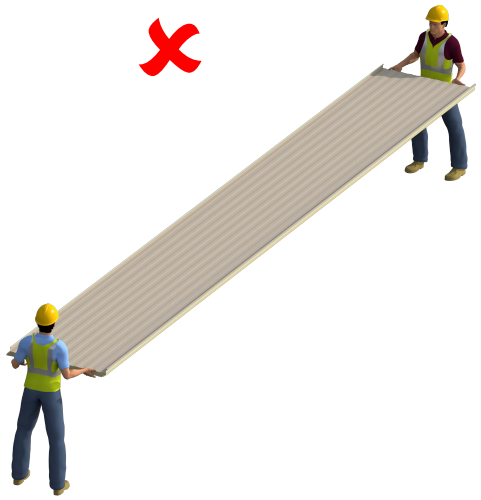


Figure 5.18b

5. MATERIAL HANDLING – Lifting Panels to Roof

5.19 Individual panels should be lifted to the roof using a vacuum lifter with outriggers (see below). Alternative methods include the use of clamps and slings.

5.20 Panel bundles may be lifted to the roof using a crane with spreader bars as needed *(see steps 5.13 - 5.15).*

5.21 Panel bundles placed on roof must be secured to roof framing members. Panels in opened bundles must be secured to prevent sliding off the roof.

5.22 Set bundles on roof in the proper orientation for the erection sequence.

WARNING: VERIFY THAT BUILDING STRUCTURE WILL SUPPORT WEIGHT OF PANEL BUNDLES PRIOR TO PLACING ON THE ROOF. VERIFY EXACT LOCATION(S) WHERE BUNDLES ARE ALLOWED TO BE PLACED!

Vacuum Lifting

5.23 Panel installation time is typically reduced when using vacuum lifting equipment. Equipment must be designed for panel lengths, weights and profiles to be lifted - *verify the requirements of your specific project with your lifting equipment supplier.*

Figure 5.23a

REMINDER - CFR PANELS ARE PACKAGED SO THAT EVERY OTHER PANEL IS FLIPPED.

Figure 5.23b

WARNING: PICKING PANELS FLAT OFF THE BUNDLE SHOULD ONLY BE DONE WITH THE USE OF VACUUM LIFTING EQUIPMENT AND PROPER OUTRIGGERS.

5. MATERIAL HANDLING - Thermal Bow

PANELS EXPOSED TO DIRECT SUNLIGHT MAY EXHIBIT THERMAL BOW WHICH CAN PREVENT PROPER ENGAGEMENT. MOVE PANELS TO SHADED AREA OR LEAVE FOAM INTERLEAF IN PLACE UNTIL INSTALLATION.

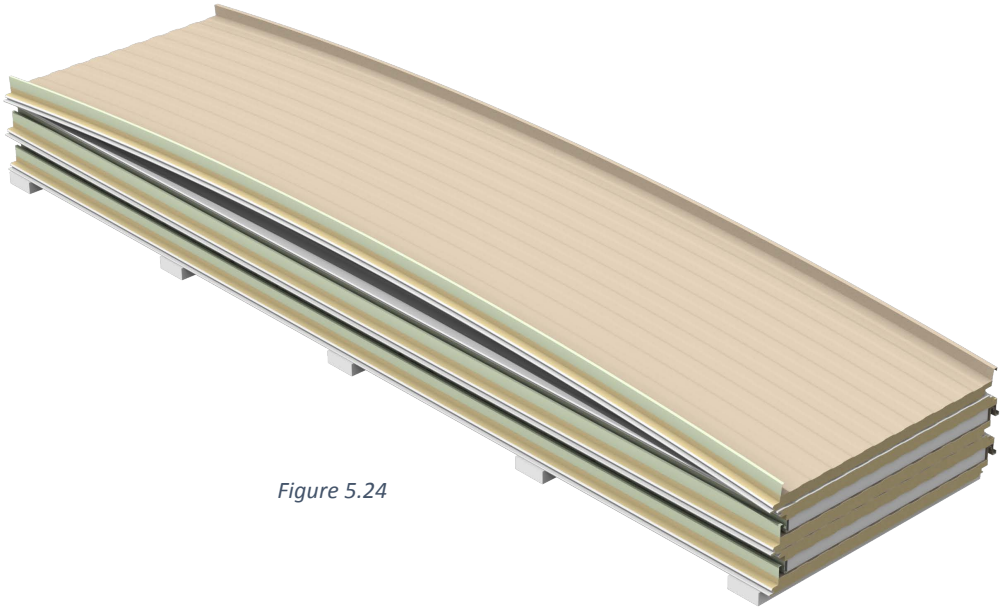


Figure 5.24

6. STORAGE AND STAGING

6.1 Panels should be stored in secure location(s), on level ground that is well drained and free from standing water.

6.2 Elevate one end of panel bundles to provide adequate drainage - use graduated blocking under bundle bearing pads as required (figure 6.2).

6.3 Slit bottom wrapping as shown for ventilation (figure 6.3).

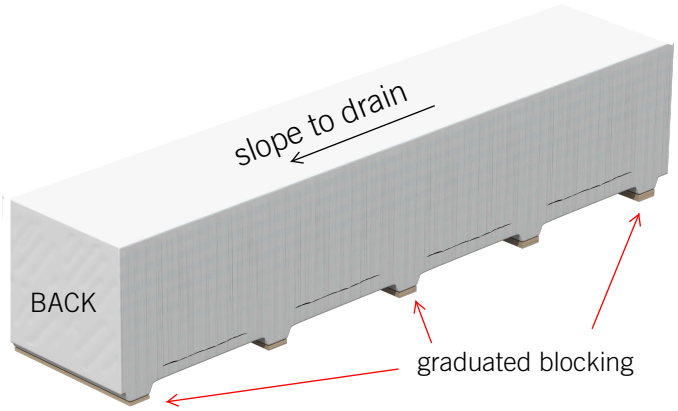


Figure 6.2

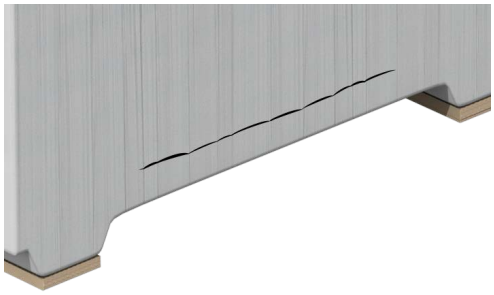


Figure 6.3

6.4 Opened bundles should be covered at the end of the workday with a tarp, and banded with straps to protect the finish and guard against wind.

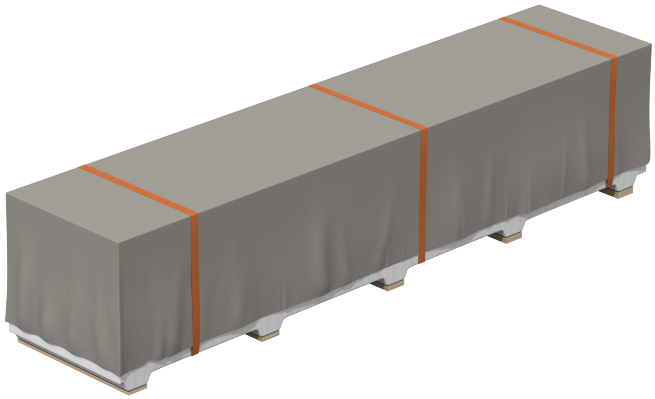


Figure 6.4

WARNING: DO NOT OVERTIGHTEN STRAPS AS DAMAGE TO PANELS MAY OCCUR. USE PROTECTIVE EDGE PADS.

WARNING: KEEP PANELS A SAFE DISTANCE FROM OTHER TRADES THAT ARE TORCHING, CUTTING, WELDING OR PAINTING. IF INTERIOR PANEL JOINT IS FACTORY CAULKED PROTECT EXPOSED SEALANT ON OPEN BUNDLES.

6.5 Items on bundle report match panel callouts on Metl-Span installation drawings. Use this info to stage panels.

JOB NUMBER					PACKAGE NUMBER		
63210					2-1		
CUSTOMER NAME:	METL-SPAN				PANEL:	3CF42M/M	
JOB NOTES:	RE: BUILDER XXXX PO # 123456				FACE 1:	Brite Red 434R843 Kynar 500 Non-directional Embossing 26 Gauge	
SPECIAL REQUIREMENTS:	LEED (BAA) Compliant						
P.O. Number:	TEST JOB				FACE 2:	Igloo White PMW0532 Polyester Non-directional Embossing 22 Gauge	
CAULKING REQUIREMENT:	EXTERIOR:	INTERIOR:	PHASE NUMBER:	1 OF 1			
ITEM NUMBER	ITEM DESC		PANEL LENGTH		QUANTITY	EXTRA	
1	W1		16'- 0"		3	0	
2	W2		15'- 6"		3	0	
3	PH1		15'- 4"		3	0	
4	PH2		15'- 0"		1	1	
OPERATOR:		SHIFT:	PROD. DATE: 04/01/15	TIME: 7:12 am	TOTAL PACKAGED: 11		

Page 1 of 1

Figure 6.5

7. PANEL CUTTING

7.1 Personnel cutting panels should always wear safety glasses, gloves and long sleeve shirts.

7.2 Panel cutting should take place *prior* to installation when possible.

7.3 Use the following cutting tools to avoid panel damage:

- ✓ Circular saw with carbide tipped metal cutting blade
- ✓ Insulated metal panel saw
- ✓ Band saw with metal cutting blade




7.4 Use care when using reciprocating saws to avoid panel delamination; make sure the blade is sharp and let the saw cut at its own pace - do not force.

7.5 Do NOT use abrasive saws to cut panels.

- ✘ Abrasive saws

WARNING: USE OF ABRASIVE SAWS/ GRINDER BLADES WILL DAMAGE THE PAINT FINISH AND THE METAL FACINGS!

7.6 For small penetrations, cut each panel face with a portable router, then cut the foam with a serrated knife.

7.7 Metal flashings may be cut with power snips, nibblers or hand snips.

7. PANEL CUTTING

7.8 Place the panel on padded sawhorses with the interior side up.

7.9 Wipe mud and debris off panel face to be cut with clean rag.

7.10 Mark cut line with chalk or washable felt tip marker (figure 7.10).

7.11 Masking tape may be applied on both sides of cut line to minimize panel scratching.

7.12 Recheck measurements and cut with appropriate tool per 7.3, 7.4.

7.13 Remove burrs at cut edges with deburring tool.

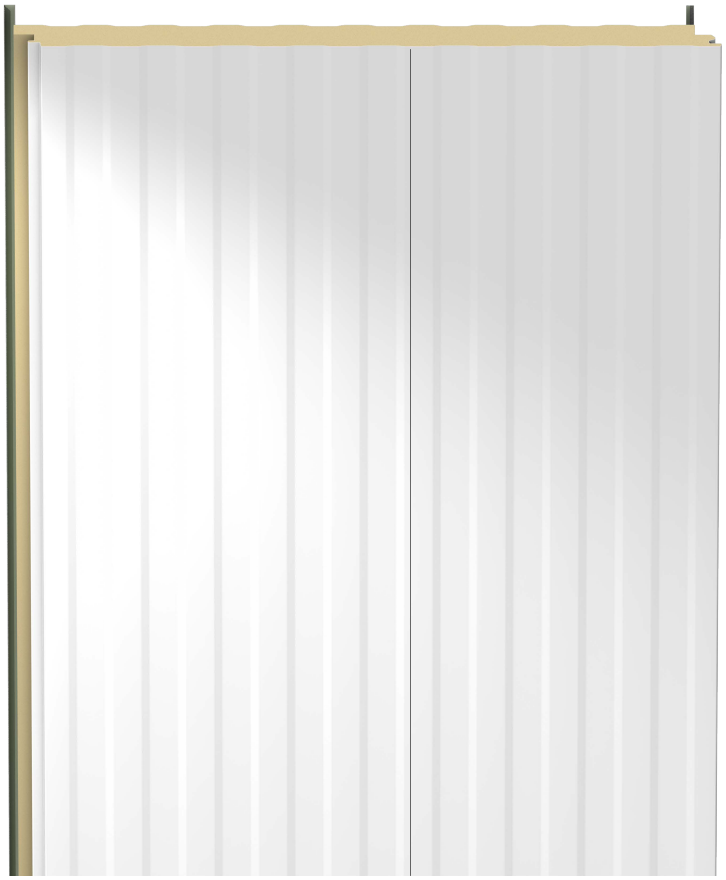


Figure 7.10

WARNING: TO PREVENT DAMAGE TO THE PAINT FINISH REMOVE ALL METAL SHAVINGS FROM PANEL SURFACES AFTER CUTTING!

WARNING: TO AVOID HAND INJURIES WEAR PROTECTIVE GLOVES WHEN HANDLING AND CUTTING PANELS AND TRIMS.

7. PANEL CUTTING

Penetrations

7.14 For panels where 50% or more of width is removed:

a. mark cut lines on BOTH panel faces

b. drill 1/4" holes at corner locations

c. cut the exterior face to a depth of 1/4"

d. flip panel over and cut interior face to a depth of 1/4"

e. cut all the way through panel sidejoints at the framed opening area

f. lift panel into place on roof

g. cut foam with serrated knife and remove panel section

h. engage panel and secure with fasteners

i. de-bur and remove metal shavings

panel exterior

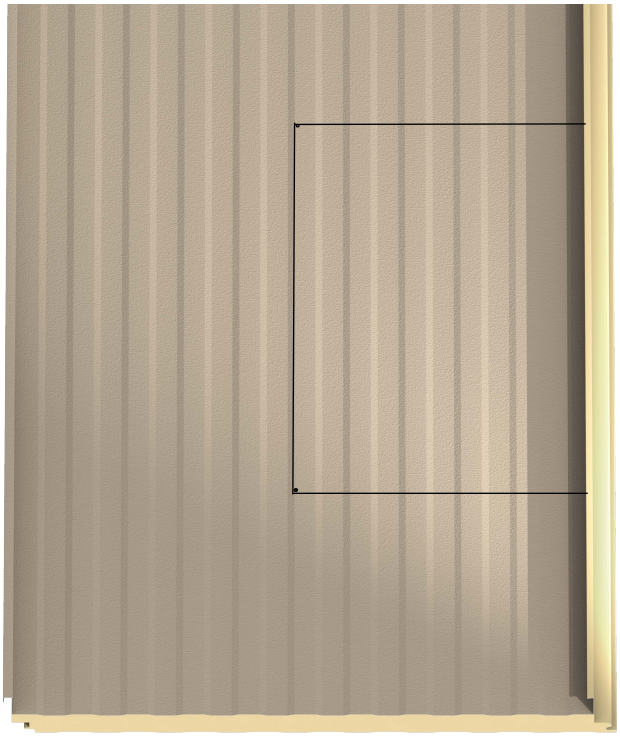


Figure 7.14a

panel interior

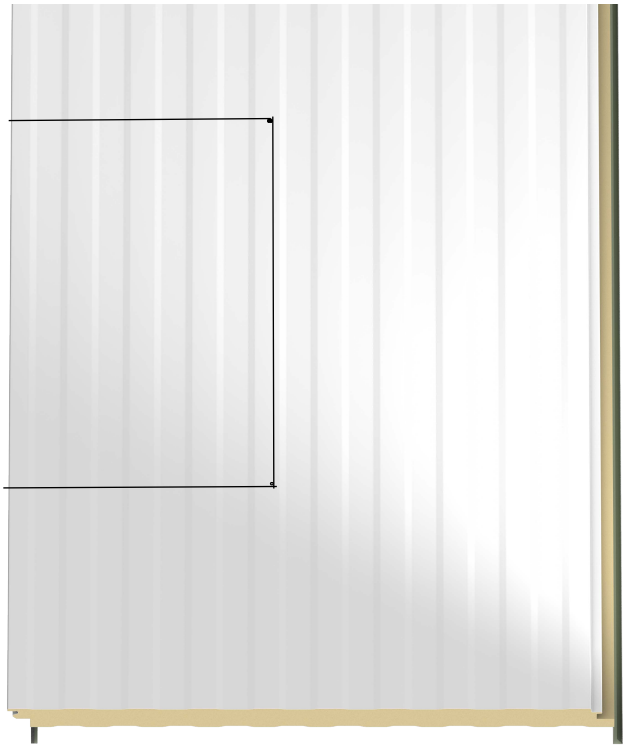


Figure 7.14b

CUT METAL FACINGS ONLY - DO NOT CUT FOAM CORE UNTIL PANEL IS LIFTED INTO PLACE!

8. PANEL SEALANT

WARNING: THE TYPICAL AIR/VAPOR BARRIER LOCATION FOR COMMERCIAL/INDUSTRIAL PROJECTS IS THE LINER (INTERIOR) SIDE JOINT. HOWEVER, THE PROJECT ARCHITECT IS RESPONSIBLE FOR DETERMINING THE ACTUAL VAPOR BARRIER LOCATION, *WHICH MAY VARY FROM THE DETAILS SHOWN IN THIS GUIDE*.

8.1 Joint must be clean and before applying sealant.

8.2 Apply continuous non-curing (non-skinning) butyl sealant to the interior panel joint with a bead size of approximately 1/4" as shown in figure 8.2. Sealant should provide continuous seal between the tongue and groove, but not overflow onto panel faces.

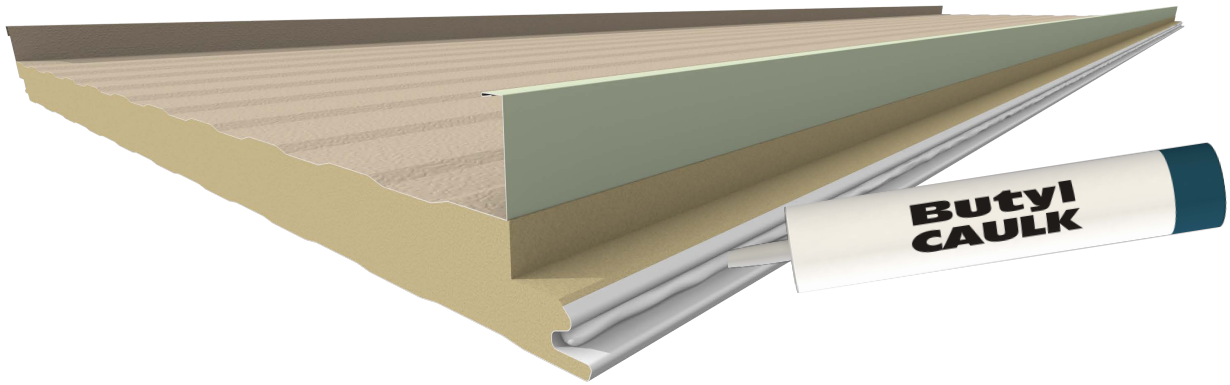


Figure 8.2

COLD WEATHER = STORE BUTYL IN A WARMING BIN UNTIL READY FOR USE

HOT WEATHER = STORE BUTYL IN THE SHADE AND OUT OF DIRECT SUNLIGHT

8.3 Inspect factory applied butyl sealant (if any) for consistent 1/4" bead size and add sealant as required. Replace contaminated sealant.

REMOVE SEALANT FROM PANEL FACES BY USING WD-40 OR MINERAL SPIRITS APPLIED WITH A CLEAN COTTON RAG.

9. PANEL FASTENERS

WARNING: REFER TO PROJECT INSTALLATION (SHOP) DRAWINGS FOR FASTENER TYPES AND REQUIRED FASTENING PATTERNS!

9.1 Self-drilling fasteners contain a built-in drill point, and do not require pre-drilling. They are the quickest and easiest way to attach insulated metal panels to light-medium gauge supports.

Figure 9.1

9.2 "B" point **self-tapping** fasteners are used to attach panels to medium-heavy gauge supports that are difficult or not possible to drill with self-drilling type fasteners. They require a two-step operation:

1. pre-drill holes through panels and structure
2. insert fastener and tighten

Figure 9.2

Suggested fastener driving speeds:

Carbon, Zinc Plated and 410 Stainless Steel: 1,800 rpm

304 Stainless Steel: 1,000 rpm

USE A TORQUE CONTROL OR DEPTH SENSING NOSE PIECE FOR PROPER FASTENER PERFORMANCE.

Recommended self-drilling, self-tapping types for various support thicknesses (¼" diameter):

Support thickness	Type	Threads per inch
18 gauge (.048)	#3	14
16 gauge (.060)	#3	14
14 gauge (.075)	#3	14
12 gauge (.105)	#3	14
1/8" (.125)	#3	14
10 gauge (.134)	#3	14 minimum
3/16" (.187)	#5	14 minimum
1/4" (.250)	#5	14 minimum
3/8" (.375)	#5	14 minimum
1/2" (.500)	#5	14 minimum

Pilot Hole Sizes for ¼" diameter B point fasteners:

Support thickness	Bit Size	Threads per inch
18 gauge (.048)	3/16"	14
16 gauge (.060)	#9 (.196)	14
14 gauge (.075)	#9 (.196)	14
12 gauge (.105)	#7 (.201)	14
1/8" (.125)	#2 (.221)	14
10 gauge (.134)	#2 (.221)	14 minimum
3/16" (.187)	#2 (.221)	14 minimum
1/4" (.250)	#1 (.228)	14 minimum
3/8" (.375)	#1 (.228)	14 minimum
1/2" (.500)	.234	14 minimum

10. CLEANING

WARNING: DO NOT USE WIRE BRUSHES, STEEL WOOL OR ANY OTHER ABRASIVE METHODS TO CLEAN PANELS.

10.1 Metal shavings from cutting and drilling should be removed as panels are erected using a soft bristle brush or clean cotton rag.

10.2 For general cleaning, use a low pressure power wash with plain water. If necessary, use carwash soap or a 5% solution of mild laundry detergent (such as Tide). Use a clean cotton rag, sponge or *soft bristle* brush as required. Rinse thoroughly.

10.3 Sealants, grease, tar and wax can be removed from panels and trim by using WD-40. Apply to a clean cotton rag, and avoid smearing over a large area. Follow up with general cleaning instructions per 10.2.

10.4 For rust stains, remove the source (typically metal filings), then clean the affected area using one of the following methods: soap and water, Soft Scrub® or Rid O'Rust®.

10.5 Concrete/mortar splatter must be washed off immediately with a high pressure wash and mild detergent.

WARNING: SCRUBBING THE PANELS WHILE MORTAR IS PRESENT WILL LIKELY RESULT IN SCRATCHES TO THE PAINT

LEAF BLOWERS ARE AN EFFECTIVE TOOL FOR REMOVING ROOF DEBRIS INCLUDING METAL SHAVINGS! BLOW IN AWAY FROM BUNDLES AND EXPOSED PANELS.

11. TOUCH-UP

11.1 Contact Metl-Span Customer Relations for color matched touch-up paint with applicator brush.

11.2 Touch-up paint is for minor scratches only. For deep scratches or larger areas of repair, contact Customer Relations for detailed instructions.

11.3 Clean affected area with a clean cloth, dampened with isopropyl alcohol.

11.4 Air and panel temperatures must be above 50°F before attempting repairs.

11.5 Apply touch-up in the scratch using an artist brush.

11.6 Allow 30-45 minutes for tack free and 24 hours for complete drying.

11.7 For more information regarding touch-up refer to the Owner's Maintenance Manual (available online at metalspan.com).

12. ROOF SAFETY REMINDERS

Before beginning panel installation, please note the following reminders:

12.1 Follow all federal, state and local laws regarding the proper use of safety equipment.

12.2 Hooks, wire cables and hardware used as tie-offs should be covered so that they do not scratch panel and trim surfaces.

12.3 Use an approved and safe walking platform in high traffic areas to prevent damage to roof panels.

12.4 Do not use panels as working platforms. Unsecured panels can slide or collapse under the weight of workers and equipment. Do not stand on the end of unsupported cantilevered panels, as this may result in panel collapse.

12.5 Avoid point loads (concentrated loads in small areas). Heavy equipment, ladders, platform feet etc. may cause panel damage that could result in collapse.

12.6 Rain, snow, ice or sand can create unsafe footing on roof panels. Exercise caution and use nonslip footwear and/or working platforms.

12.7 Do not install panels in high winds or other unsafe working conditions.

12.8 Secure all loose panels with banding or tie-downs to prevent blowing off the roof. Use roof clamps as necessary to hold panels in place until fastening is complete.

12.9 Use extreme caution on high pitched roofs - use adequate safety measures to prevent materials, equipment and workers from sliding off.

12.10 Avoid panel and lifting equipment contact with electrical power lines, equipment and services.

12.11 Verify that the roof structure is complete and properly aligned, with all connections and bracing in place and secured.

13. PANEL INSTALLATION - INTERIOR RIDGE TRIM

13.1 Apply bead of butyl sealant on top of rake structural support. Attach interior ridge trim to ridge purlins using 1/8" painted stainless steel pop rivets as necessary. Align the end of the trim flush with the outer edge of the rake structure.

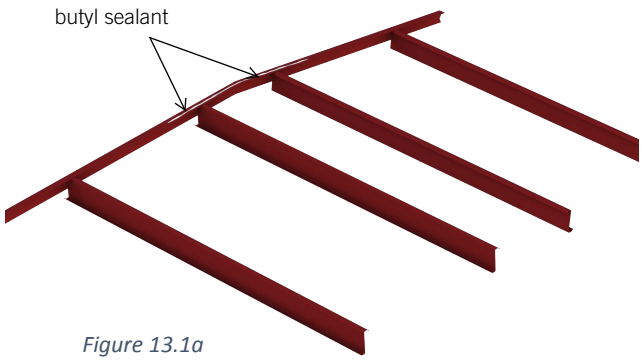


Figure 13.1a

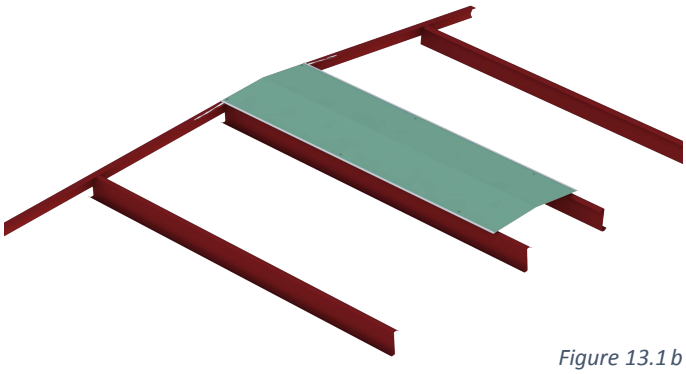


Figure 13.1 b

13.2 Trim hems 2", apply two rows of urethane sealant, lap and fasten 3" on center with 1/8" painted stainless steel pop rivets.

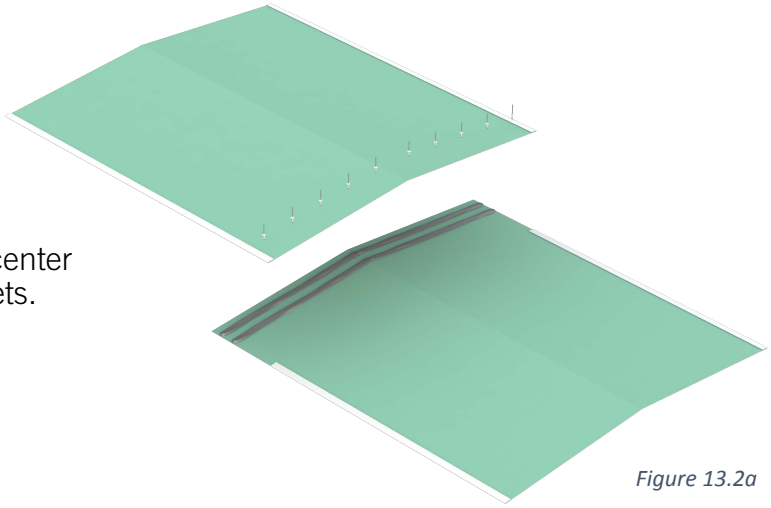


Figure 13.2a

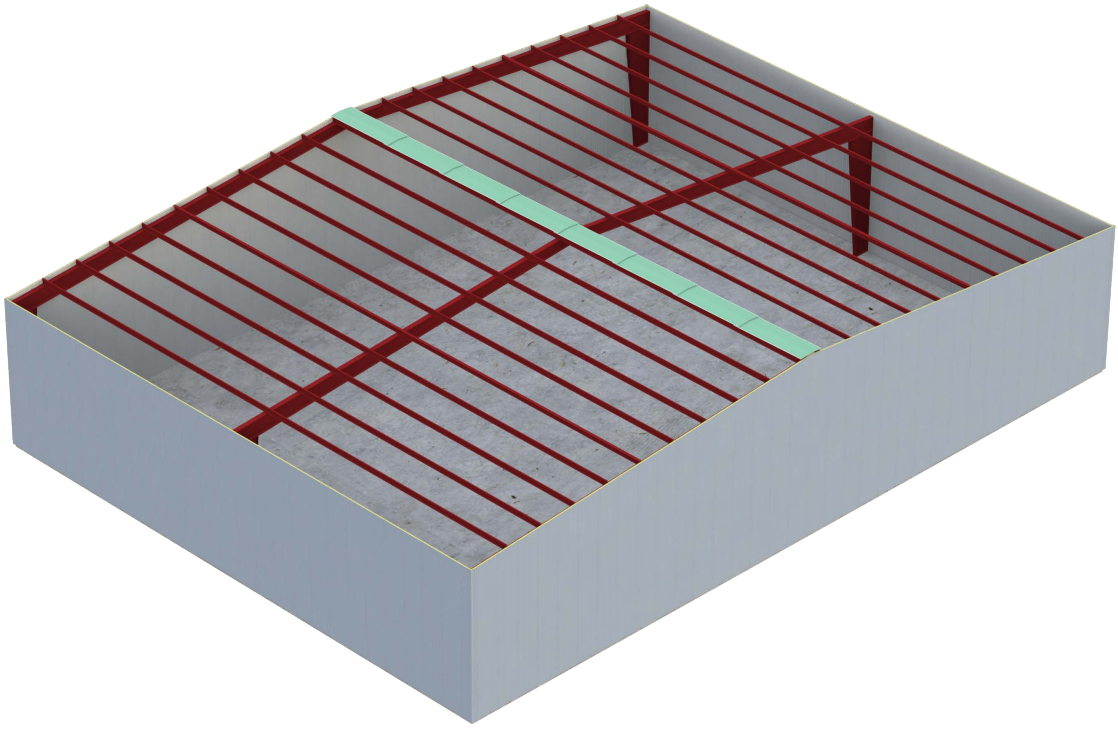


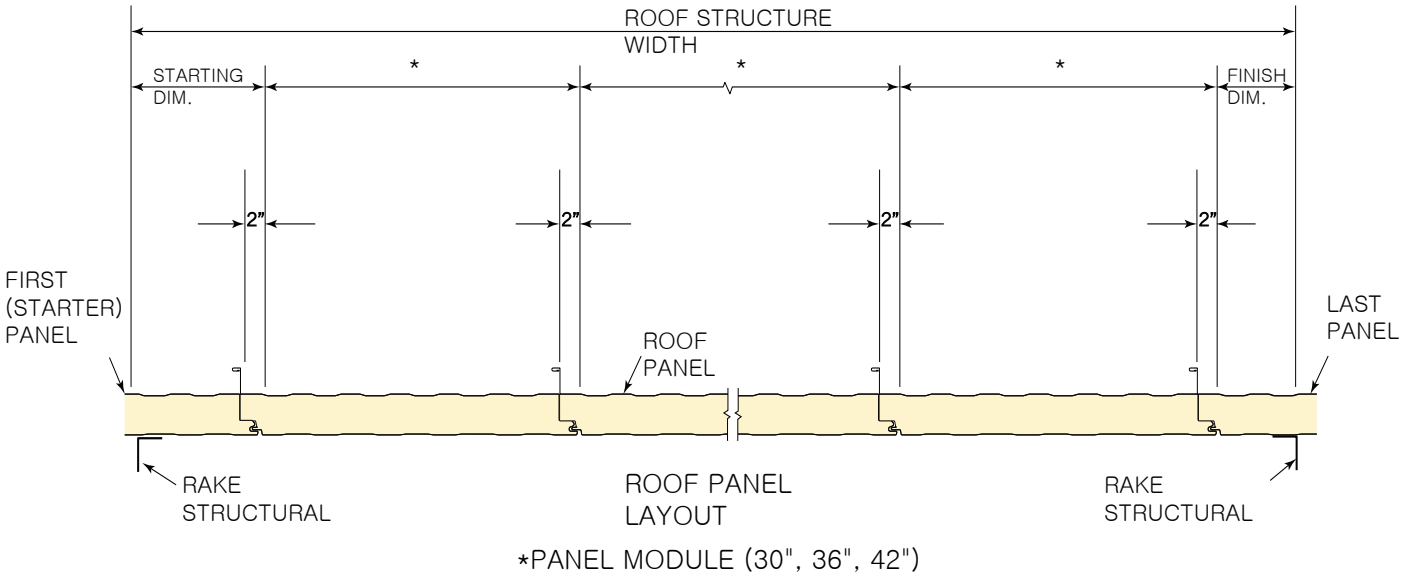
Figure 13.2b

13. PANEL INSTALLATION - PANEL LAYOUT

13.3 Determine the desired width of the first (starter) panel using figure 13.3 below. The first and last panel should be of equal width.

NOTE: FIRST PANEL DIMENSION MAY BE SHOWN ON THE INSTALLATION DRAWINGS.

Figure 13.3



13.4 Measure the starting dimension from the outer face of the rake angle and mark the dimension on the eave strut and the interior ridge trim. Snap a chalk line between these marks.

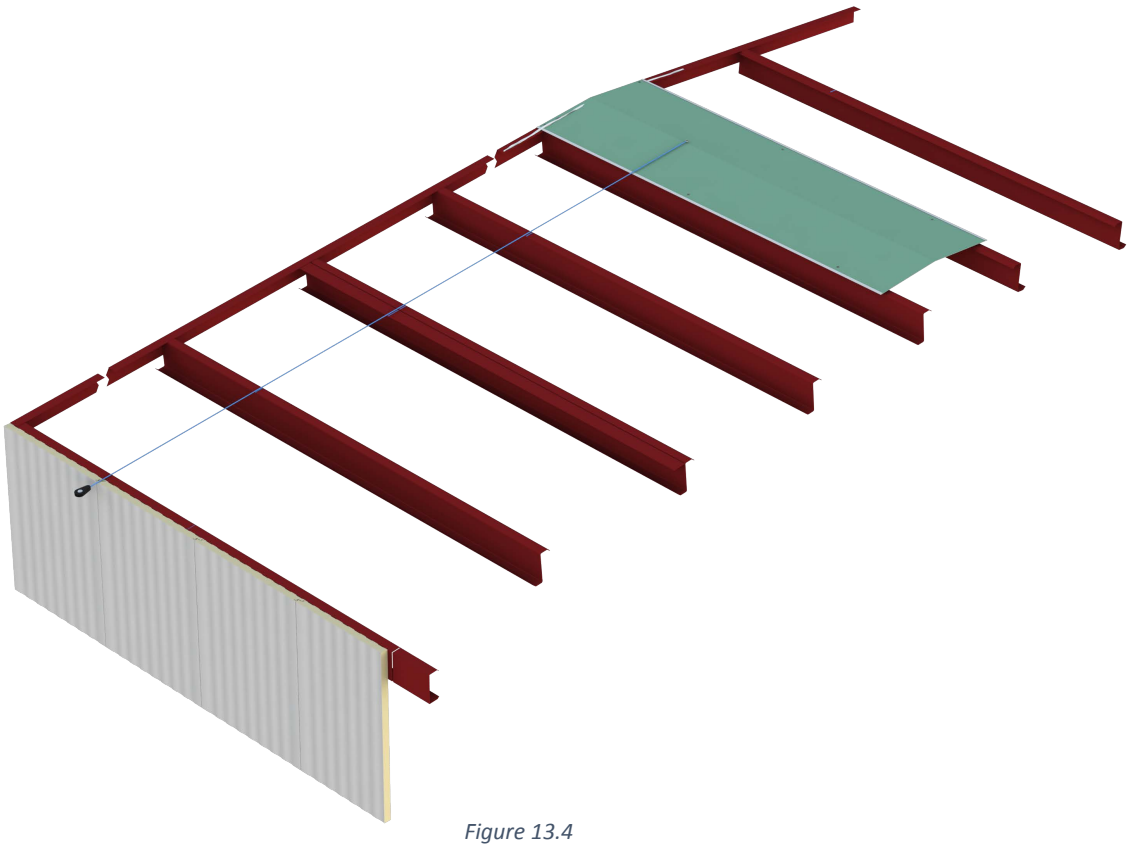


Figure 13.4

13. PANEL INSTALLATION - PERIMETER, ENDLAP SEALS

13.5 Apply a 3/8" continuous bead of butyl sealant along the rake and eave structural supports and interior ridge trim.

WARNING: TO ENSURE PROPER PERIMETER SEAL AND PREVENT SEALANT CONTAMINATION, APPLY BUTYL IMMEDIATELY BEFORE INSTALLING PANELS.

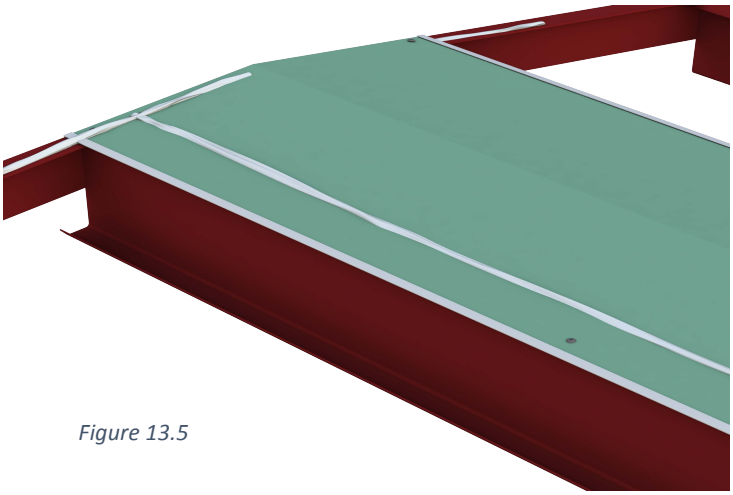


Figure 13.5

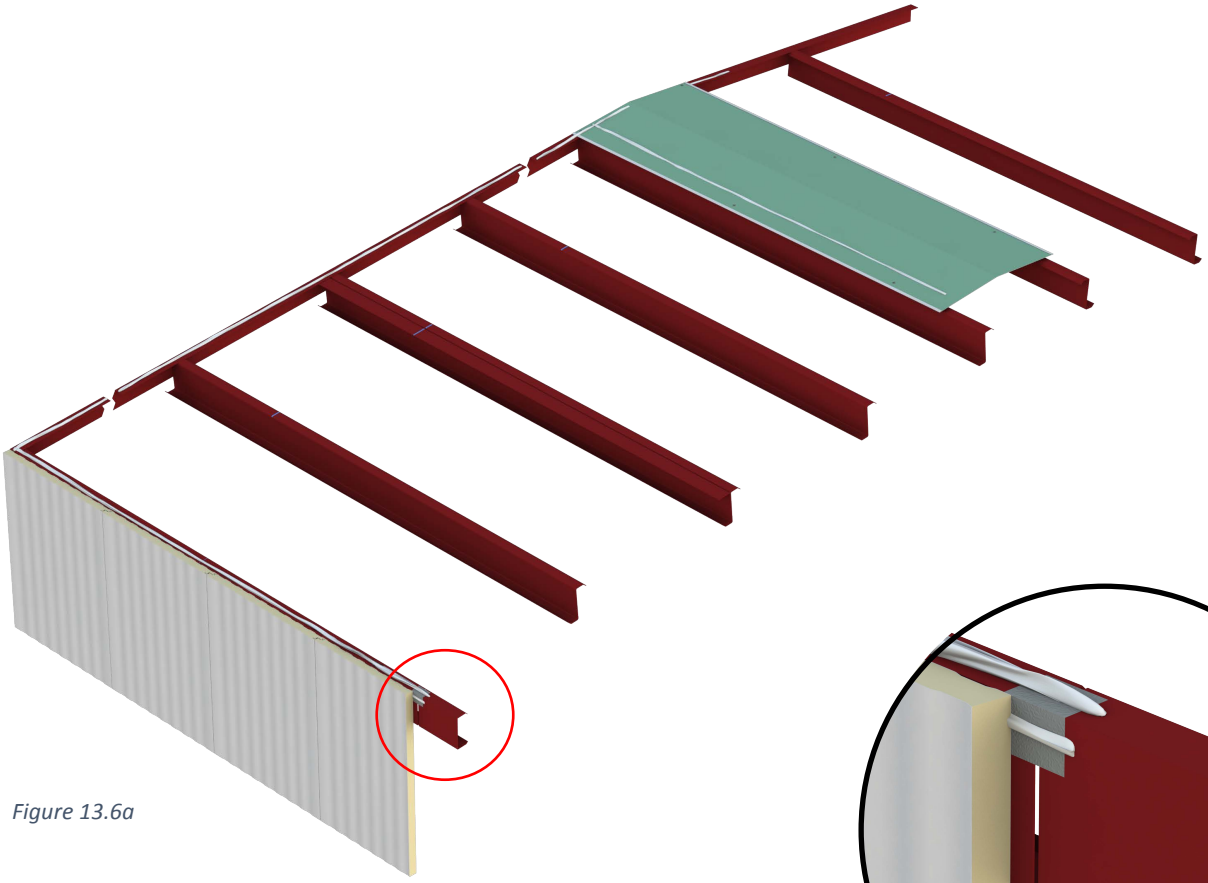


Figure 13.6a

13.6 Seal structural gaps using sheet metal or strips of adhesive membrane (not by Metl-Span) and butyl sealant.

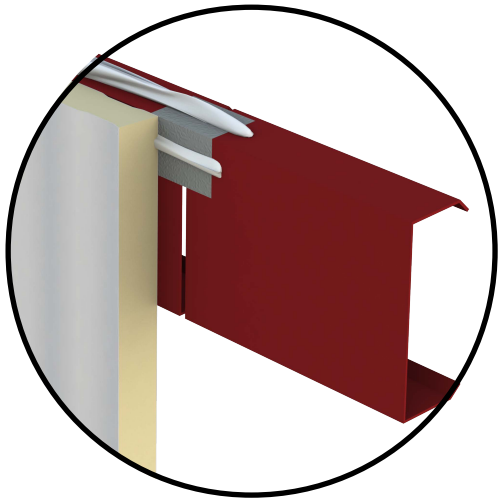


Figure 13.6b

13. PANEL INSTALLATION - PERIMETER, ENDLAP SEALS

13.7 Install 2.5" **tape to seal gap between support members** over topside of purlin/ support angle at panel endlap locations. Add two rolls of butyl sealant on top of tape.

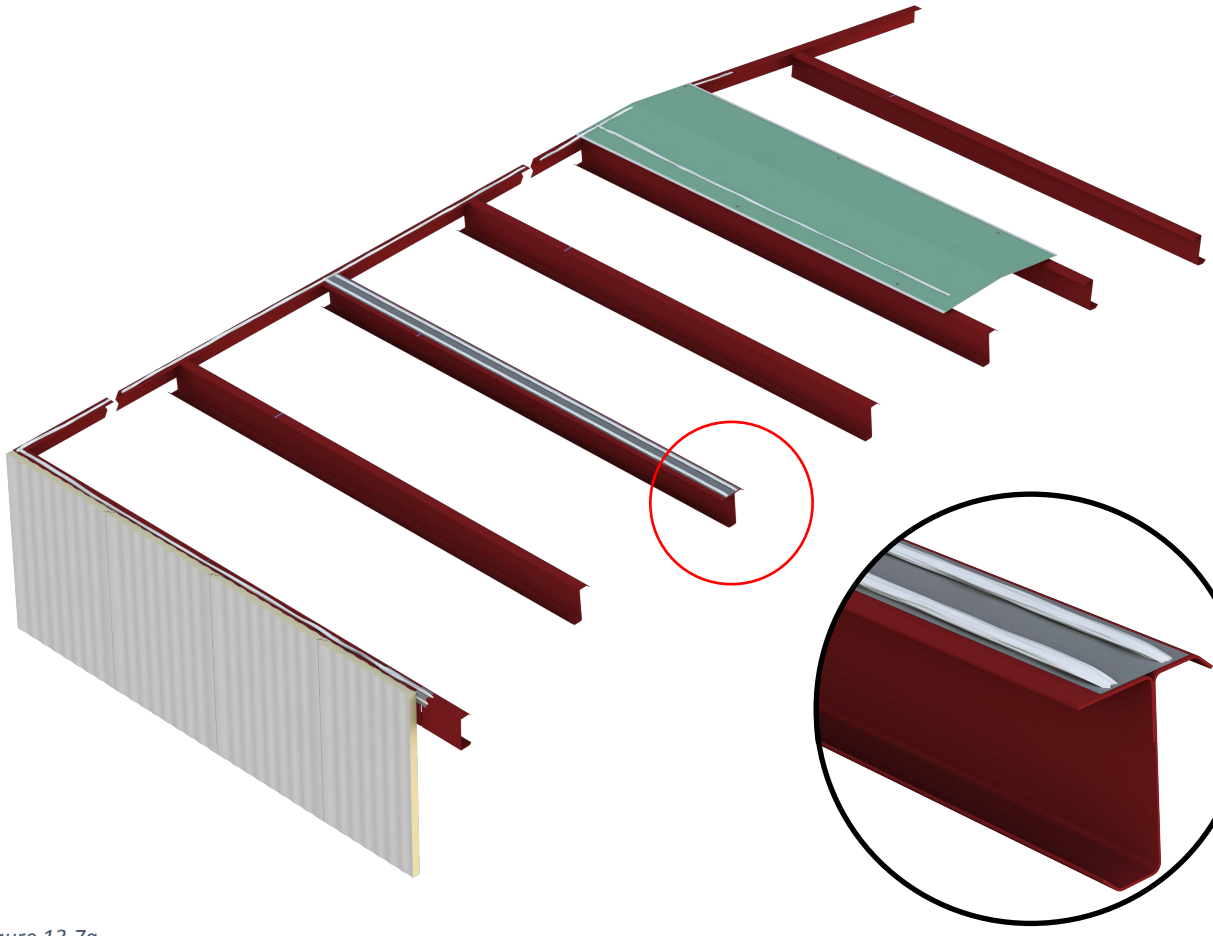


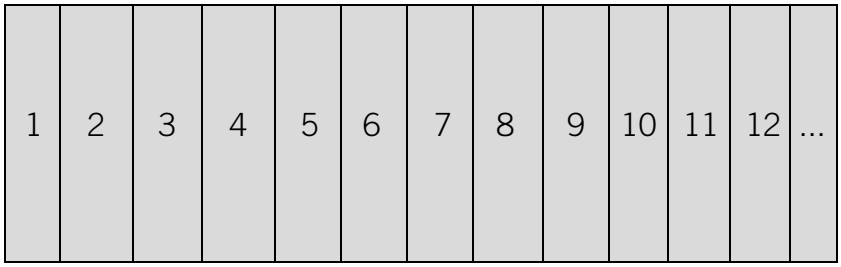
Figure 13.7a

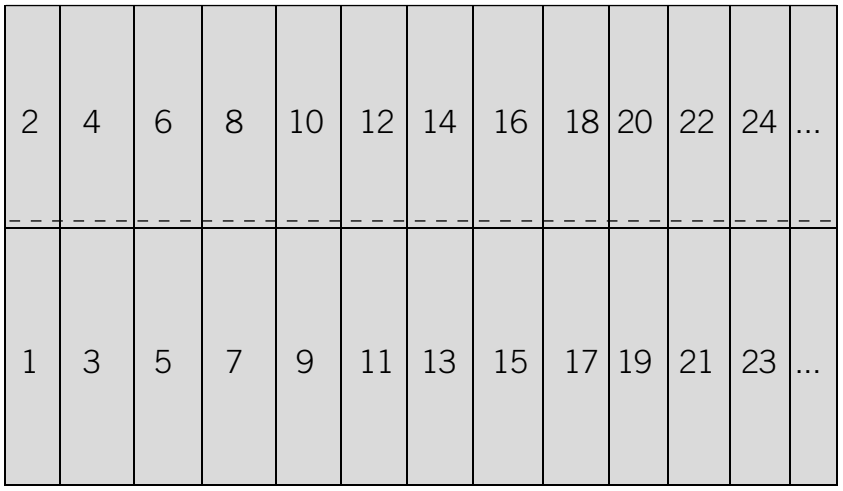
Figure 13.7b

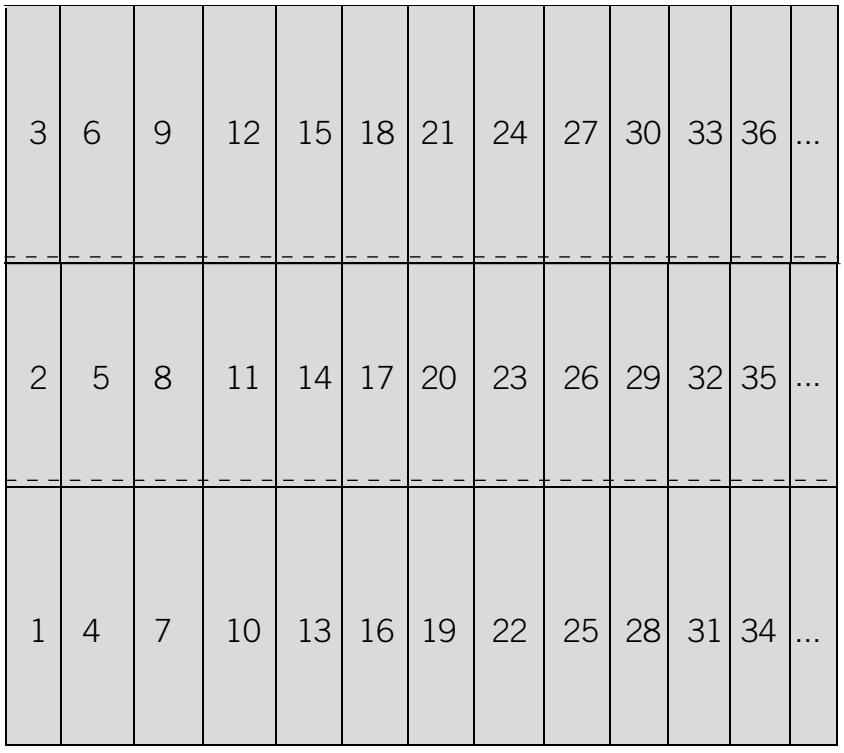
PERIMETER AND ENDLAP BUTYL BEADS ARE CRITICAL
IN CREATING THE PROPER ROOF AIR/VAPOR BARRIER.

13. PANEL INSTALLATION - ATTACHMENT

WARNING: PROPER PANEL INSTALLATION SEQUENCE IS REQUIRED IN ORDER FOR PANELS TO LAP CORRECTLY. FAILURE TO FOLLOW THESE RECOMMENDATIONS WILL VOID METL-SPAN'S CFR ROOF WARRANTY.







13. PANEL INSTALLATION - ATTACHMENT

13.8 Field cut the starter panel P1 to the required width. Apply butyl sealant to interior joint as required by installation drawings (see figure 8.2).

13.9 Position the leading edge of panel P1 along the previously laid chalk line (step 13.3).

13.10 Align panel P1 so that the top skin overhangs 2" beyond the outer face of the wall panels at the eaves, and 1" inboard of the outer face of the wall panels at the rakes.

13.11 Top edge of panel P1 should be centered on endlap support location.

13.12 Use "C" clamps to temporarily hold the cut edge of the panel to the rake angle.

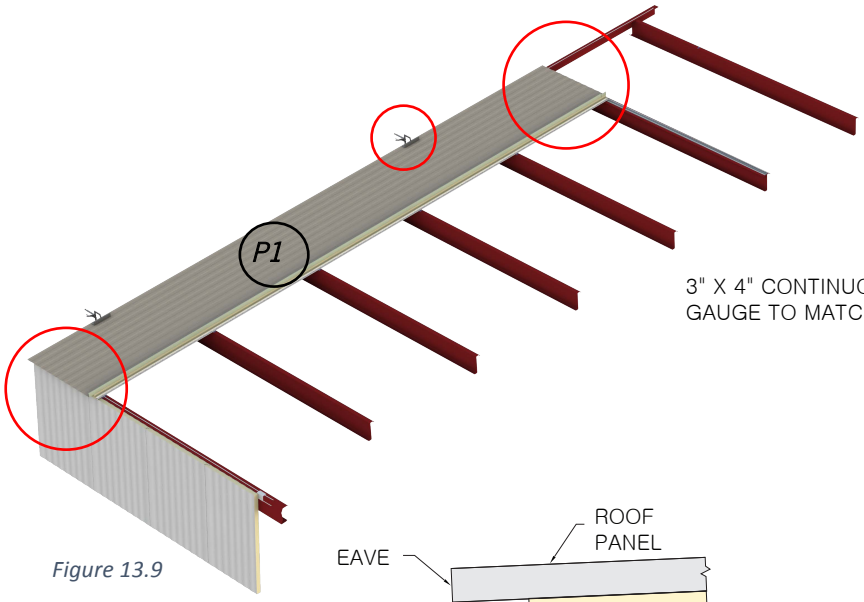


Figure 13.9

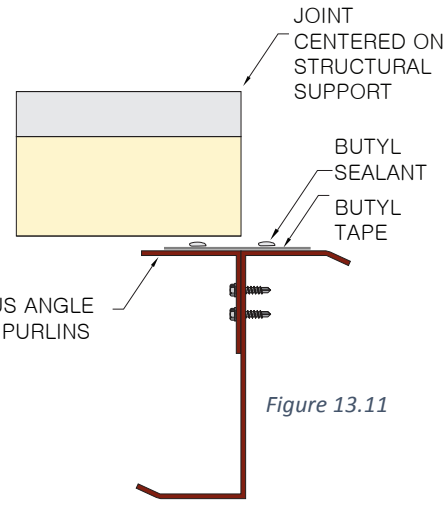


Figure 13.11

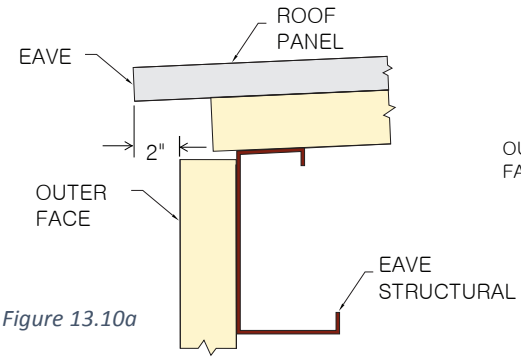


Figure 13.10a

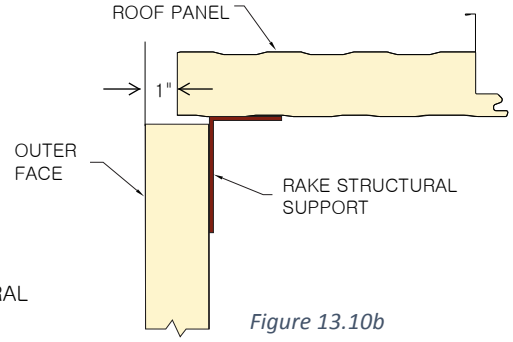


Figure 13.10b

13.13 Attach panel P1 to purlins within 1" of **outside edge of wall** using using 1/4" hex head fasteners with sealing washers.

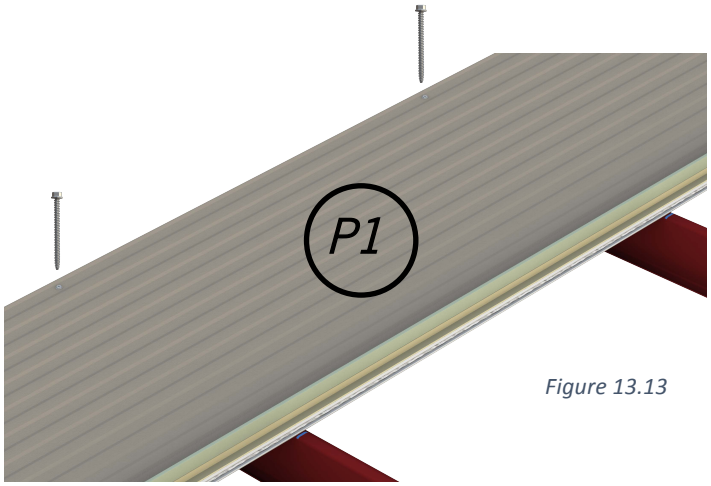


Figure 13.13

13. PANEL INSTALLATION - ATTACHMENT

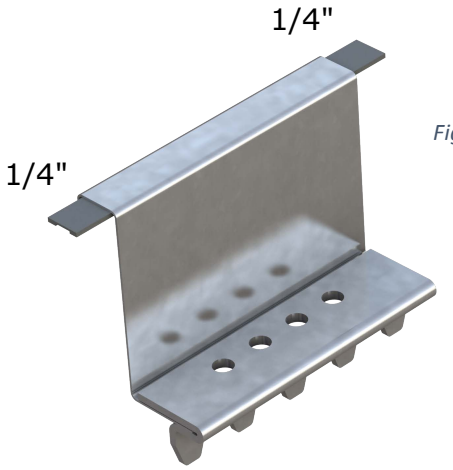


Figure 13.14

13.14 Apply **clip** butyl tape to underside of panel clips and extend beyond clips as shown.

13.15 Remove paper backing from butyl tape and position clip over male leg of panel. Align clip over top purlin flange to allow use of three fasteners.

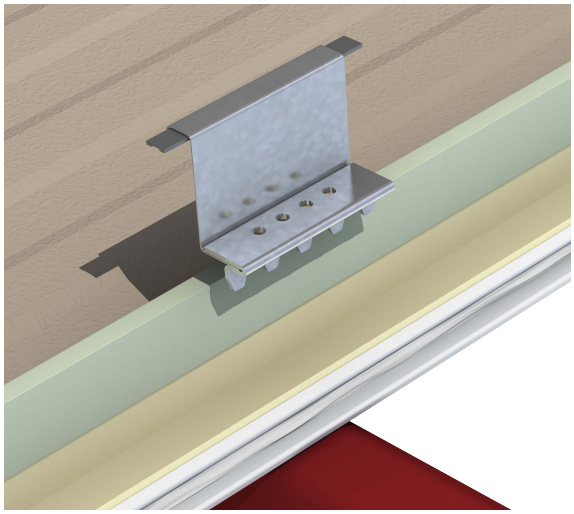


Figure 13.15

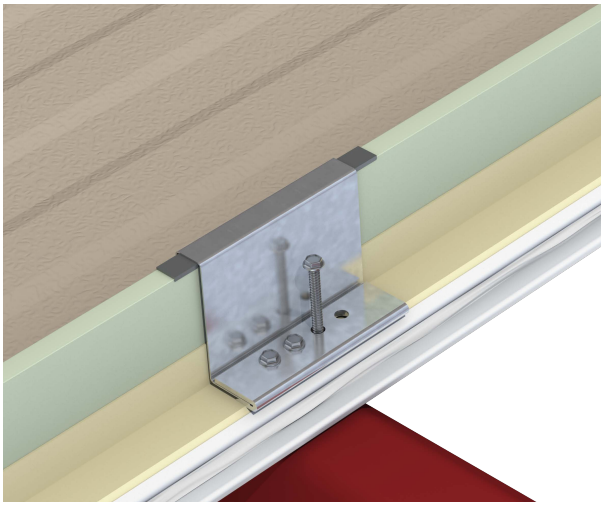


Figure 13.16

13.16 Hold clip tight against panel's edge and push clip base into foam core. Fasten with 1/4" hex washer head through fasteners **minimum of two fasteners per clip. Additional fastener may be required based on fastener type and support gauge.**

WARNING: DO NOT INSTALL CLIPS AT ENDLAP LOCATIONS AT THIS TIME!

13.17 Crimp clip tab around male leg of panel with the manual seaming tool.

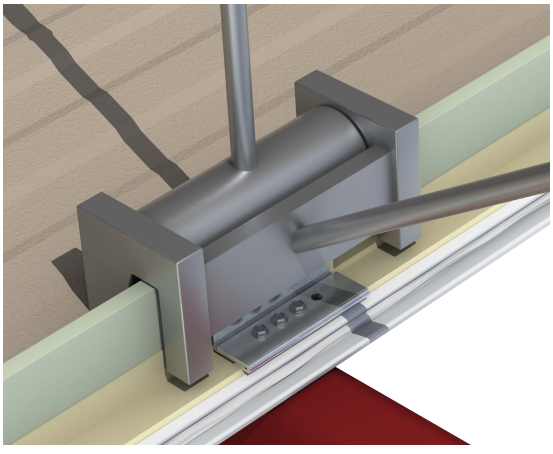


Figure 13.17

13. PANEL INSTALLATION - ATTACHMENT

13.18 Cut upper course of panel P2 to match width of starter panel P1.

13.19 Apply 2.5" wide endlap tape on P1. Position so that lower edge of tape aligns with lower edge of notch. Run tape up and over vertical male leg.

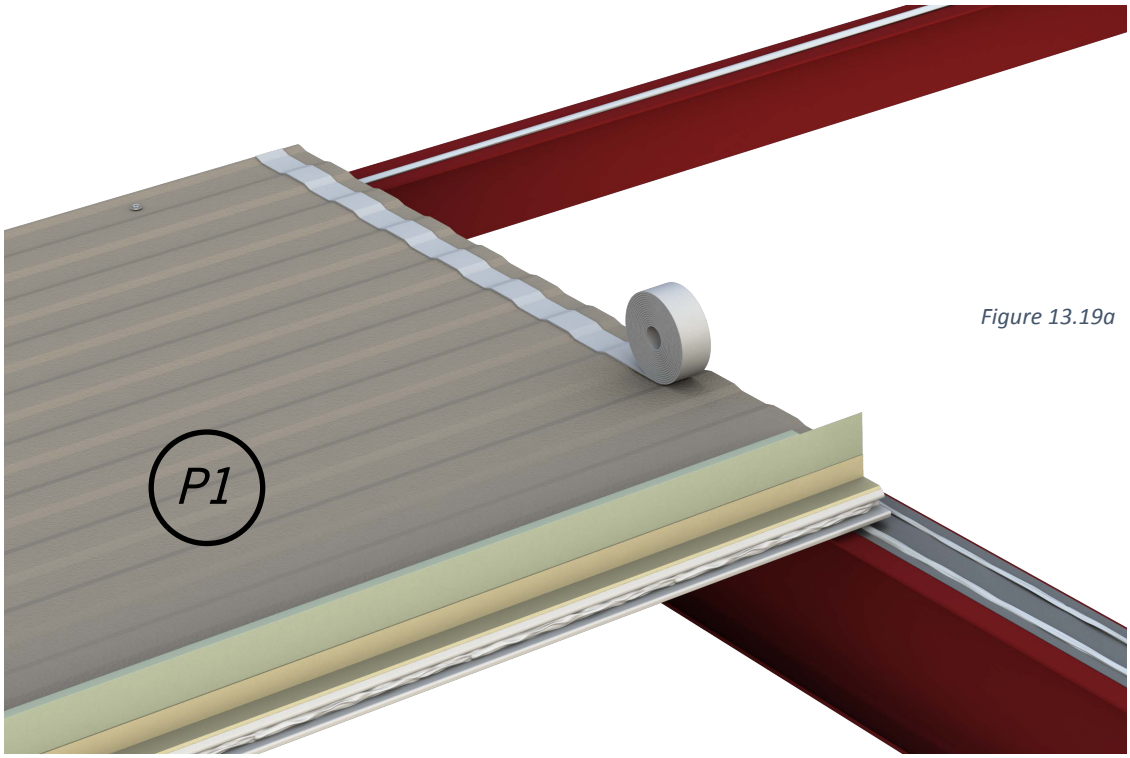


Figure 13.19a

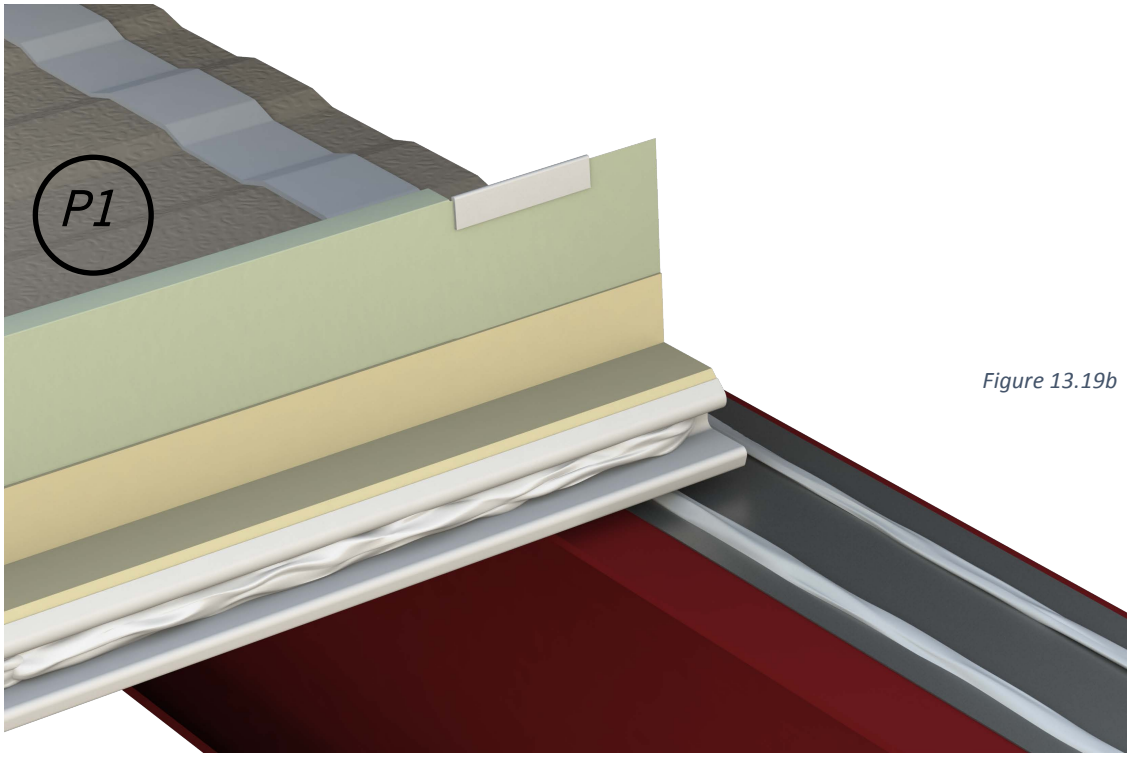


Figure 13.19b

13. PANEL INSTALLATION - ATTACHMENT

13.20 Verify endlap backup plates are present **at** ***upslope*** end of panel P1 (factory pre-installed). **Install** missing plates (if any).

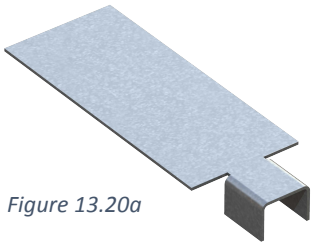


Figure 13.20a

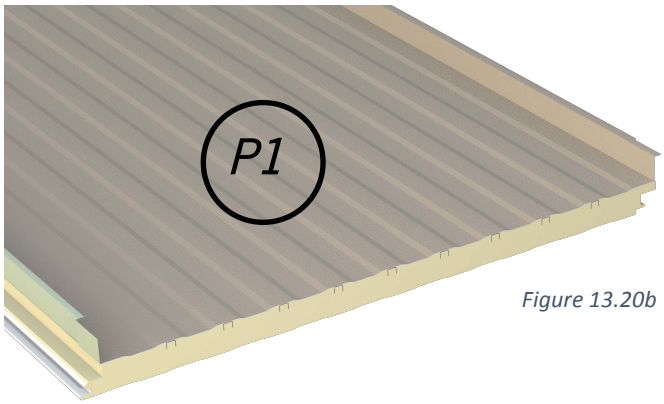
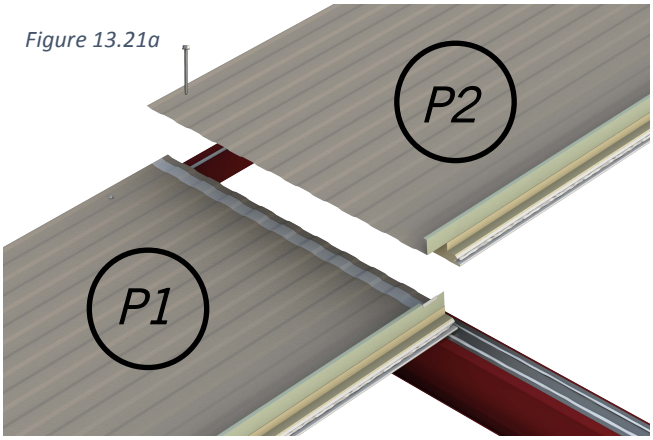


Figure 13.20b

WARNING: CHECK UPSLOPE END OF ***ALL*** LOWER COURSE PANELS FOR ENDLAP BACKUP PLATES!

13.21 Place panel P2 into position. Align leading edge using seam clamp. Attach cut edge of panel P2 to purlins using 1/4" hex washer head through fasteners with sealing washers.

Figure 13.21a



WARNING: INSPECT GAP BETWEEN THE FOAM CORE OF P1 AND P2 TO ENSURE A TIGHT FIT.

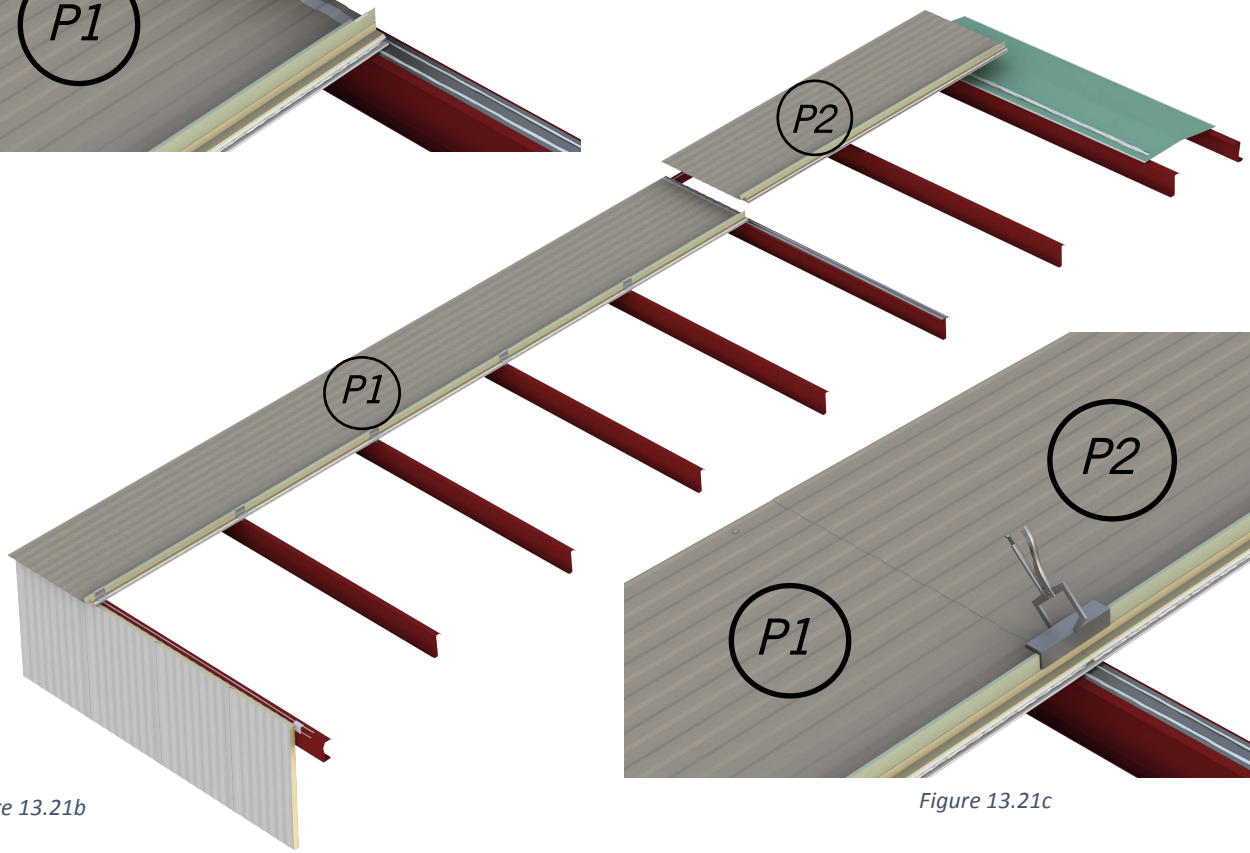


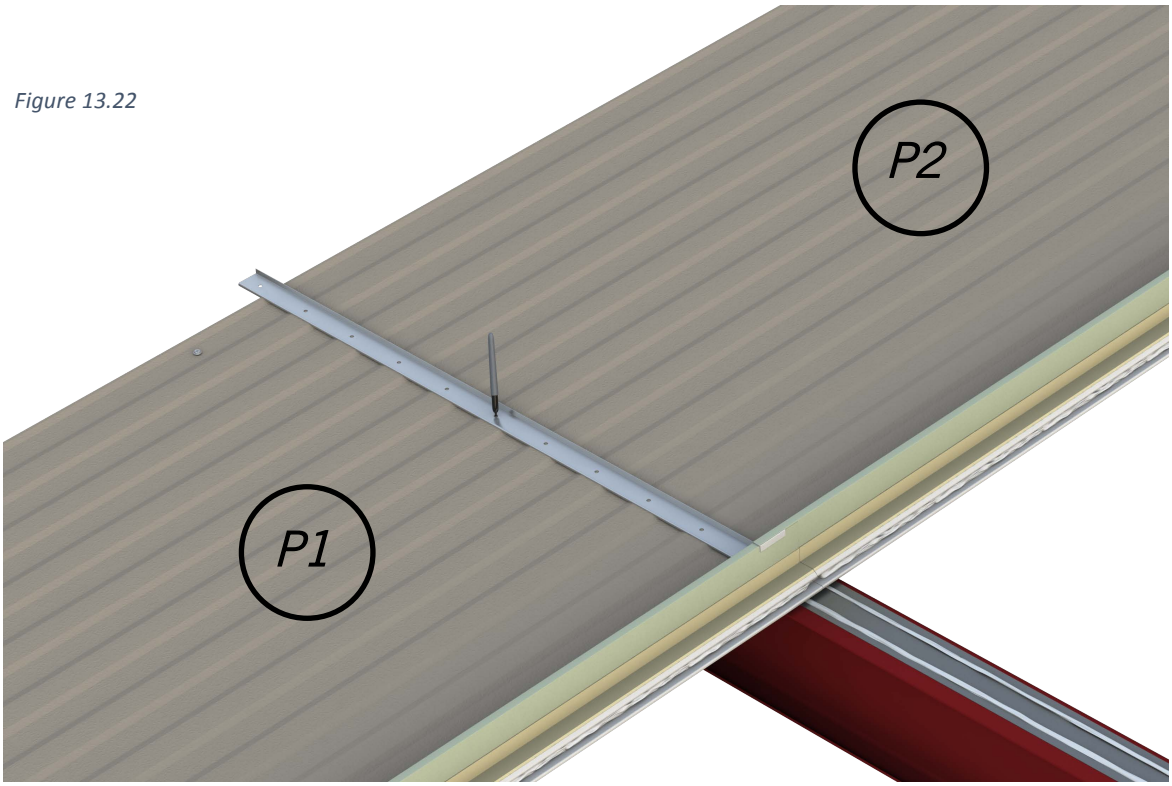
Figure 13.21b

Figure 13.21c

13. PANEL INSTALLATION - ATTACHMENT

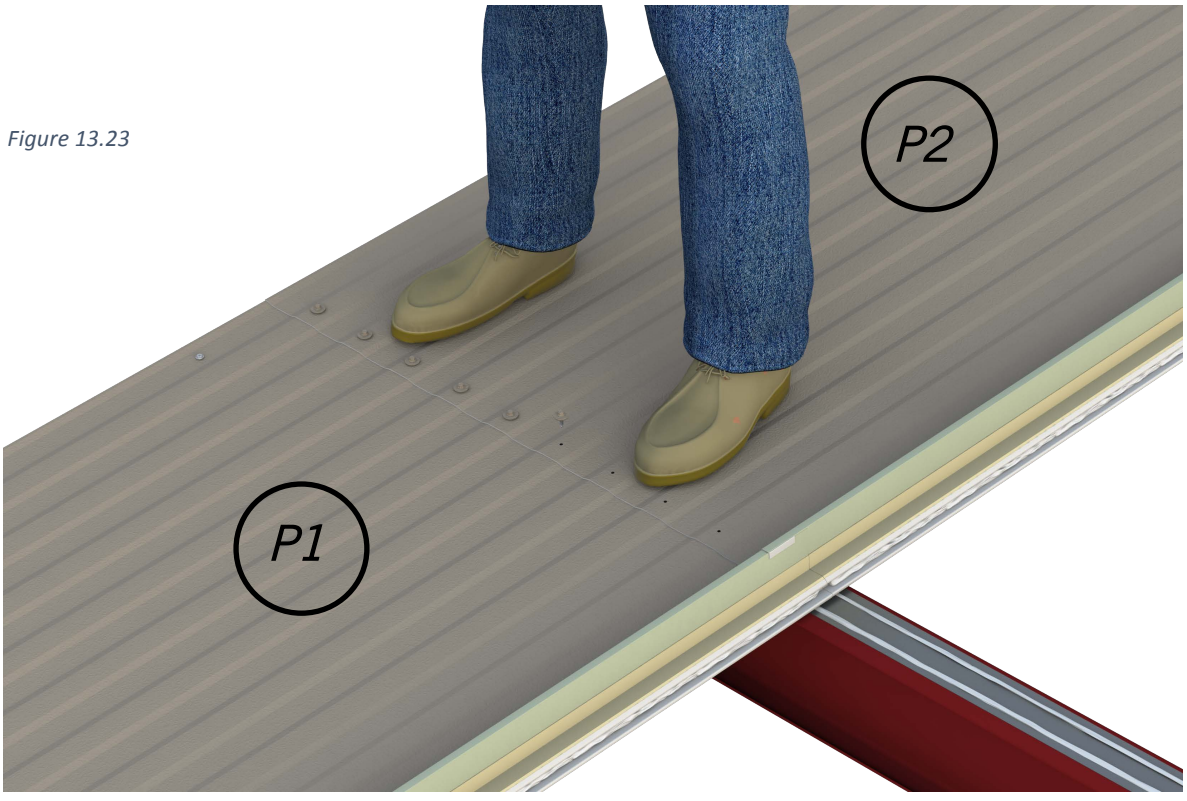
13.22 Set endlap assembly gauge on the end of panel P2. Place gauge with short lip down against the edge of panel P2. Mark the panel through each hole using a washable felt tip marker.

Figure 13.22



13.23 Stand on panel P2 to firmly seat endlap and install 1/4"-14 Type 2 fasteners with 1-1/8" sealing washers through marks at every high mesa into endlap backup plates.

Figure 13.23



13. PANEL INSTALLATION - ATTACHMENT

13.24 Install two clips at endlap. Position so that each clip is secured with two 1/4" hex washer head through fasteners. Crimp both clips with manual seaming tool.

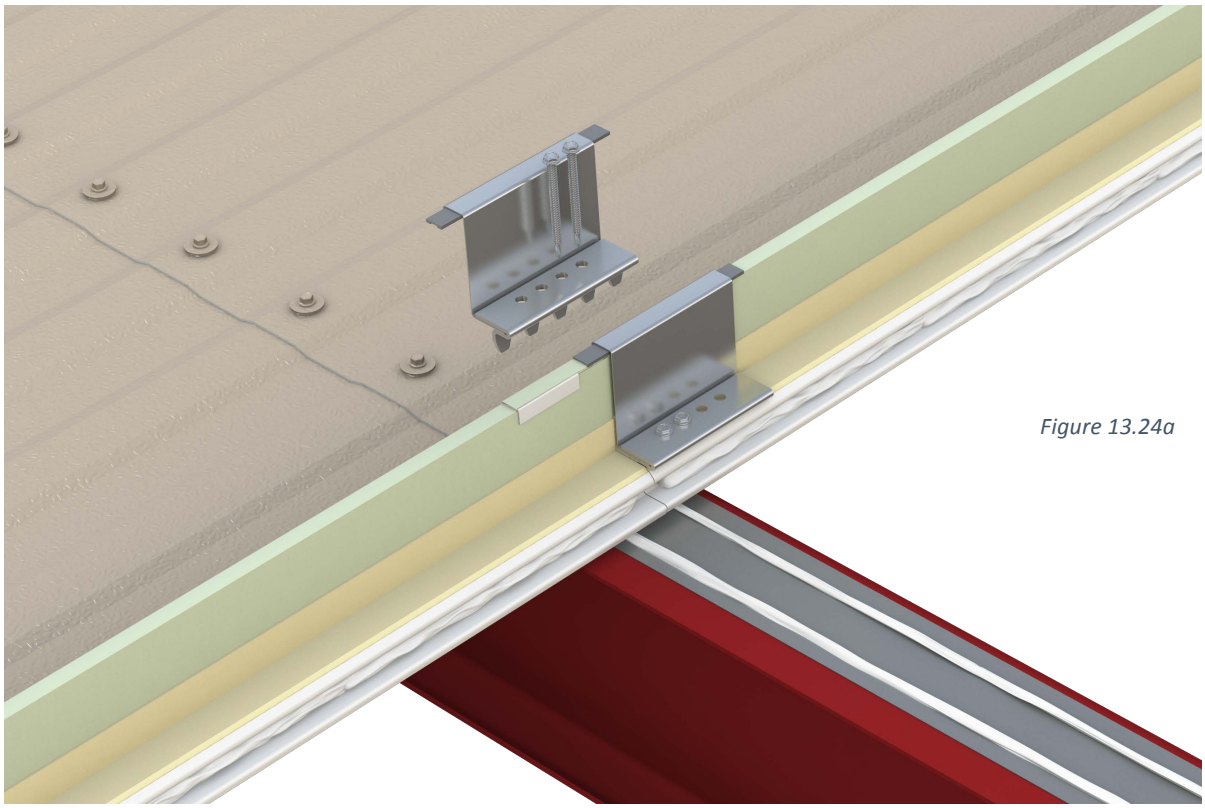


Figure 13.24a

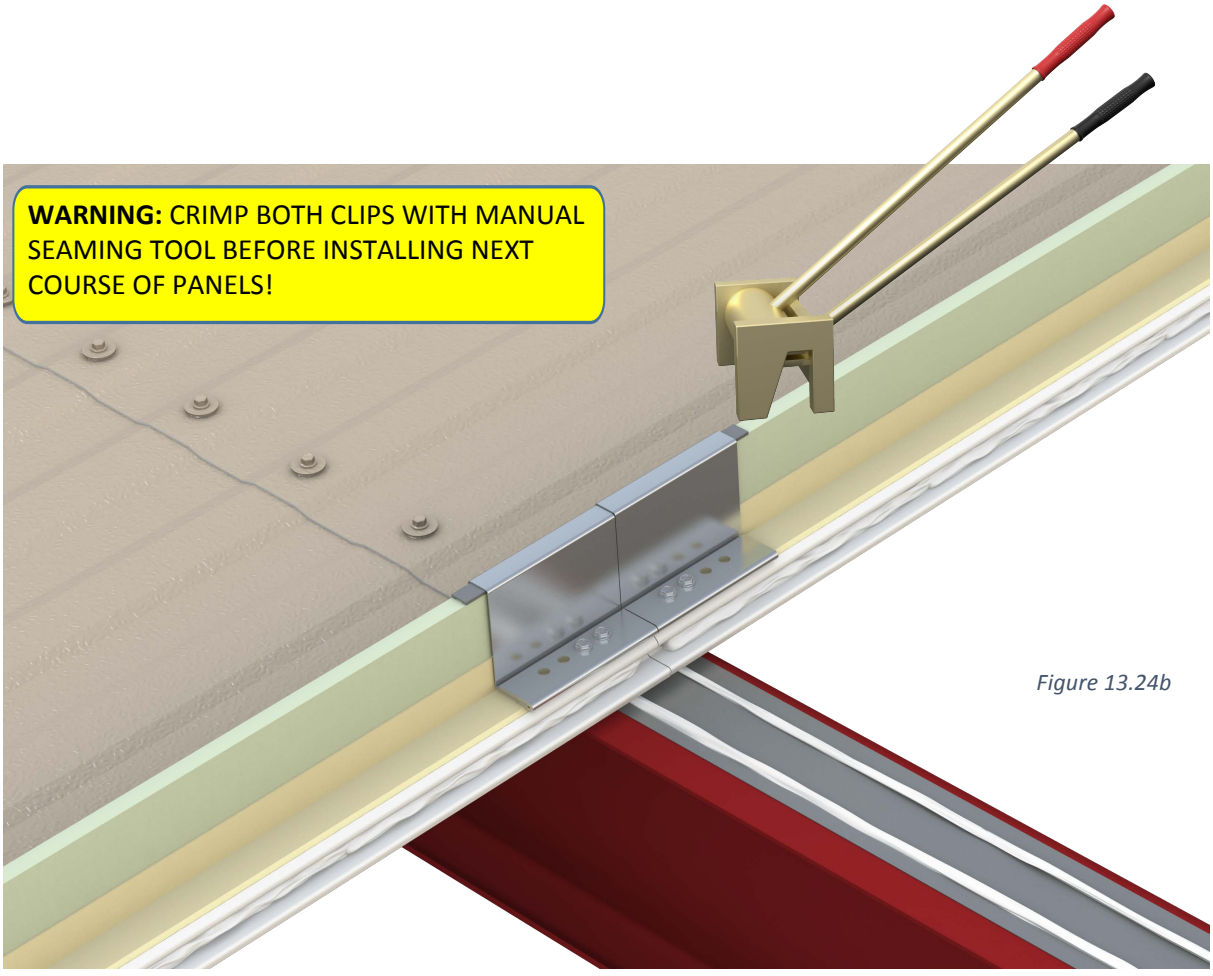


Figure 13.24b

13. PANEL INSTALLATION - ATTACHMENT

13.25 Apply continuous butyl tape to sidelap seam.

13.26 Apply butyl tape pigtail to vertical leg of panel P1 at eave, marry to seam sealant.

WARNING: TO KEEP TAPE CLEAN, LEAVE PROTECTIVE PAPER ON UNTIL READY TO INSTALL NEXT PANEL.

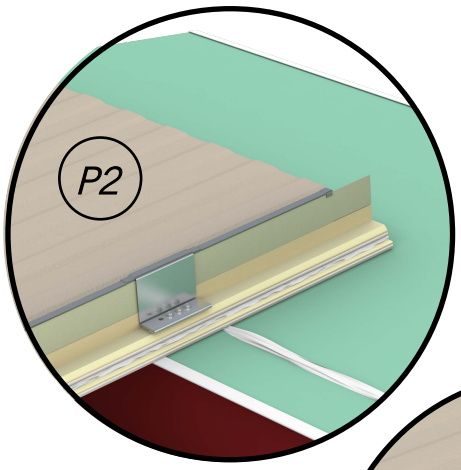


Figure 13.25a

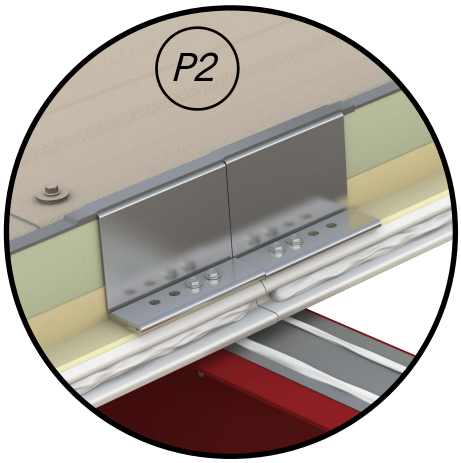


Figure 13.25b

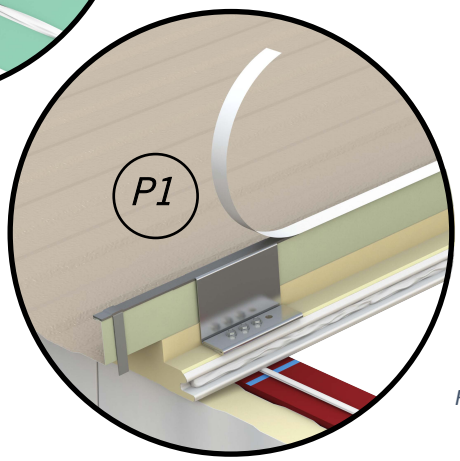


Figure 13.26

13.27 Apply butyl sealant marriage beads at eaves, endlaps and ridge conditions.

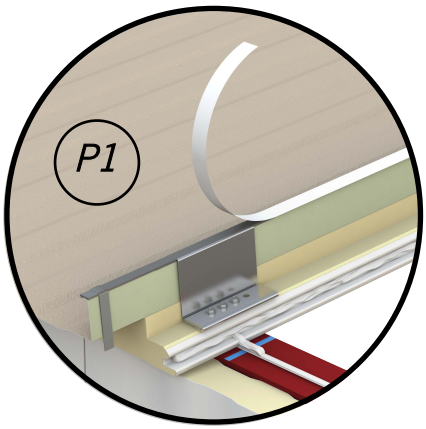


Figure 13.27a

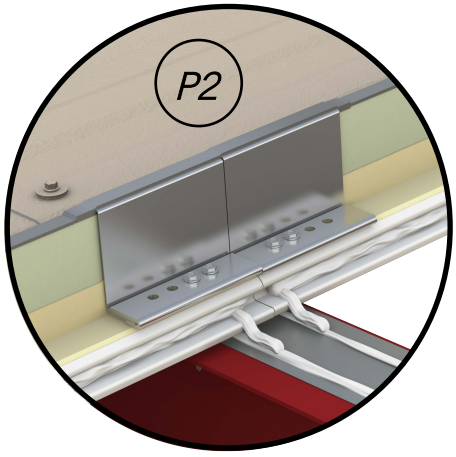


Figure 13.27b

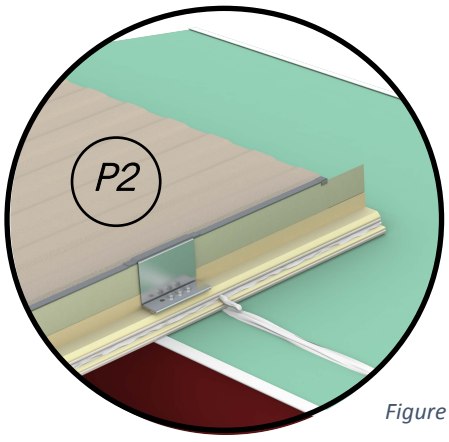


Figure 13.27c

13. PANEL INSTALLATION - ATTACHMENT

13.28 Verify paper backing is removed from all butyl tapes.

13.29 Position panel P3 as shown, hook female lap over male leg of panel P1 and rotate into position.

13.30 Use rib clamps to pull panel sidelaps together.

Figure 13.29a

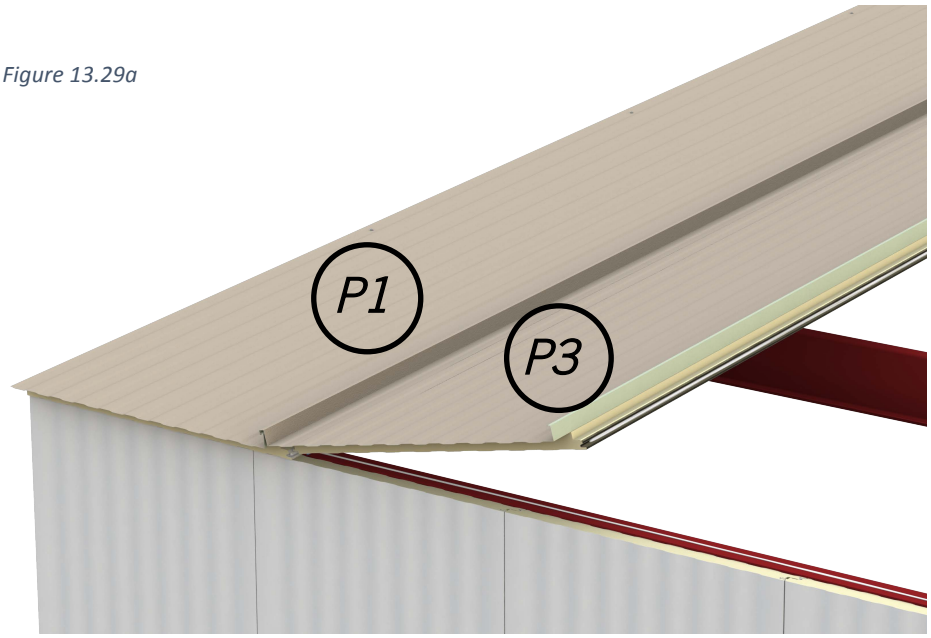


Figure 13.29b

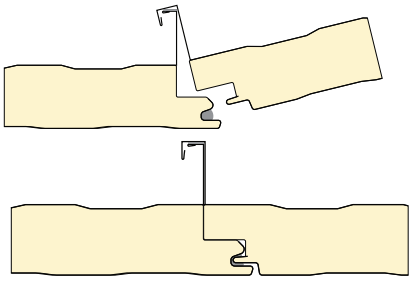
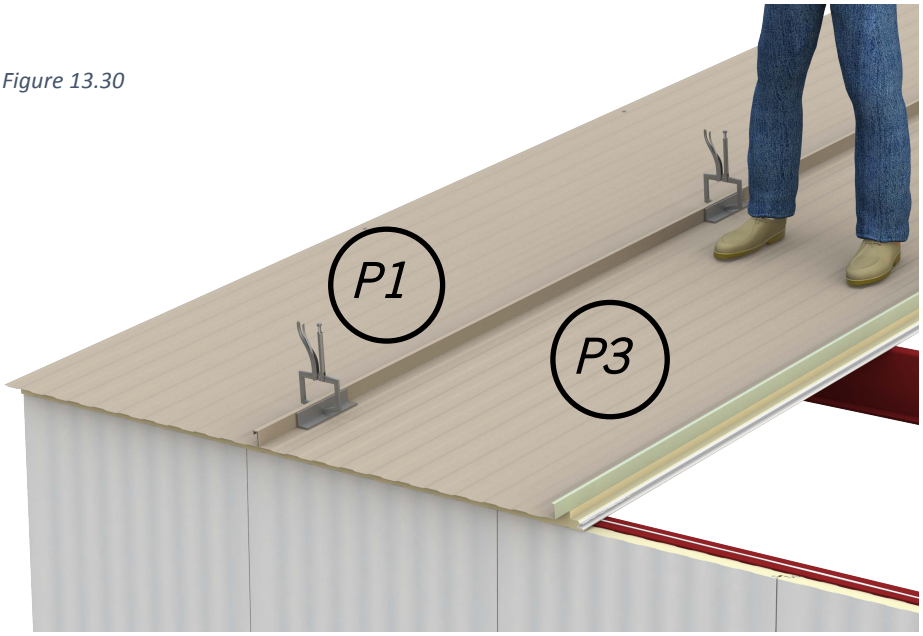


Figure 13.30



13. PANEL INSTALLATION - ATTACHMENT

13.31 Install clips on panel P3 (except at endlaps). Crimp clips with manual seaming tool.

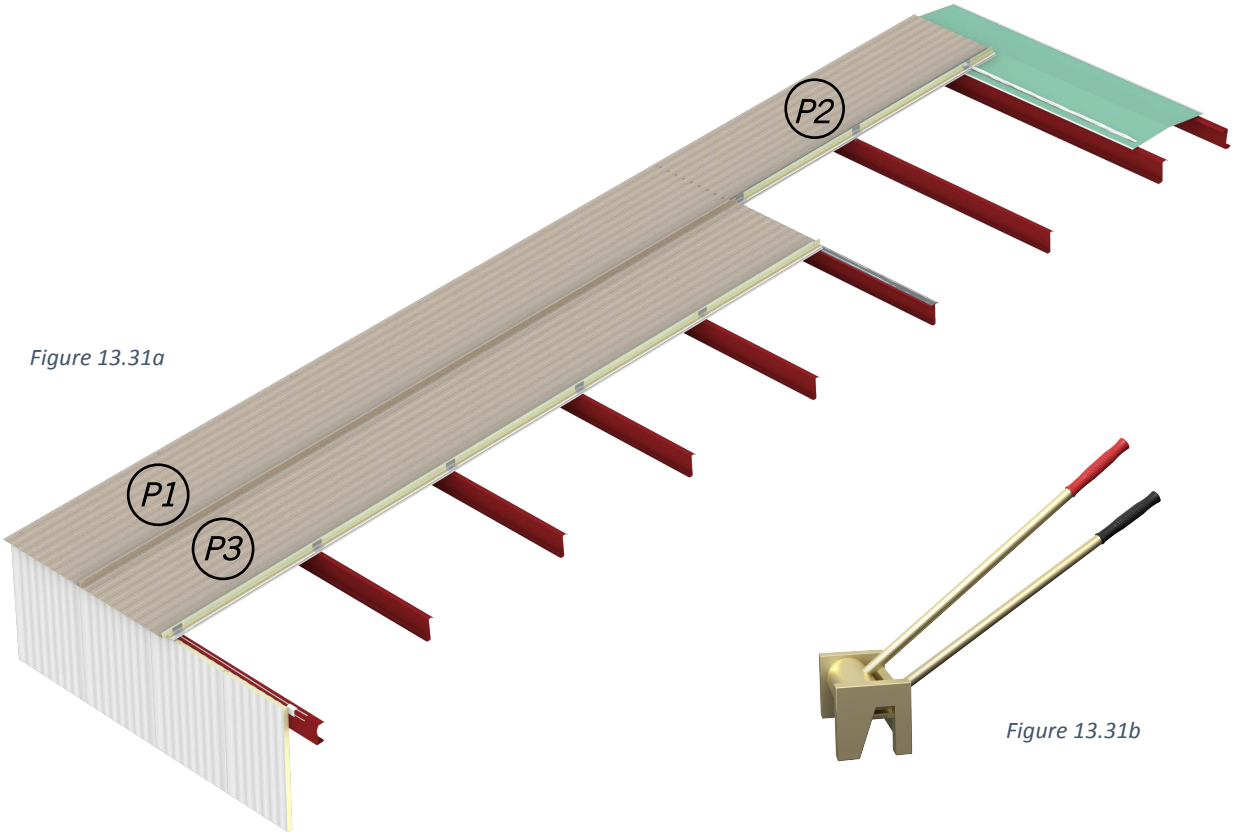


Figure 13.31a

Figure 13.31b

13.32 Apply butyl tape at endlap of panel P3 as shown. Align with panel notch.

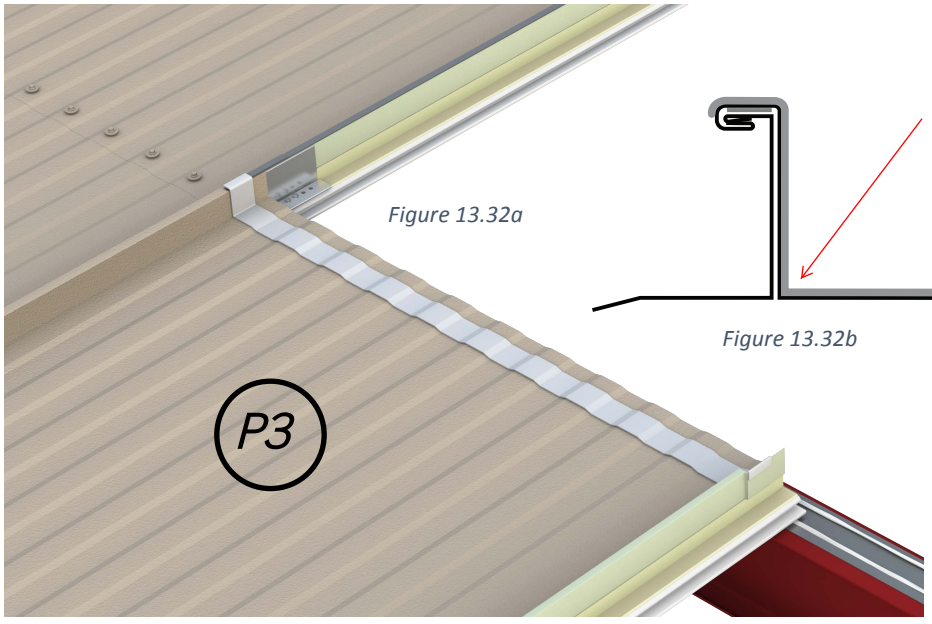


Figure 13.32a

Figure 13.32b

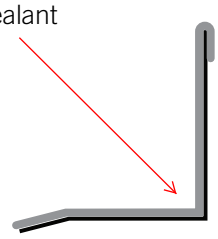


Figure 13.32c

13. PANEL INSTALLATION - ATTACHMENT

13.33 Position panel P4 as shown, hook female lap over male leg of panel P2 and rotate into position.

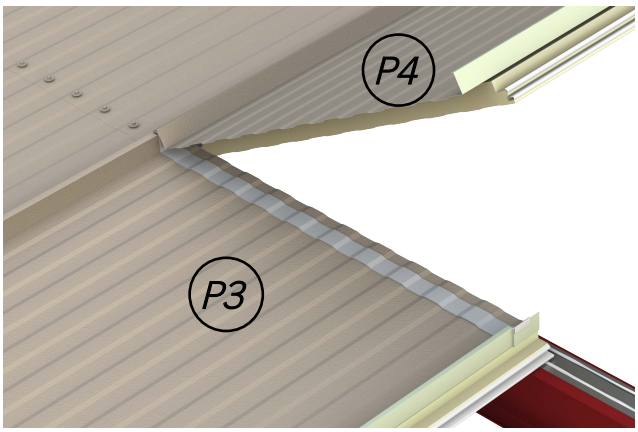


Figure 13.33

13.34 Use rib clamps to pull panel sidelaps together.

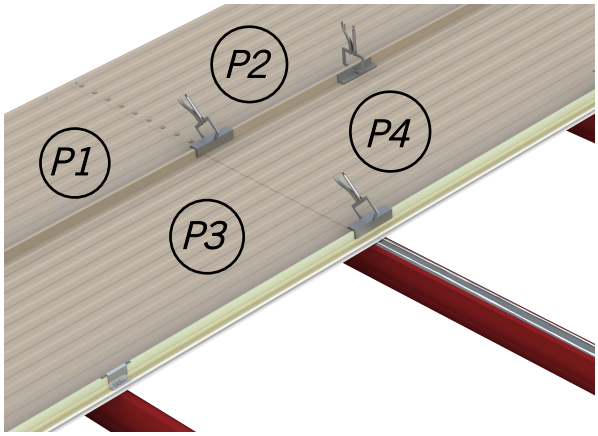


Figure 13.34

13.35 Set endlap assembly gauge on the end of panel P4, with short lip down. Mark panel P4 through each hole using a washable felt tip marker.

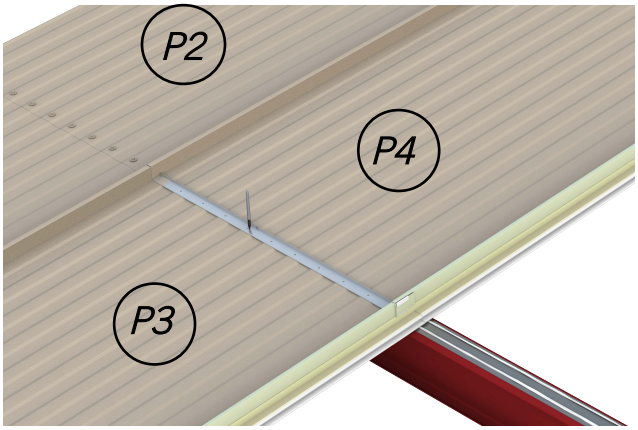


Figure 13.35

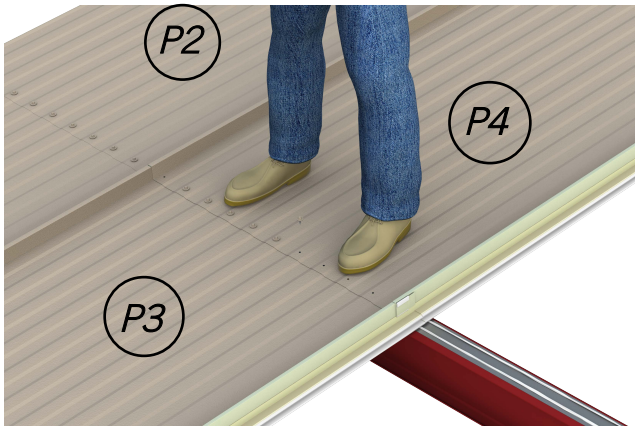


Figure 13.36

13.36 Stand on panel P2 to firmly seat endlap and install 1/4"-14 x 1-1/8" Type 2 fasteners with sealing washers through marks at every high mesa into endlap backup plates

13. PANEL INSTALLATION - ATTACHMENT

13.37 Install clips on panel P4. Crimp clips with manual seaming tool.

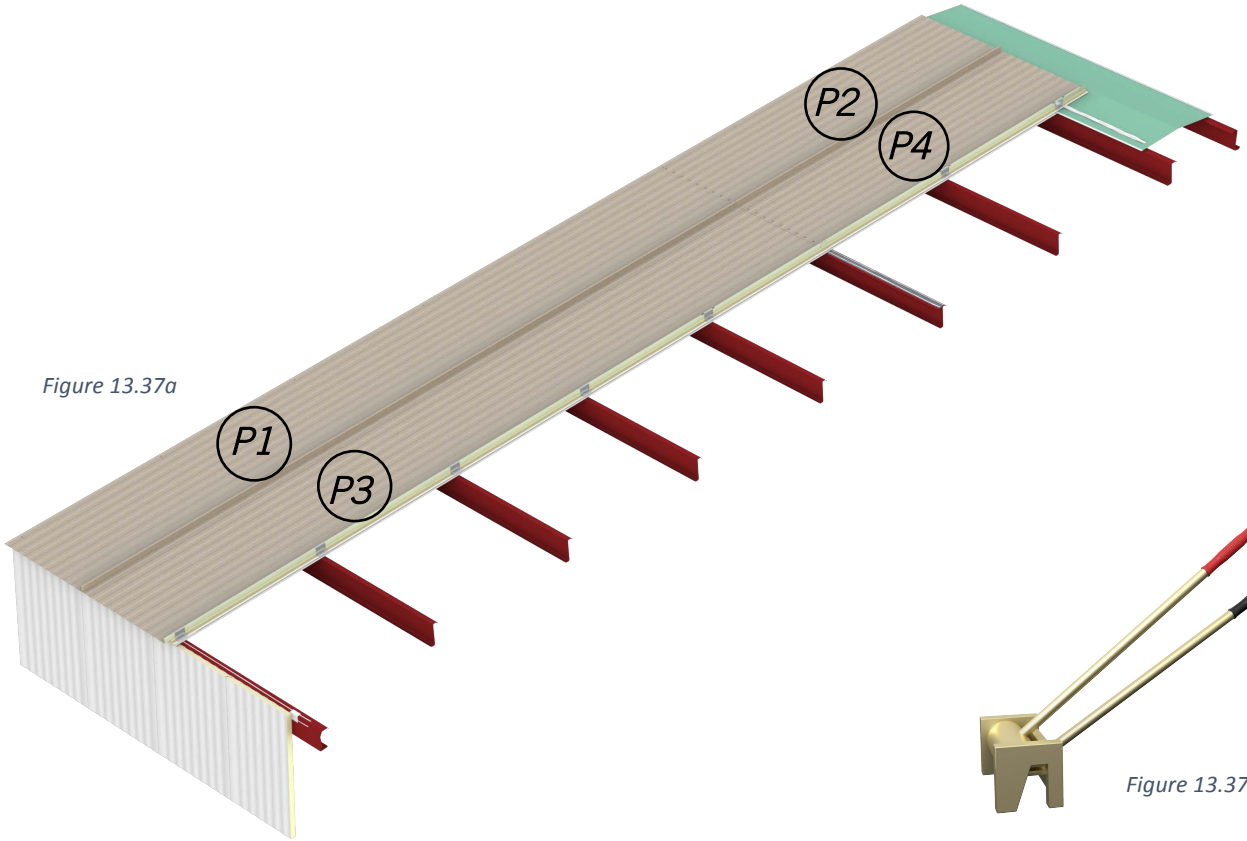


Figure 13.37a

Figure 13.37b

13.38 Install two clips at endlap. Position so that each clip is secured with two 1/4" hex washer head through fasteners.

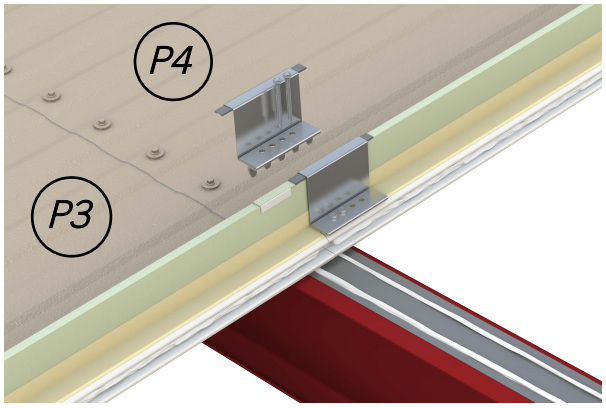


Figure 13.38a

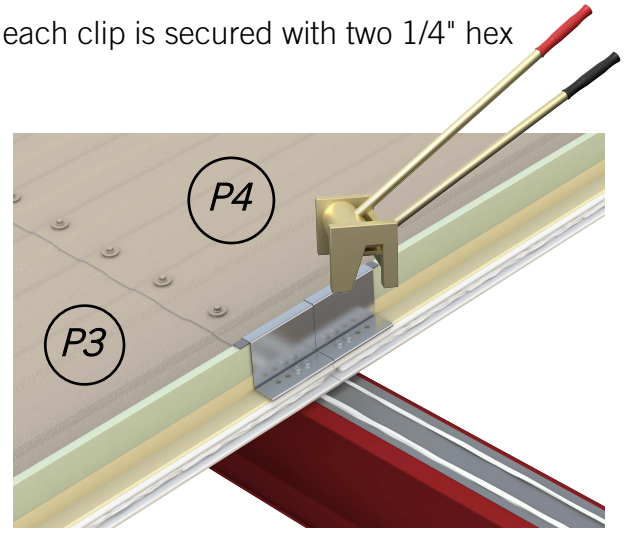


Figure 13.38b

WARNING: CRIMP BOTH CLIPS WITH MANUAL SEAMING TOOL BEFORE INSTALLING NEXT COURSE OF PANELS!

13. PANEL INSTALLATION - ATTACHMENT

13.39 Apply continuous butyl tape to sidelap seam.

13.40 Apply butyl tape pigtail to vertical leg of panel P1 at eave, marry to seam sealant.

WARNING: TO KEEP TAPE CLEAN, LEAVE PROTECTIVE PAPER ON UNTIL READY TO INSTALL NEXT PANEL.

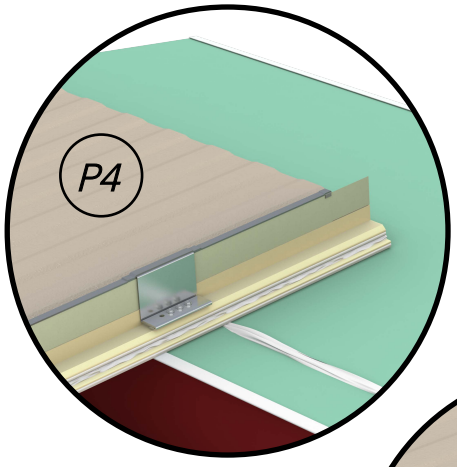


Figure 13.39a

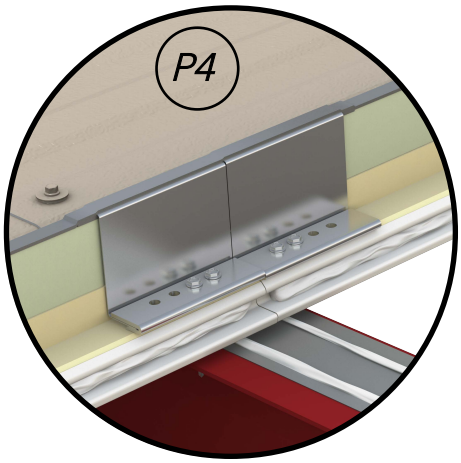


Figure 13.39b

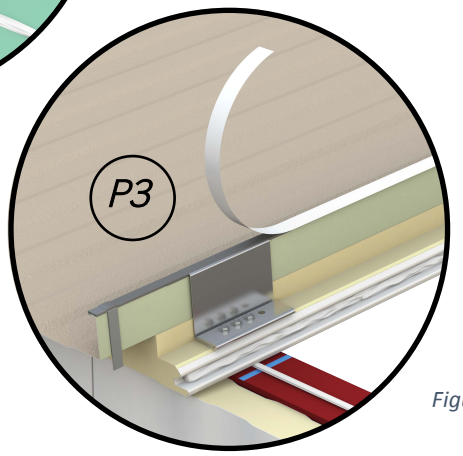


Figure 13.40

13.41 Apply butyl sealant marriage beads at eaves, endlaps and ridge conditions.

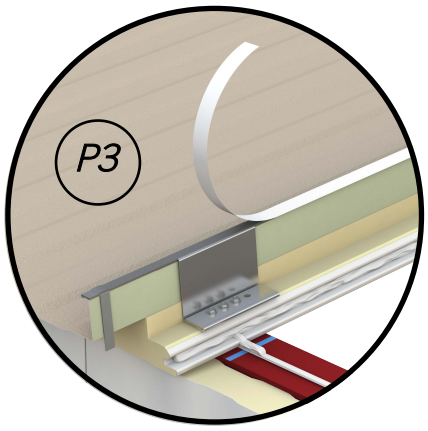


Figure 13.41a

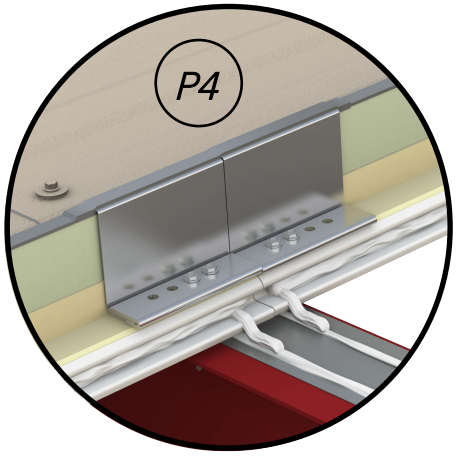


Figure 13.41b

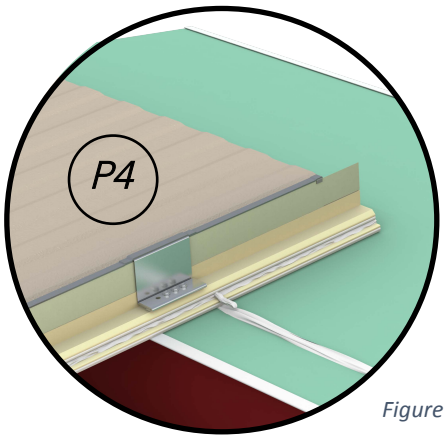


Figure 13.41c

13. PANEL INSTALLATION - ATTACHMENT

13.42 Check panel module every three panels - verify tape measure is parallel to panel ends. To maintain module (30", 36" or 42"), adjust rib clamp pressure as required.

WARNING: DO NOT ATTEMPT MORE THAN + 1/8" OR - 1/16" MODULE CORRECTION PER PANEL.

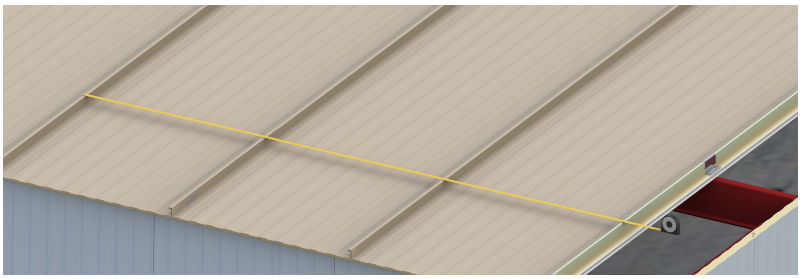


Figure 13.42a

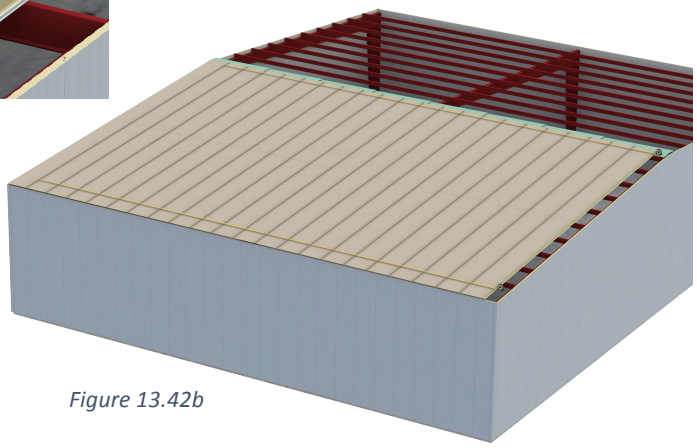


Figure 13.42b

13.43 Repeat steps 13.29 through 13.42 until all roof panels are installed.

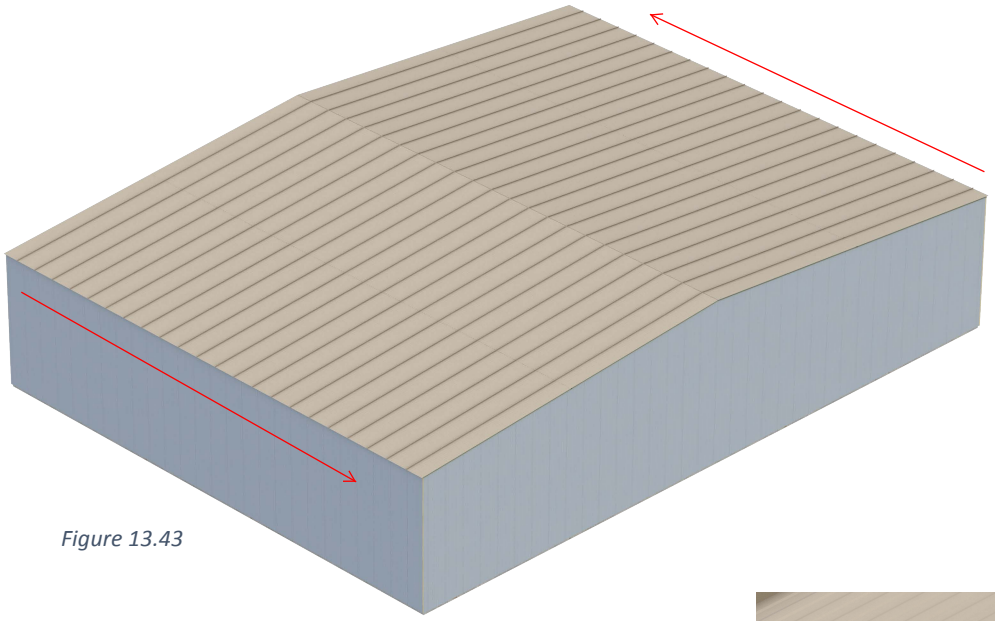


Figure 13.43

Figure 13.44

13.44 Attach cut side of last panel to purlins within 1" of edge using 1/4" hex head through fasteners with sealing washers.

13. PANEL INSTALLATION - SEAMING

13.45 Use manual seamer to crimp seams for 12"-18" at ridge, eaves and endlaps.

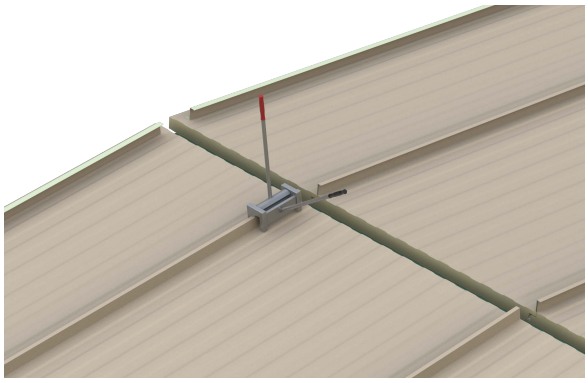


Figure 13.45a

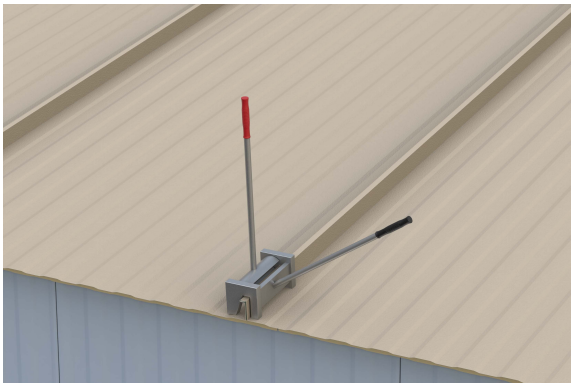


Figure 13.45b

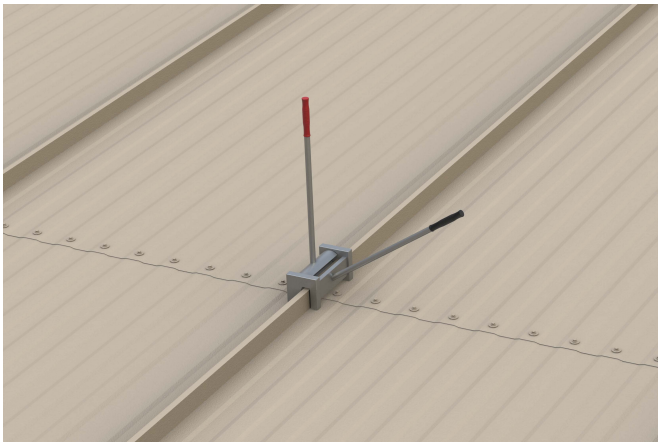


Figure 13.45c

13.46 Use electric seamer on remaining roof areas.

WARNING: REFER TO INSTRUCTIONS PROVIDED WITH SEAMER FOR OPERATING, MAINTENANCE AND SAFETY INFORMATION!

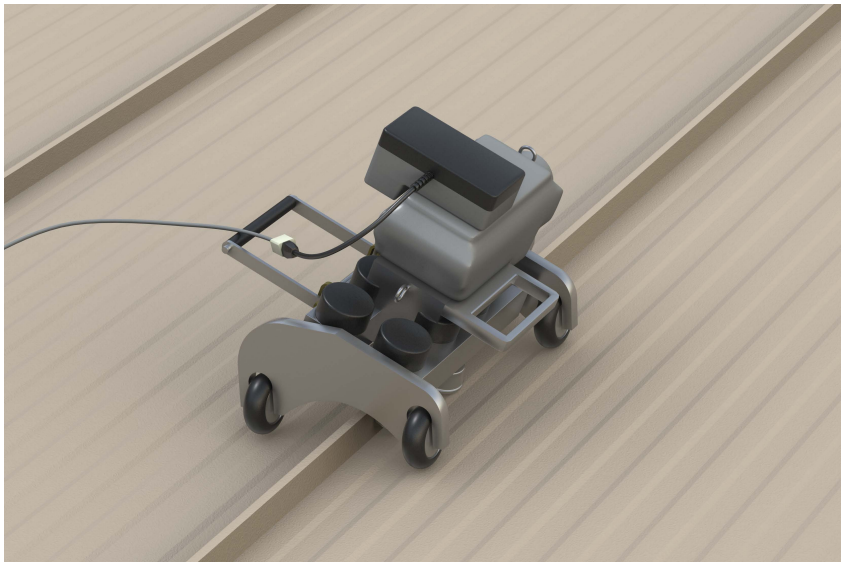


Figure 13.46

14. PERIMETER FLASHING INSTALLATION - RAKES

14.1 Determine rake closure location on starting and finish panels:

a. closure must set on high or low mesa, but not both.

b. align so that attachment screws will engage rake structural support.

14.2 Mark rake closure location with chalk line strung from ridge to eave.

14.3 Apply butyl tape sealant along chalk line.

14.4 Install top rake closure on top of tape and secure with 1/4" hex washer head through fasteners at 12" on center.

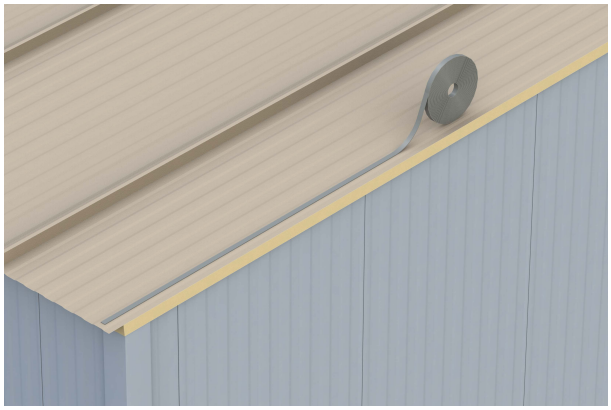


Figure 14.3

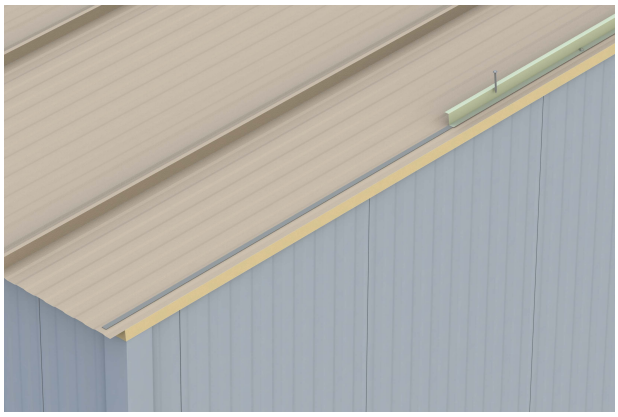


Figure 14.4

14.5 Apply butyl tape at downslope end of rake closure as shown in figure 14.5.

14.6 Place downslope closure over splice and align using seam clamp. Install 1/4" hex washer head through fasteners at 12" on center.

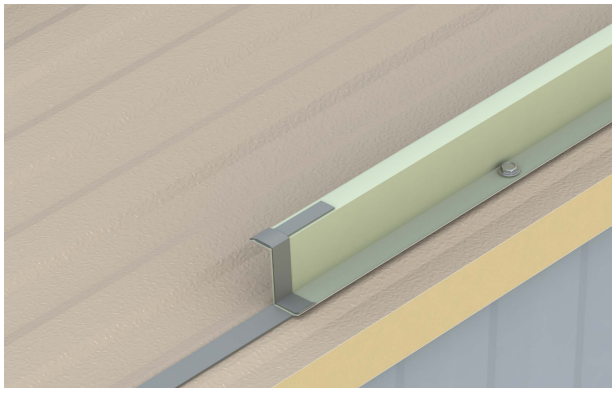


Figure 14.5

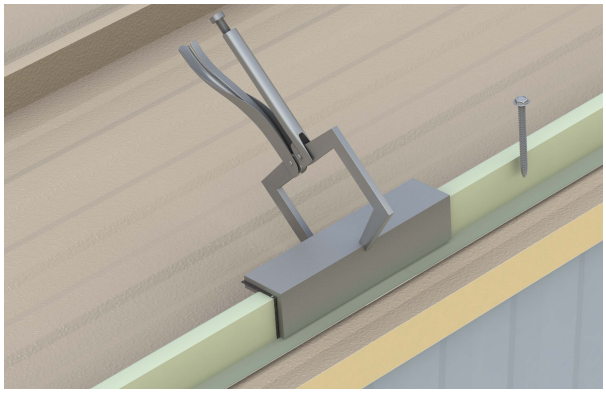


Figure 14.6

14.7 Remove seam clamp and:

a. install 1/4" hex washer head through fastener at bottom flange of splice.

b. install 1/4"-14 x 7/8" hex washer head Type 1 lap screw through splice with tip pointing outwards.

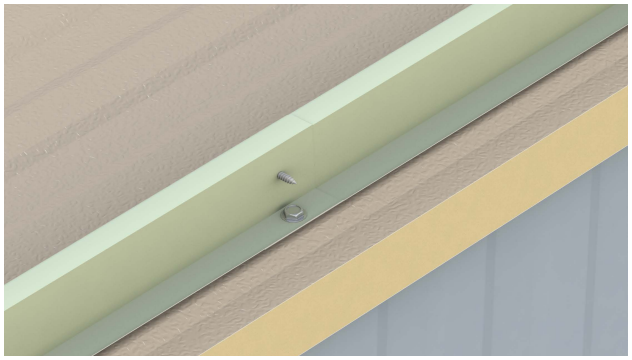


Figure 14.7

14. PERIMETER FLASHING INSTALLATION - RIDGE

14.8 If panel ends are within ± 1/4" of a straight line, use assembly gauge to guide application of butyl tape sealant. If not, then measure 4" (or as indicated on installation drawings) from center of ridge and mark panels with chalk line. Apply tape uphill of marked line, and up and around seams.

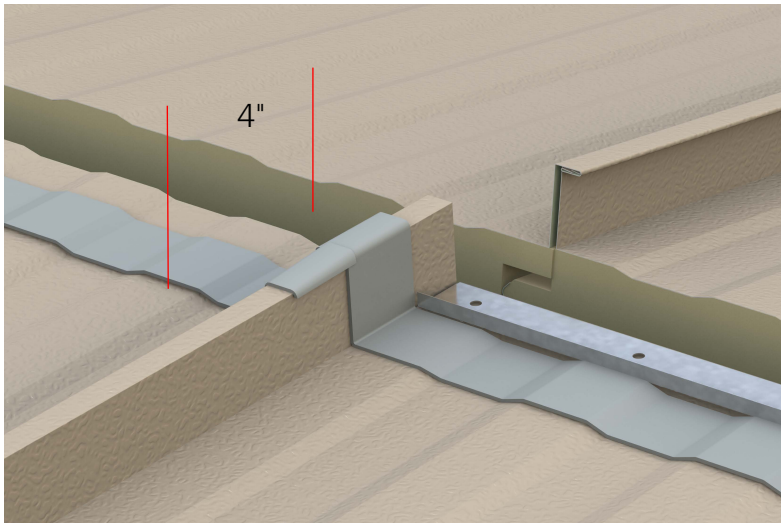


Figure 14.8a

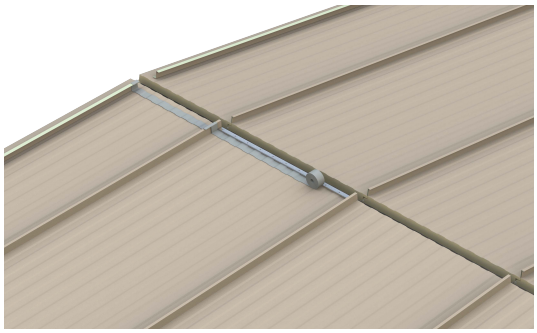


Figure 14.8b

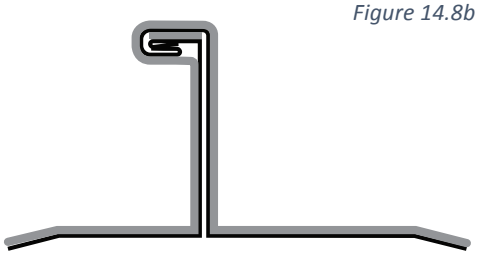


Figure 14.8c

14.9 Field cut and tab left end of first ridge closure to fit up with rake closure. Right side of ridge closures should tuck underneath panel ribs.

14.10 Secure bottom uphill flange of closure through panel facing into back-up plates under high mesas with 1/4"-14 x 1-1/2" hex washer head Type 2 fasteners. Secure tabs on left side of closures to high ribs with 1/8" painted pop rivets. **Placement of tape sealant over ridge closure not shown.**

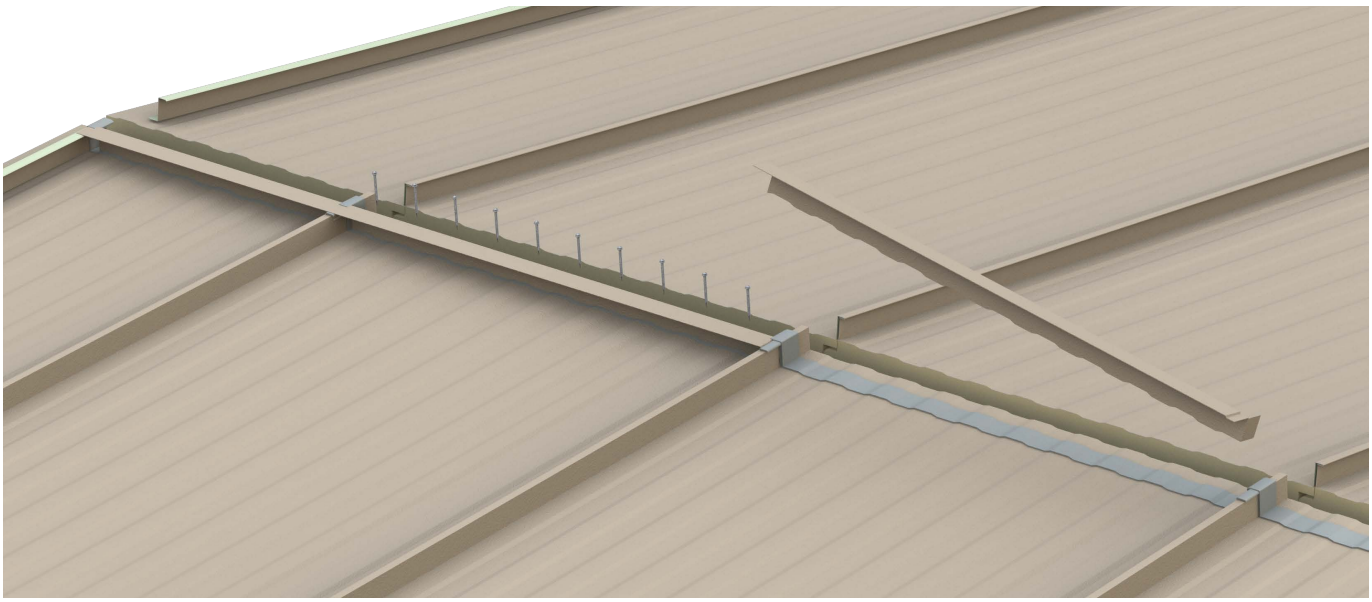


Figure 14.10

14. PERIMETER FLASHING INSTALLATION - RIDGE

14.11 Fill void at ridge using expandable foam (not by panel manufacturer).

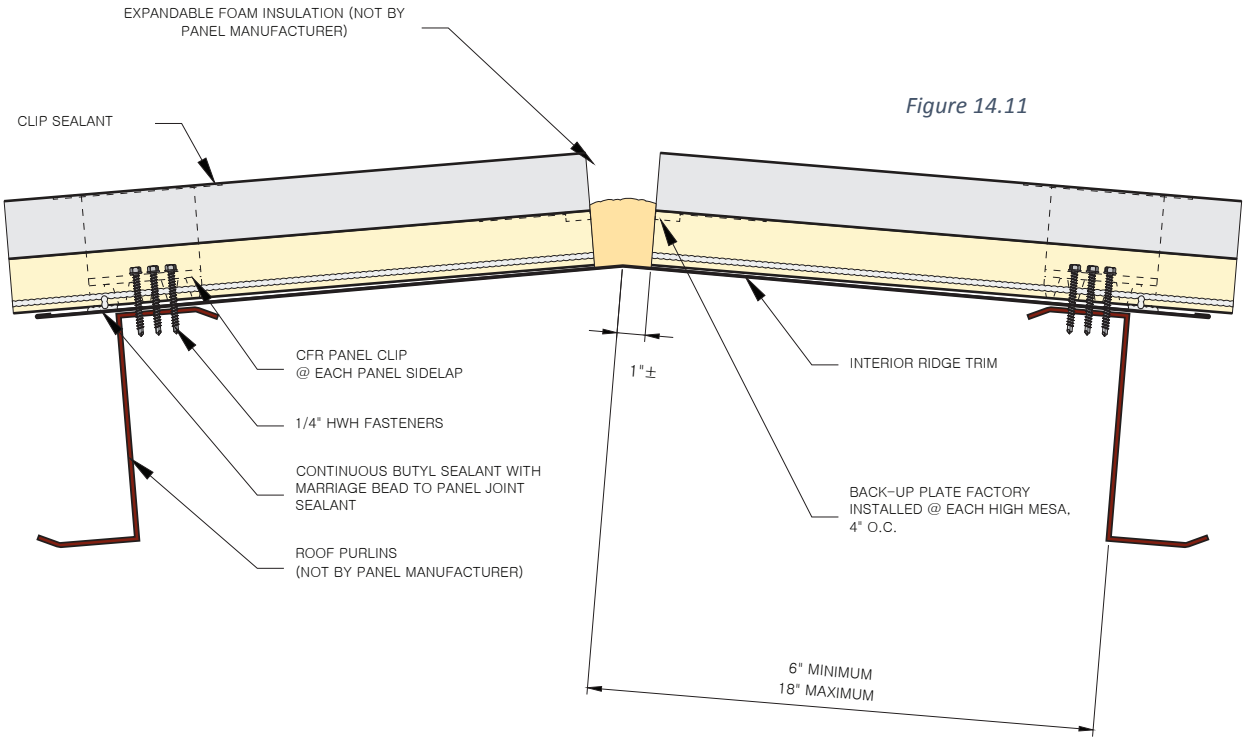


Figure 14.11

WARNING: IF USING COMPRESSIBLE INSULATION IN LIEU OF EXPANDABLE FOAM, FILL ENTIRE RIDGE CAVITY UP TO BOTTOM OF EXTERIOR RIDGE TRIM.

14.12 Attach exterior ridge trim using 1/4"-14 x 7/8" hex washer head Type 1 fasteners (with neoprene washers) at 6" on center.

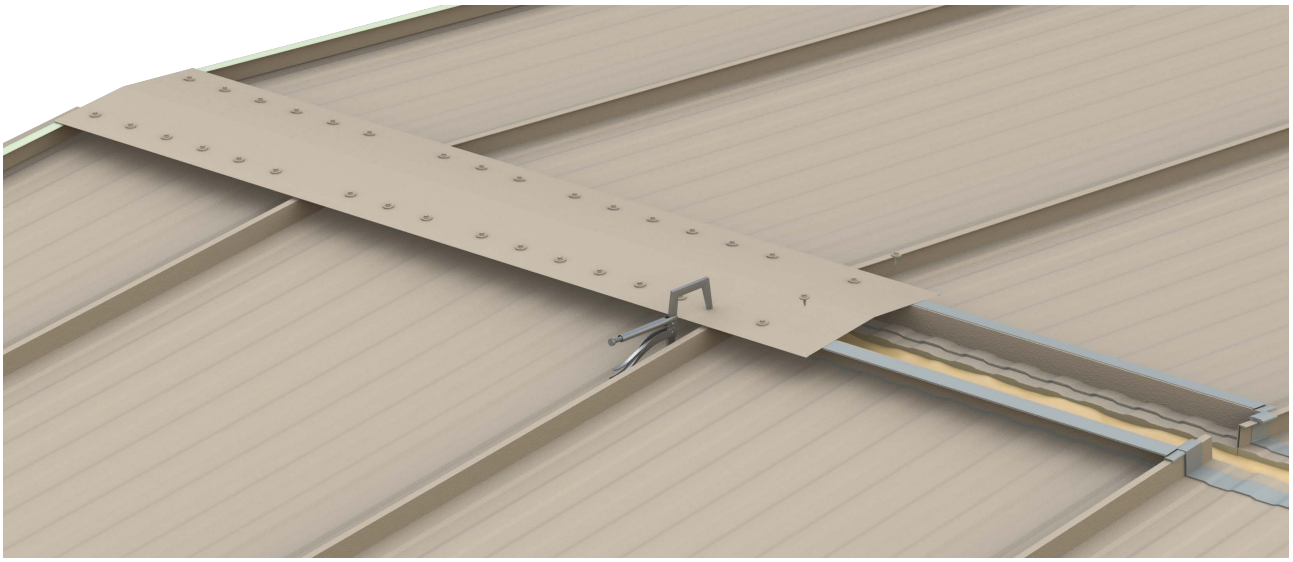


Figure 14.12

14. PERIMETER FLASHING INSTALLATION - EAVE (NO GUTTERS)

14.13 Install expandable foam insulation at intersection of wall and roof panels.

14.14 Apply continuous butyl tape along top and bottom of eave trim.

14.15 Attach eave trim to bottom side of roof panels using 1/4"-14 x 7/8" hex washer head Type 1 fasteners (with neoprene washers) at each high rib.

14.16 Attach bottom of eave trim to wall with same type fastener at 8" on center.

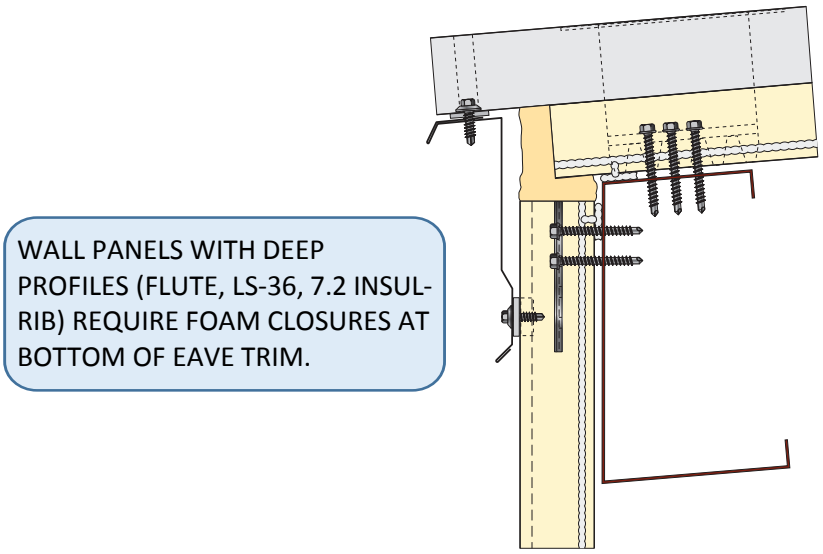


Figure 14.13

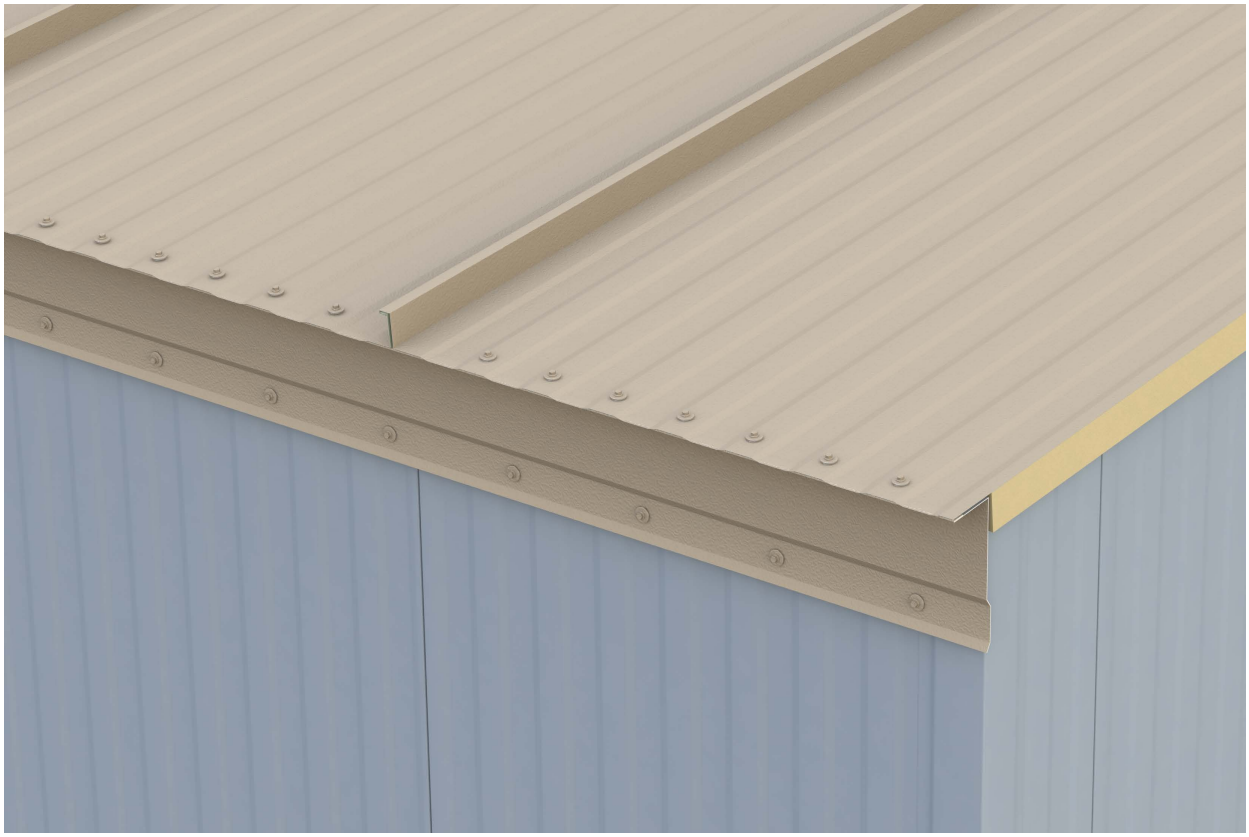


Figure 14.15

14. PERIMETER FLASHING INSTALLATION - GUTTERS

14.17 Attach bottom of eave trim to wall with 1/4"-14 x 7/8" hex washer head Type 1 fasteners (with neoprene washers) at 8" on center.

14.18 Attach top leg of eave trim and back leg of gutter to panel overhang using same type fasteners through every high mesa. Attach gutter straps at each high rib - two fasteners into top of ribs and one into outside leg of gutter.

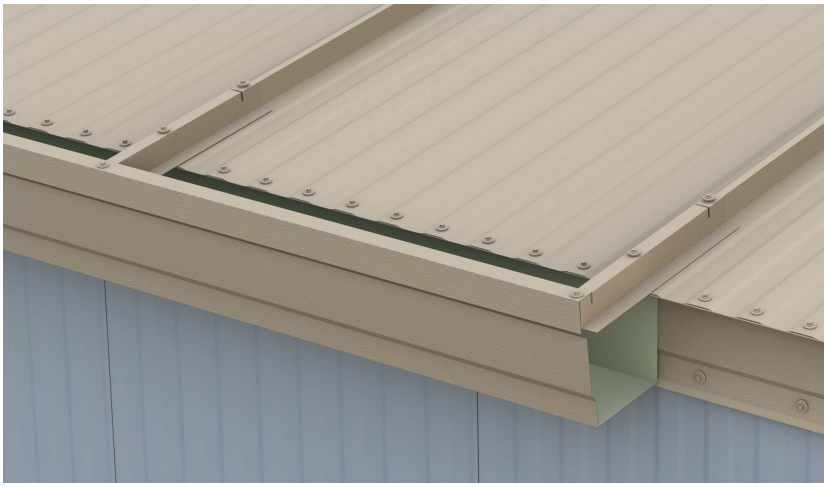


Figure 14.18a

STANDARD GUTTER

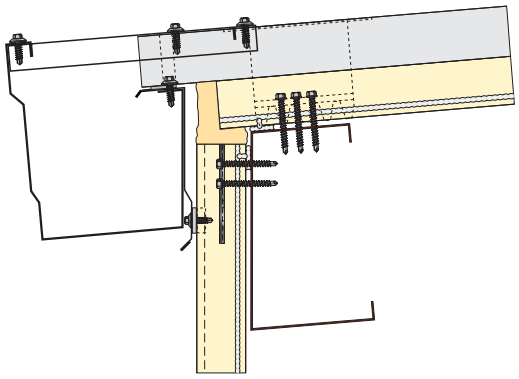


Figure 14.18b

14.19 Attach gutter straps at each high rib using 1/4"-14 x 1-1/2" hex washer head Type 1 (with neoprene washers). Fasten through the vertical leg of the seam. Attach hangar to interior gutter supports with three 1/4"-14 x 7/8" hex washer head Type 1 fasteners.

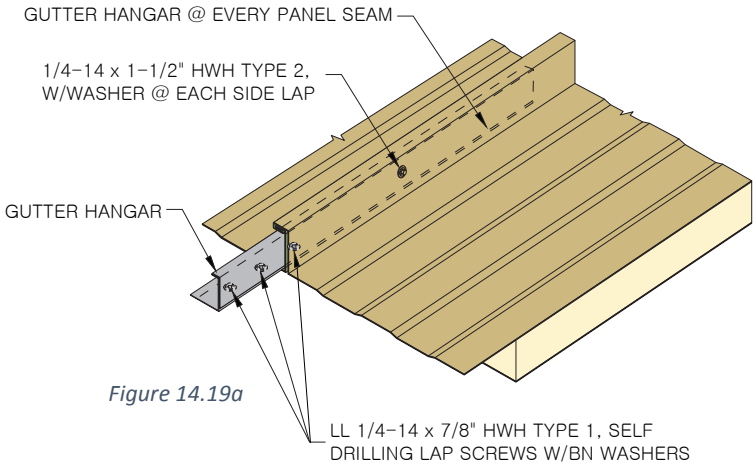
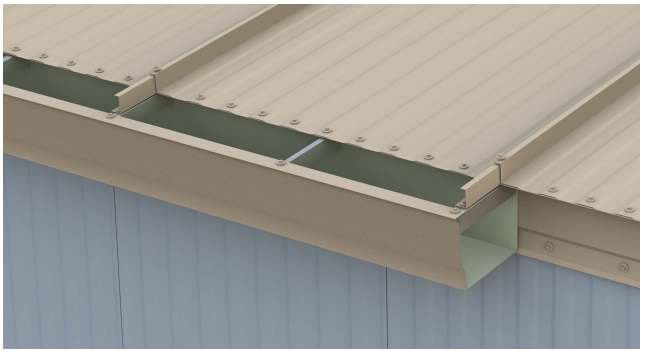


Figure 14.19a

NORTHERN GUTTER

Figure 14.19b



42" CFR PANELS REQUIRE INTERMEDIATE GUTTTER SUPPORTS WHEN USING NORTHERN GUTTER.

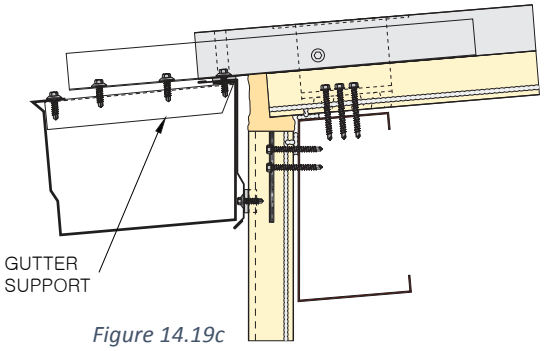


Figure 14.19c

EAVE TRIM WITH NORTHERN GUTTER DOES NOT HAVE DRIP EDGE AT TOP.

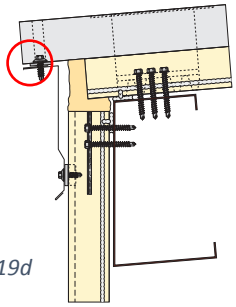
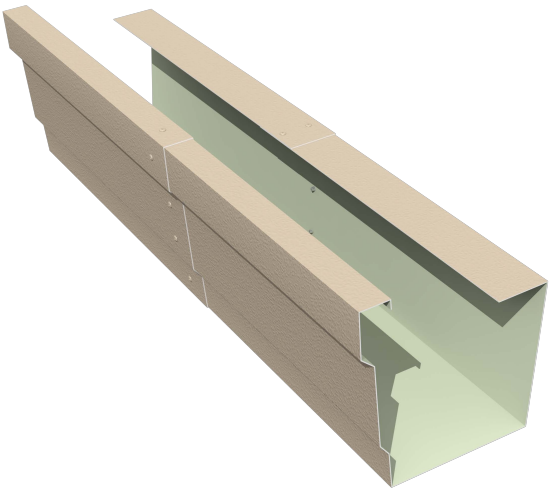


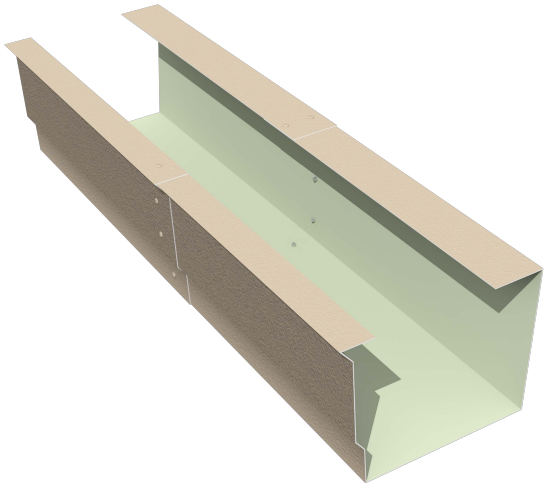
Figure 14.19d

14. PERIMETER FLASHING INSTALLATION - EAVES

14.20 Lap gutter sections by 2", use two rows of urethane sealant and fasten with 1/8" painted stainless steel pop rivets.

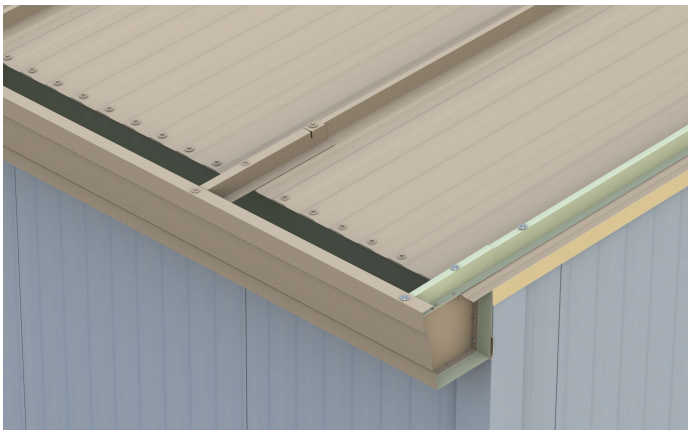


STANDARD GUTTER *Figure 14.20a*



NORTHERN GUTTER *Figure 14.20b*

14.21 Install gutter endcaps using urethane sealant and 1/8" painted stainless steel pop rivets.

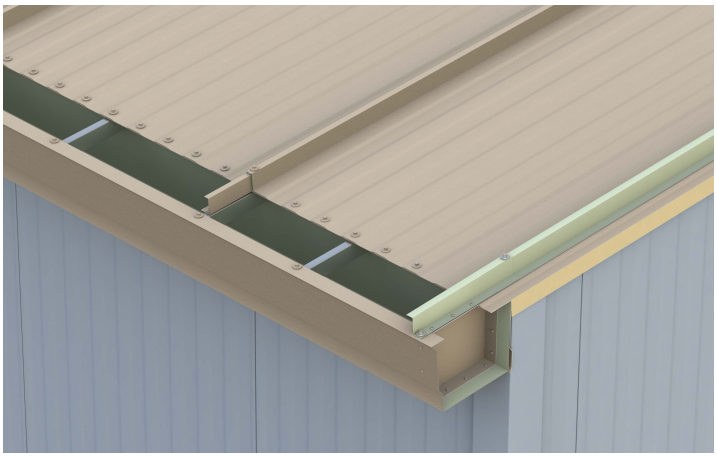


STANDARD GUTTER

Figure 14.21a

NORTHERN GUTTER

Figure 14.21b



14. PERIMETER FLASHING INSTALLATION - RAKE, CORNERS, PEAK

14.22 Attach bottom edge of rake trim to wall panels and top edge to rake closures using 1/4"-14 x 7/8" hex washer head Type 1 fasteners (with neoprene washers) at 8" on center. Begin at eave and work upwards towards ridge. Laps should be "shingled" 2", using butyl tape sealant and 1/8" painted stainless steel pop rivets.

Figure 14.23

14.23 Install end cap in rake trim using 1/8" painted stainless steel pop rivets.

Figure 14.24

14.24 For roofs with gutters, install corner boxes using urethane sealant and 1/8" painted stainless steel pop rivets.

REFER TO PROJECT INSTALLATION DRAWINGS FOR MORE DETAILS ON CORNER TRIMS. SOME PROJECTS MAY REQUIRE FIELD FABRICATION OF CORNER AND END CAPS.

14.25 Attach peak box to rake and ridge flashing. Use butyl sealant tape and 1/8" painted stainless steel pop rivets as required. (It may be necessary to field build peak box from section of rake trim - refer to project installation drawings).

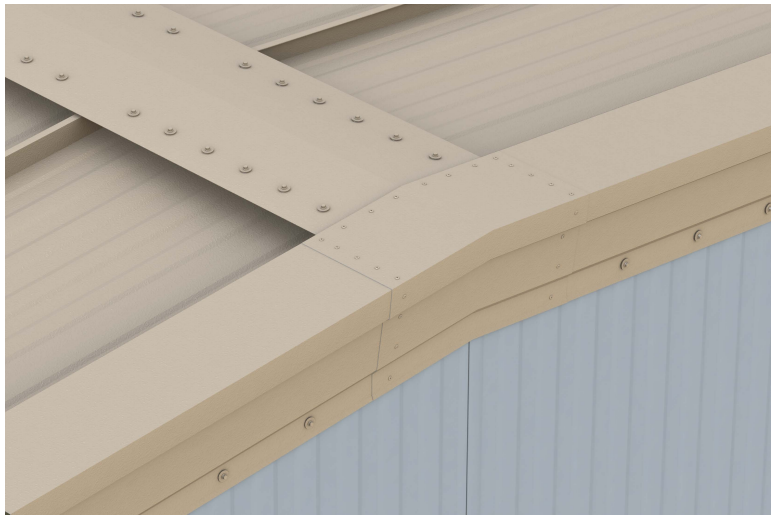
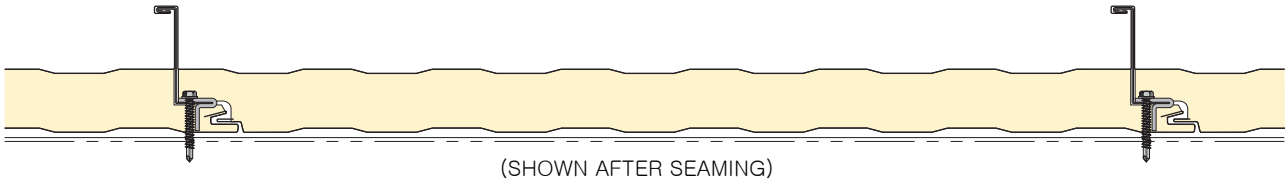


Figure 14.25

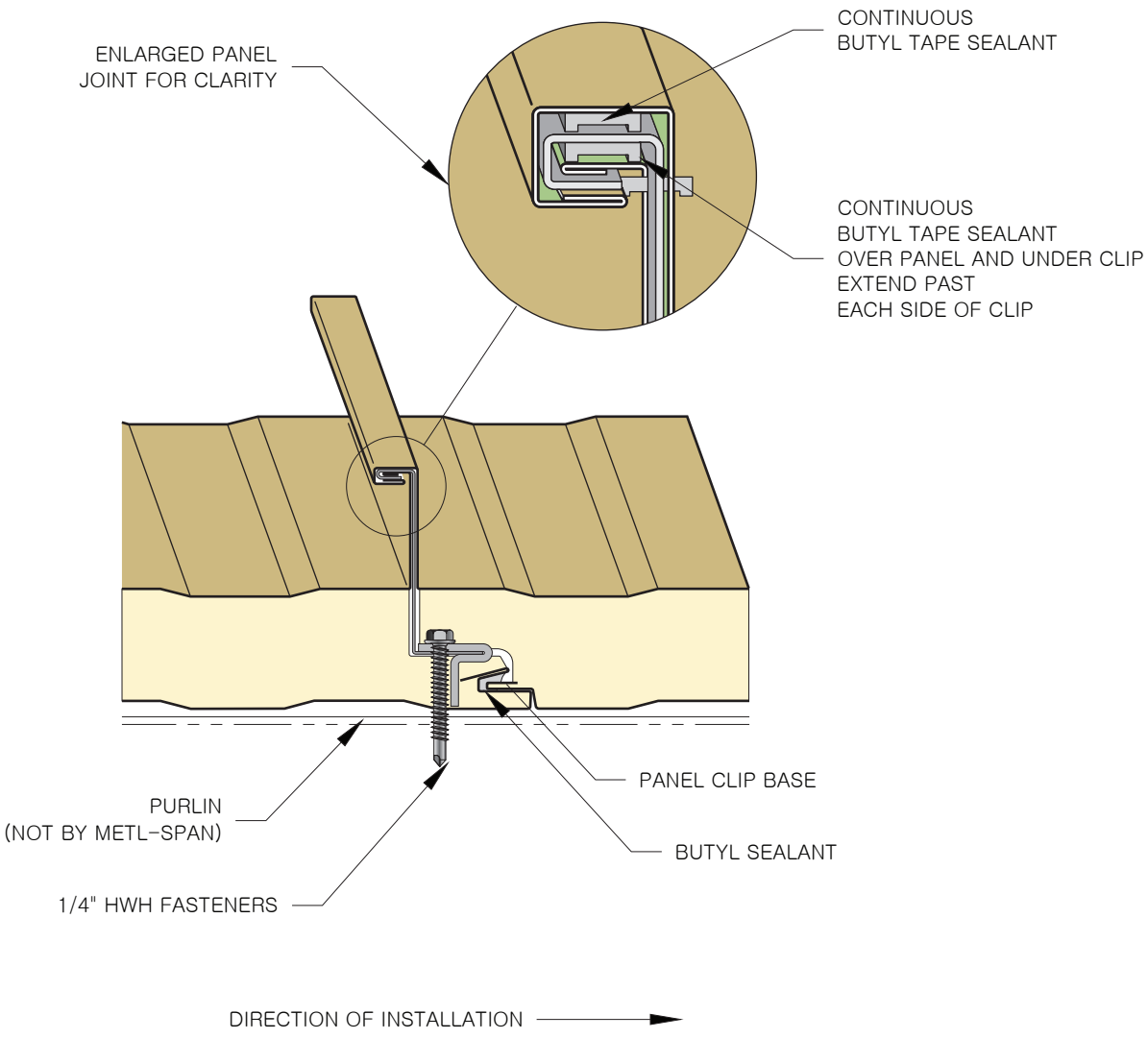
CHECK INSTALLATION DRAWINGS - SOME PROJECTS MAY REQUIRE FIELD FABRICATION OF PEAK BOX.

15. GENERAL DETAILS

WARNING: THIS CHAPTER CONTAINS ***GENERAL DETAILS ONLY*** - REFER TO PROJECT INSTALLATION (SHOP) DRAWINGS FOR PROJECT SPECIFIC DETAILS!



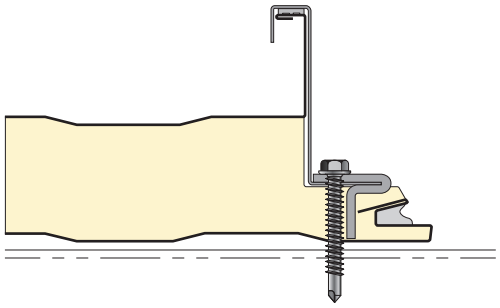
(SHOWN AFTER SEAMING)



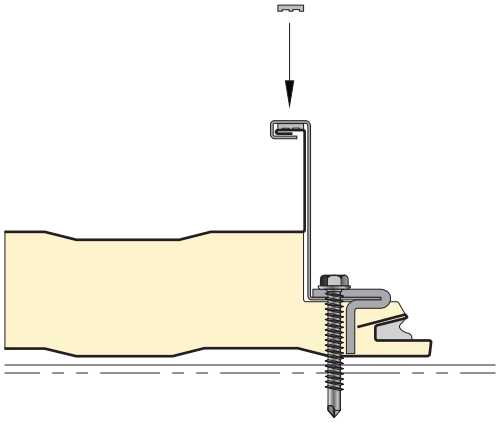
CI-CFR-JT-01
PANEL JOINT

15. GENERAL DETAILS

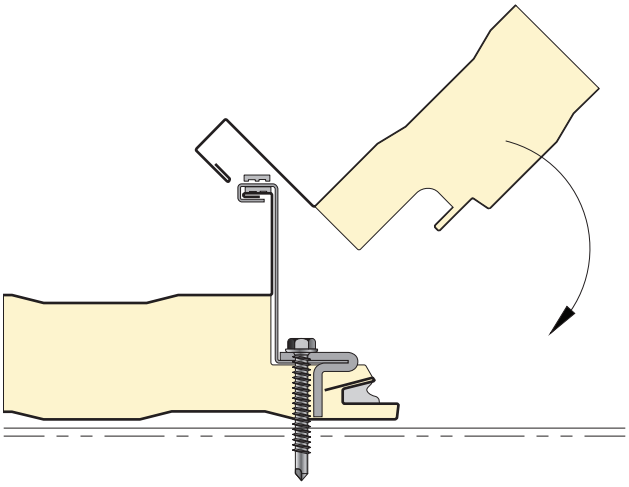
1. SET PANEL IN PLACE
2. INSTALL CFR CLIP W/BUTYL TAPE SEALANT
3. SECURE TO PURLINS W/ 1/4" HEX HEAD FASTENERS



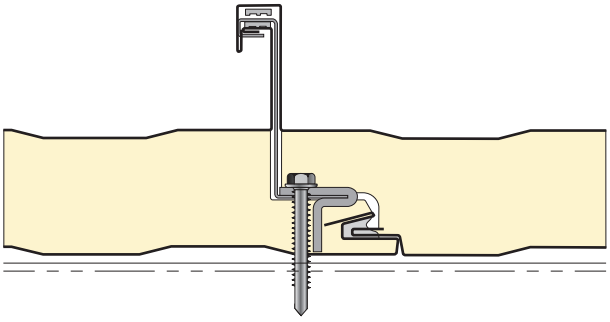
4. HAND "CRIMP" THE STANDING RIB/ CLIP ASSEMBLY AT EACH CLIP LOCATION
5. INSTALL CONTINUOUS BUTYL TAPE SEALANT ON TOP OF MALE STANDING SEAM



6. TILT NEXT PANEL TO BE INSTALLED AT 45 DEGREE ANGLE. ROTATE INTO POSITION.



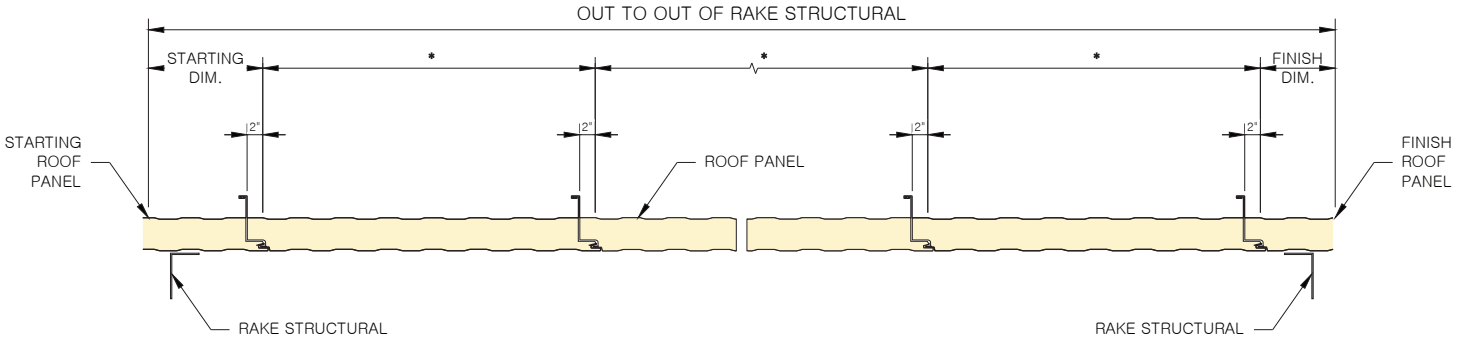
7. USE CLAMPS TO ENSURE PROPER PANEL ENGAGEMENT
8. HAND CRIMP AT RIDGE, ENDLAP AND EAVES
9. INSTALL RIDGE, RAKE AND EAVE COMPONENTS, THEN MECHANICALLY SEAM ROOF



CI-CFR-JT-02
PANEL JOINT

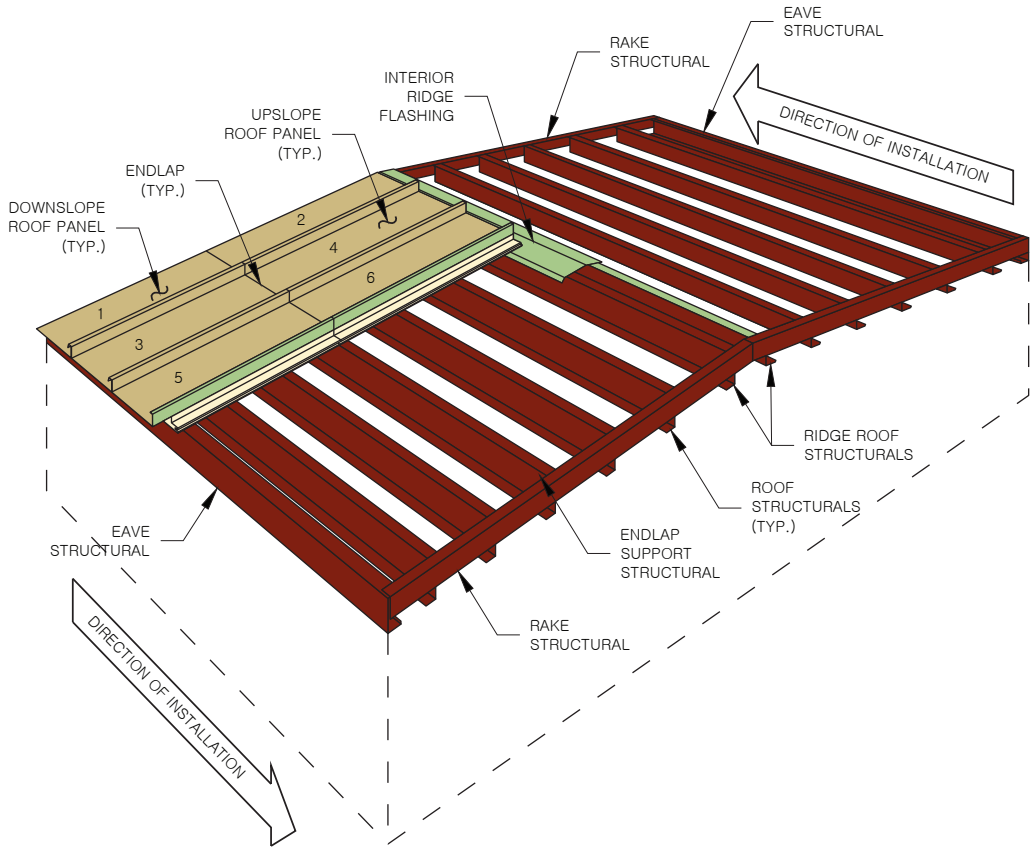
15. GENERAL DETAILS

1. ADD WALL PANEL THICKNESS (BOTH ENDS) PLUS OUT TO OUT DIMENSIONS OF RAKE STRUCTURAL SUPPORTS.
2. DIVIDE RESULT BY PANEL MODULE* (30", 36" OR 42") TO DETERMINE NUMBER OF PANELS REQUIRED.
3. DIVIDE FRACTIONAL PANEL REMAINDER (IF ANY) BY 2 TO DETERMINE STARTING PANEL WIDTH. IF RESULT IS LESS THAN 12", THEN CUT STARTER PANEL TO REMOVE INTERIOR JOINT ONLY – LAST PANEL WILL NEED TO ACCOMODATE THE REMAINDER (LAYOUT WILL BE ASSYMETRICAL).



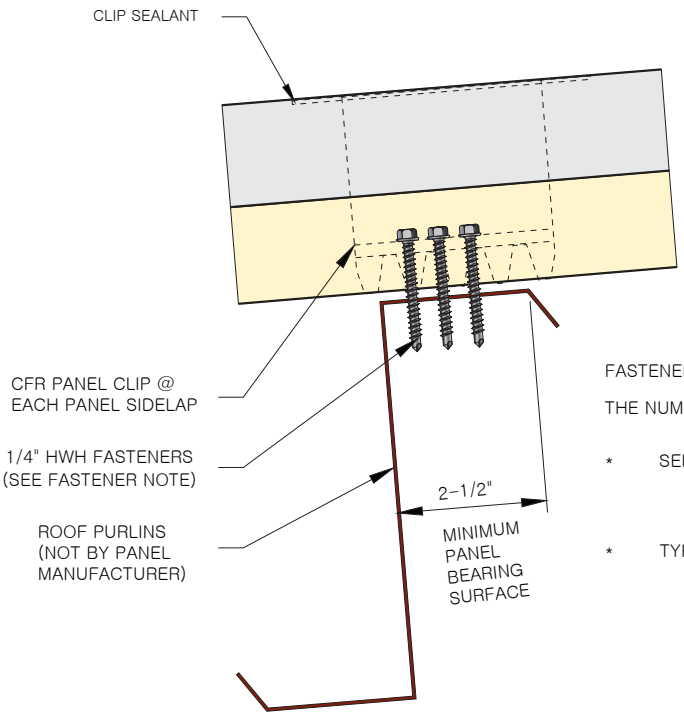
ROOF PANEL LAYOUT

CI-CFR-JT-03
PANEL JOINT LAYOUT



CI-CFR-SQ-01
PANEL INSTALLATION SEQUENCE

15. GENERAL DETAILS

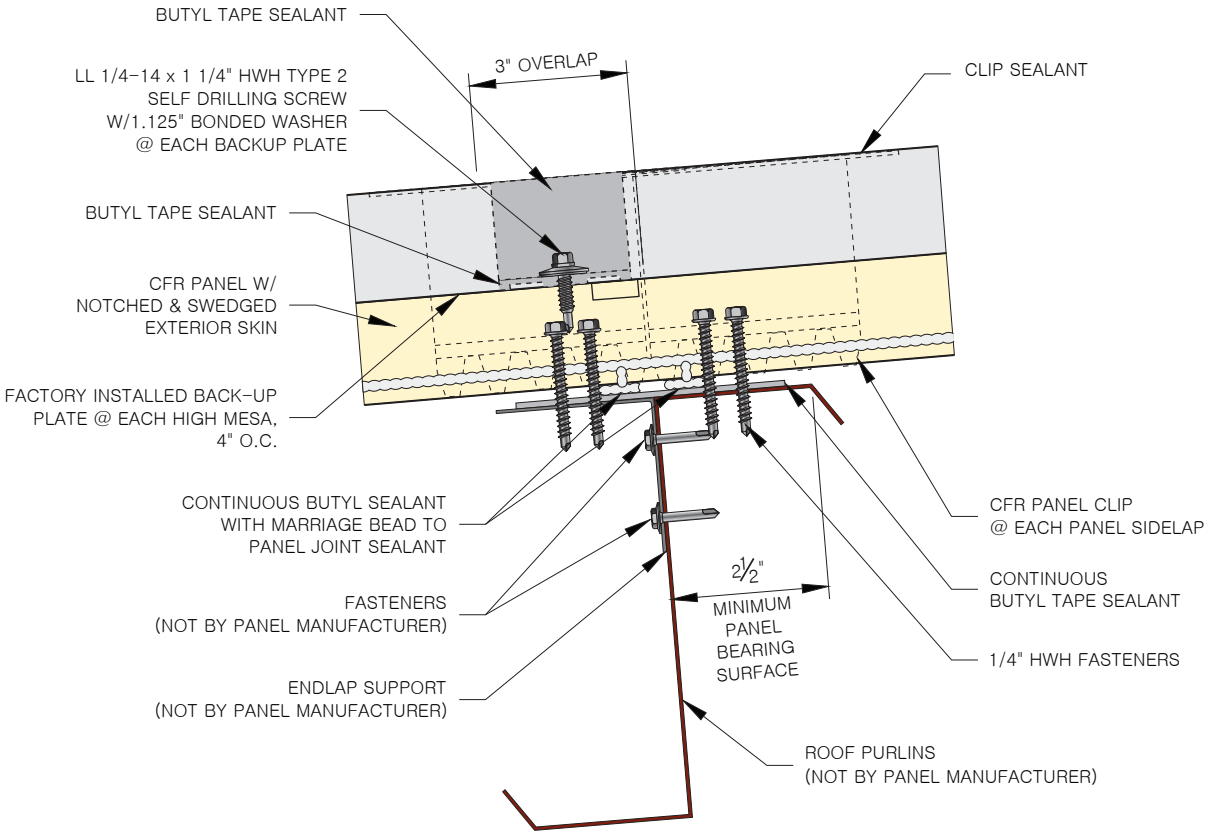


FASTENER NOTE:

THE NUMBER OF FASTENERS PER CLIP ARE BASED ON THE FOLLOWING CRITERIA

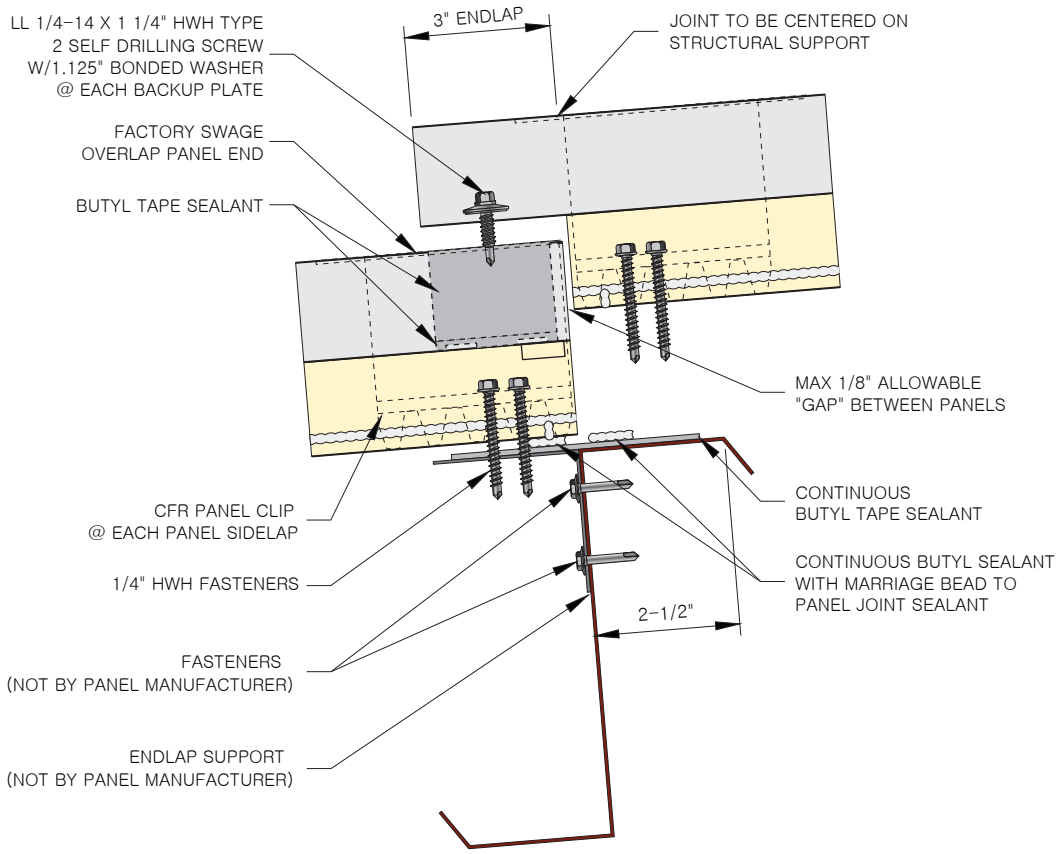
* SELF DRILLING, SELF-TAPPING SCREWS
  * 3 /CLIP IF PURLIN IS LESS THAN 12 GAUGE.
  * 2 /CLIP IF PURLIN IS GREATER OR EQUAL TO 12 GA.
* TYPE B SELF-TAPPING SCREWS – 2 /CLIP

CI-CFR-AT-01
INTERMEDIATE ATTACHMENT

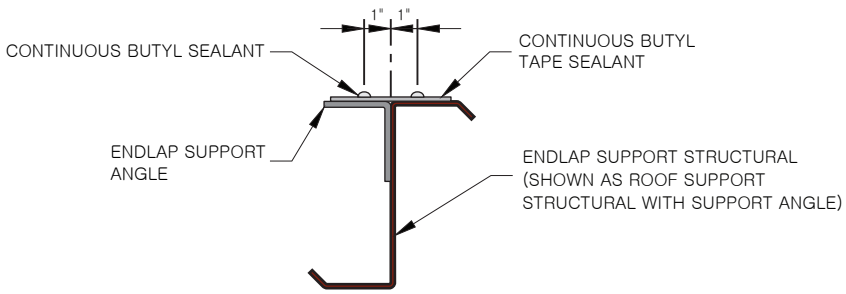


CI-CFR-EL-01
ENDLAP ATTACHMENT

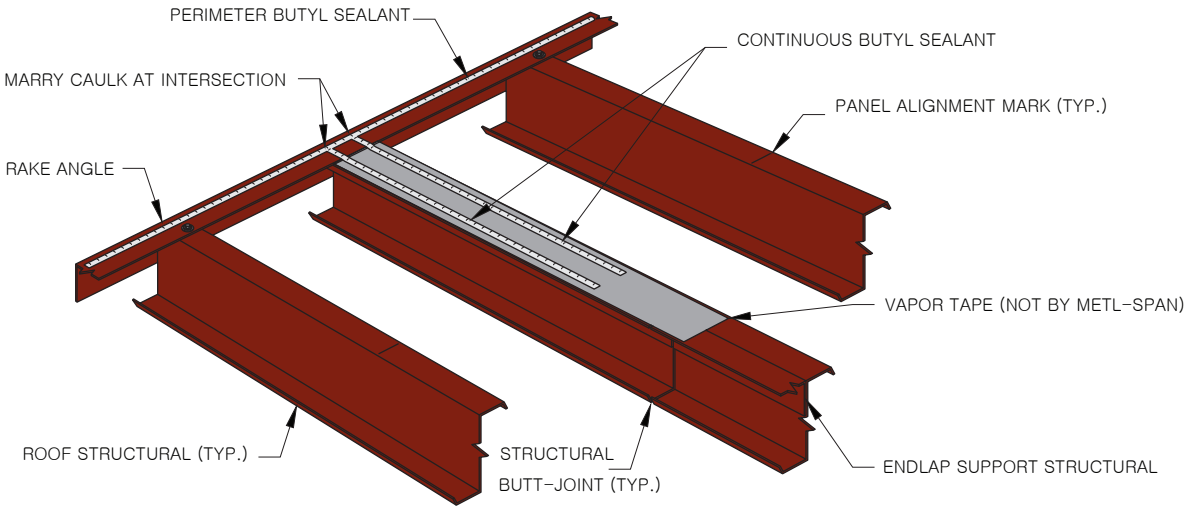
15. GENERAL DETAILS



CI-CFR-EL-02 ENDLAP ATTACHMENT - EXPLODED VIEW

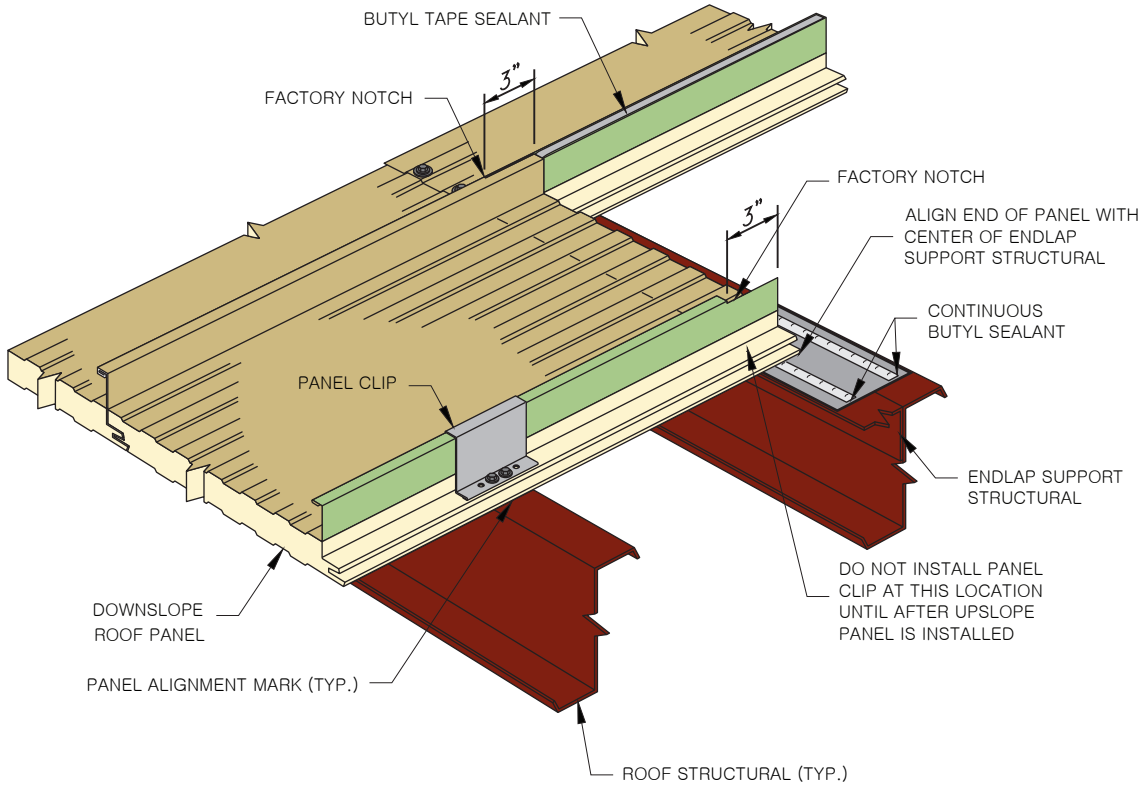


ENDLAP SUPPORT STRUCTURAL SECTION

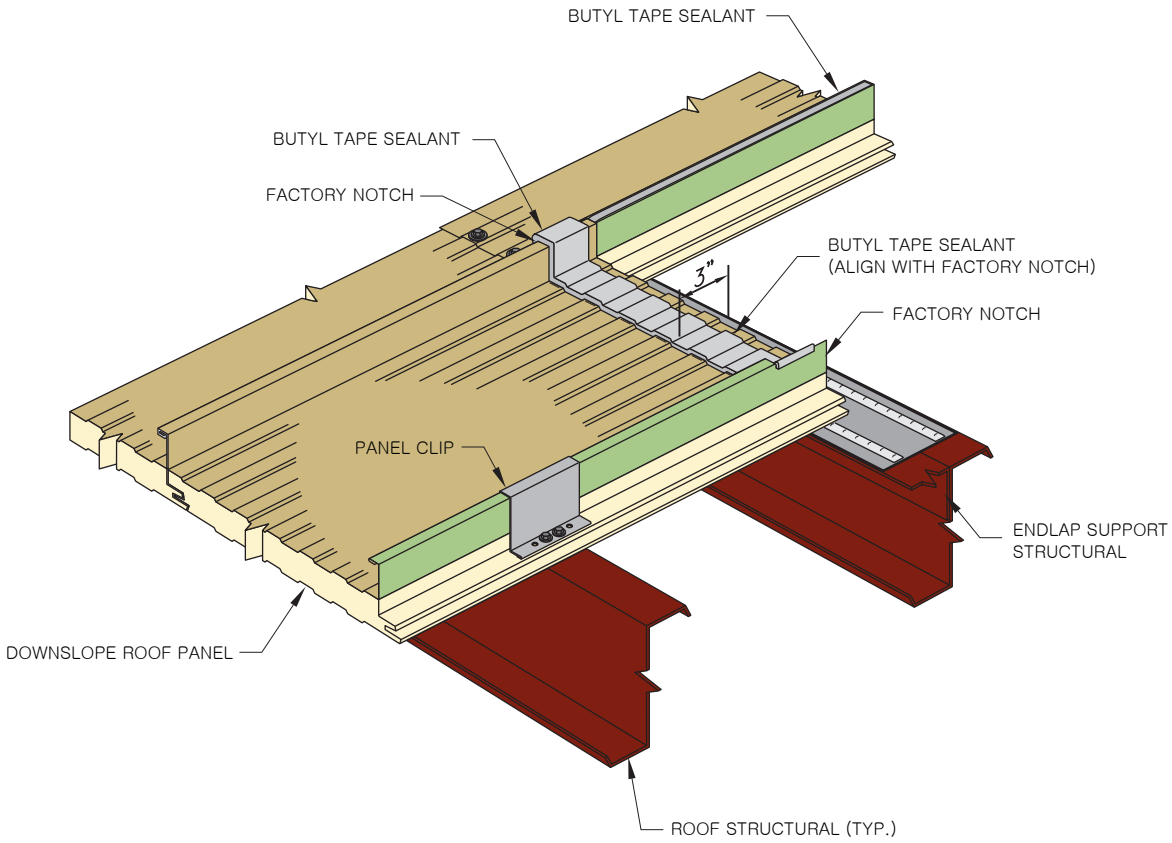


CI-CFR-EL-03 ENDLAP STRUCTURAL SEALANT

15. GENERAL DETAILS

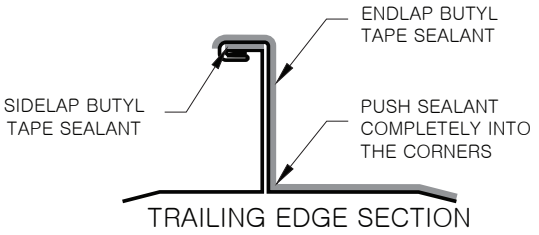


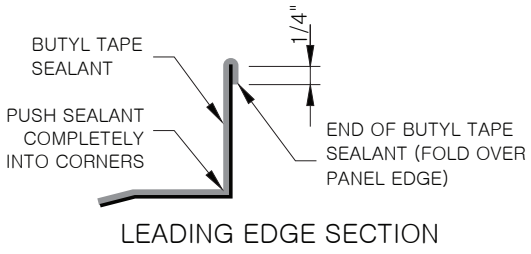
CI-CFR-EL-04 ENDLAP LOWER PANEL

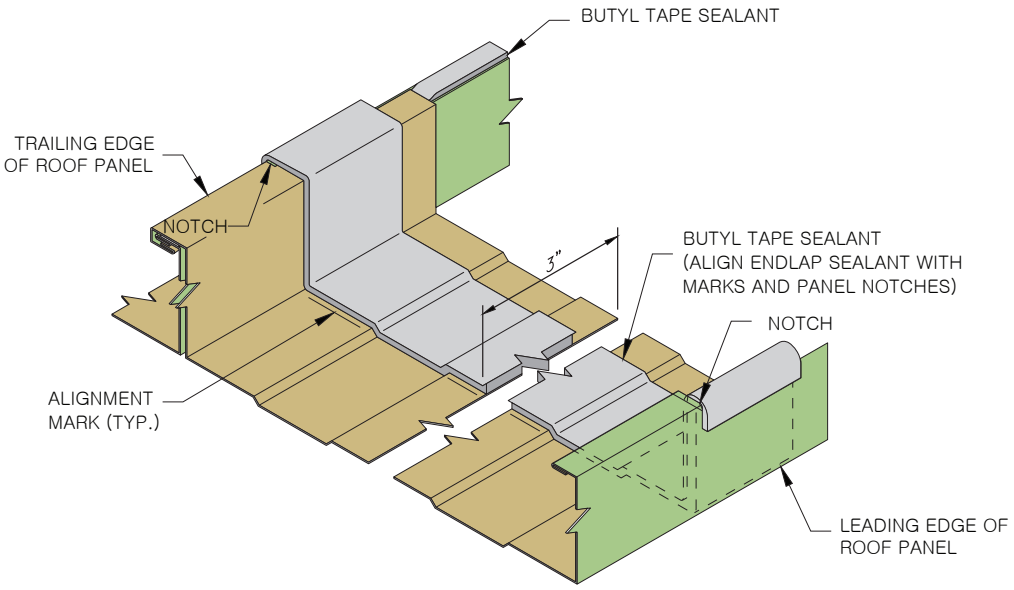


CI-CFR-EL-05 ENDLAP LOWER PANEL BUTYL TAPE SEALANT (1 OF 2)

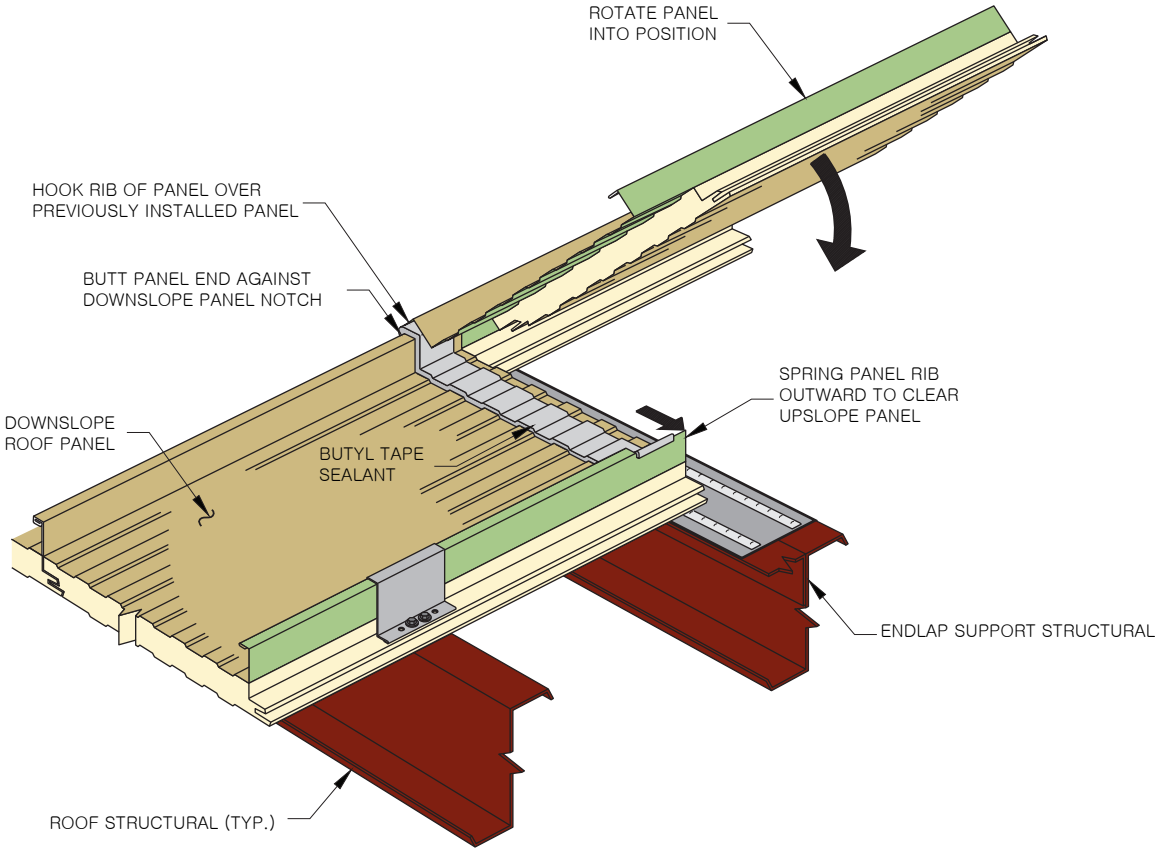
15. GENERAL DETAILS





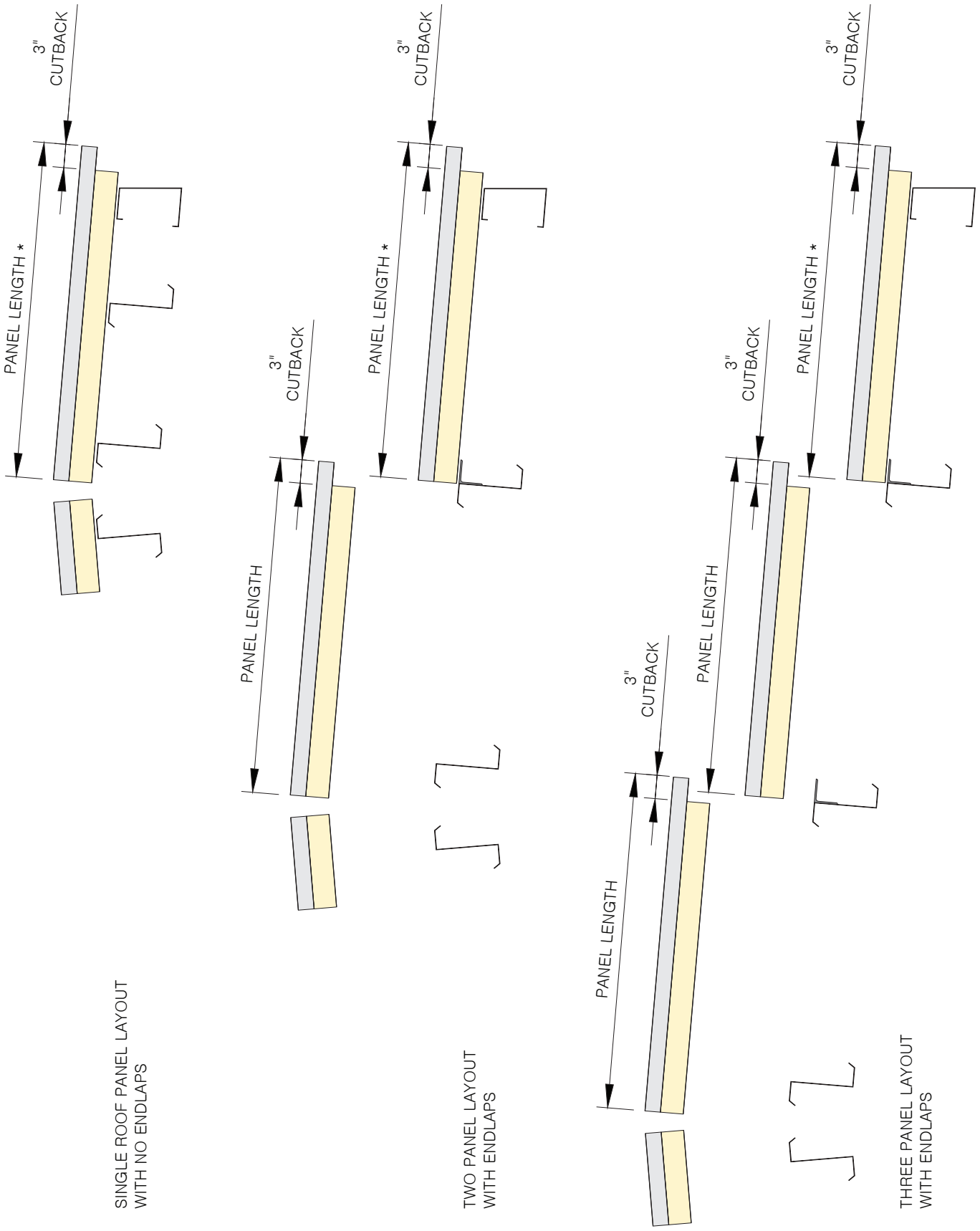


CI-CFR-EL-06 ENDLAP LOWER PANEL
BUTYL TAPE SEALANT (2 OF 2)



CI-CFR-EL-07 ENDLAP UPPER PANEL

15. GENERAL DETAILS



SINGLE ROOF PANEL LAYOUT
WITH NO ENDLAPS

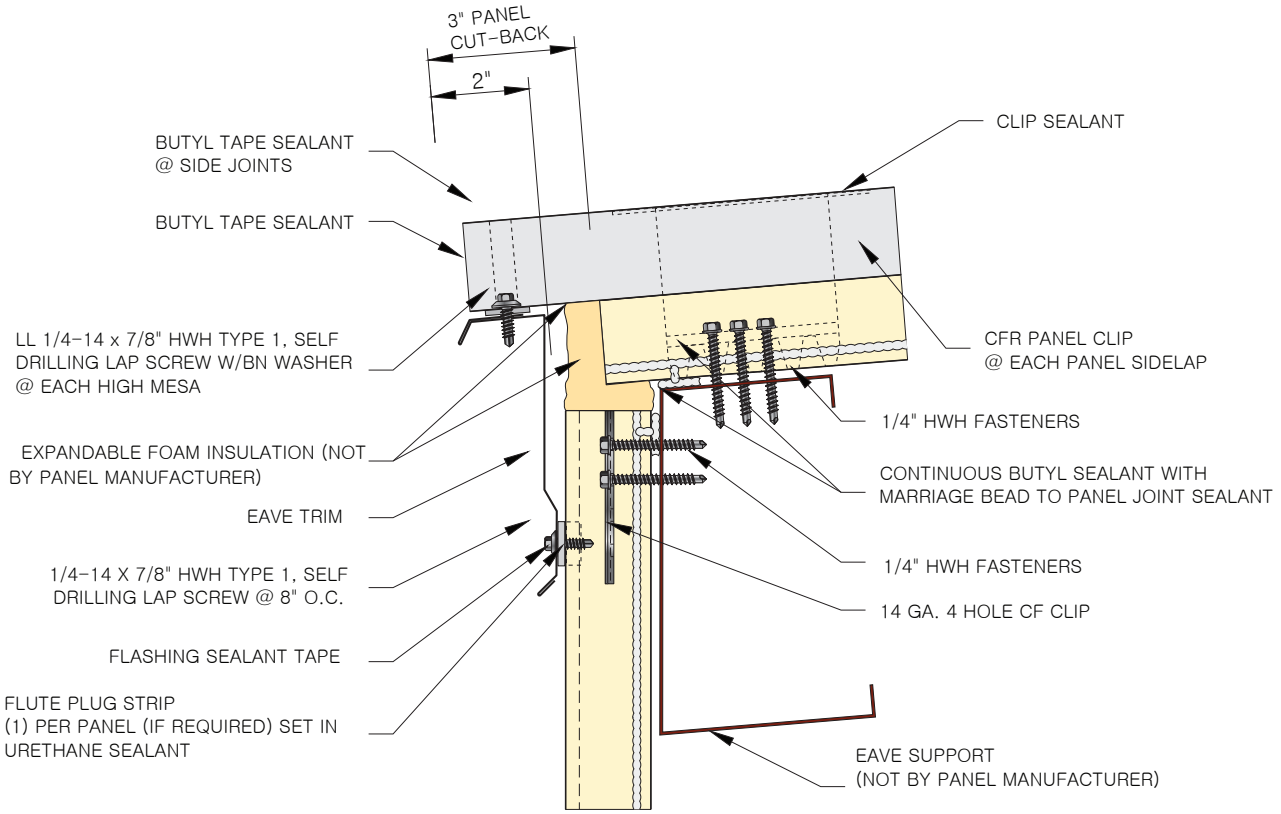
TWO PANEL LAYOUT
WITH ENDLAPS

THREE PANEL LAYOUT
WITH ENDLAPS

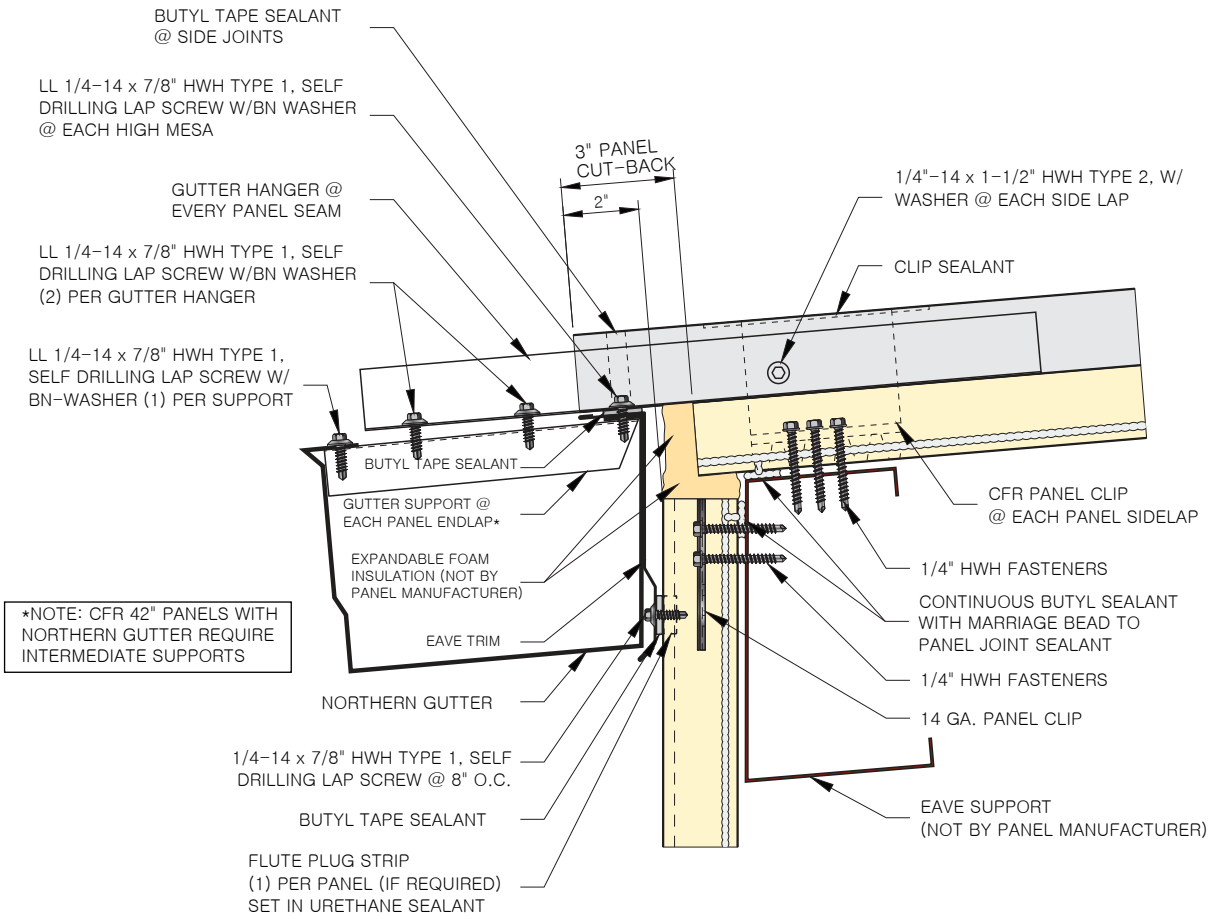
(*) ADD WALL PANEL THICKNESS TO PANEL LENGTH

CI-CFR-EL-08
ENDLAP CONDITIONS

15. GENERAL DETAILS

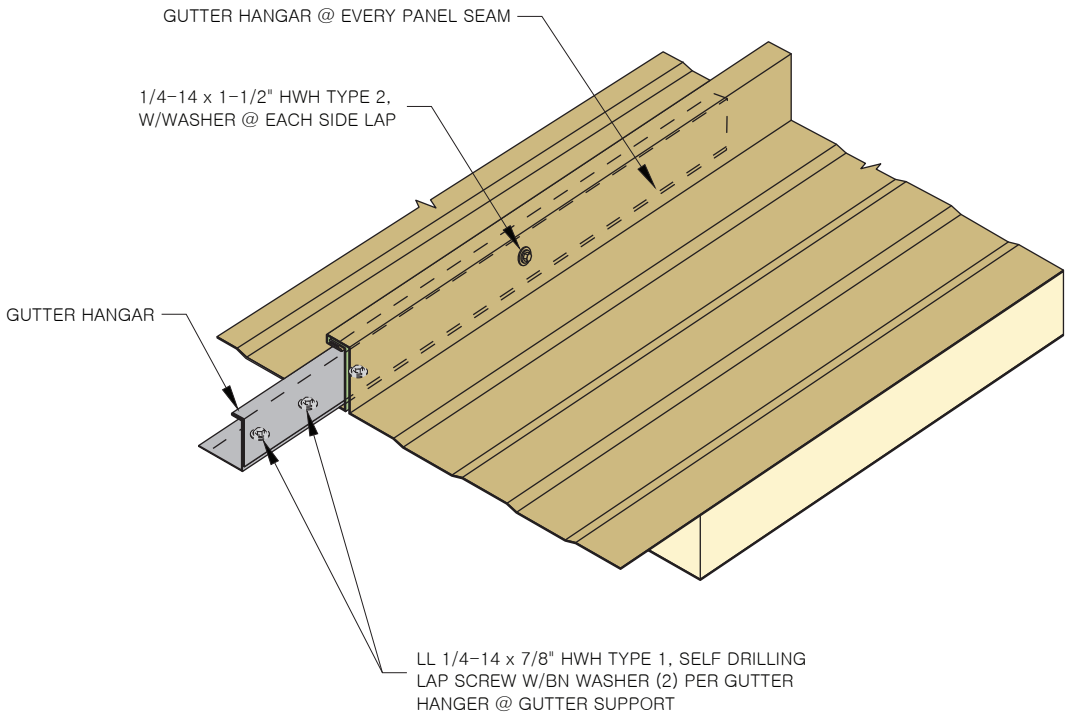


CI-CFR-EV-01 LOW EAVE W/TRIM

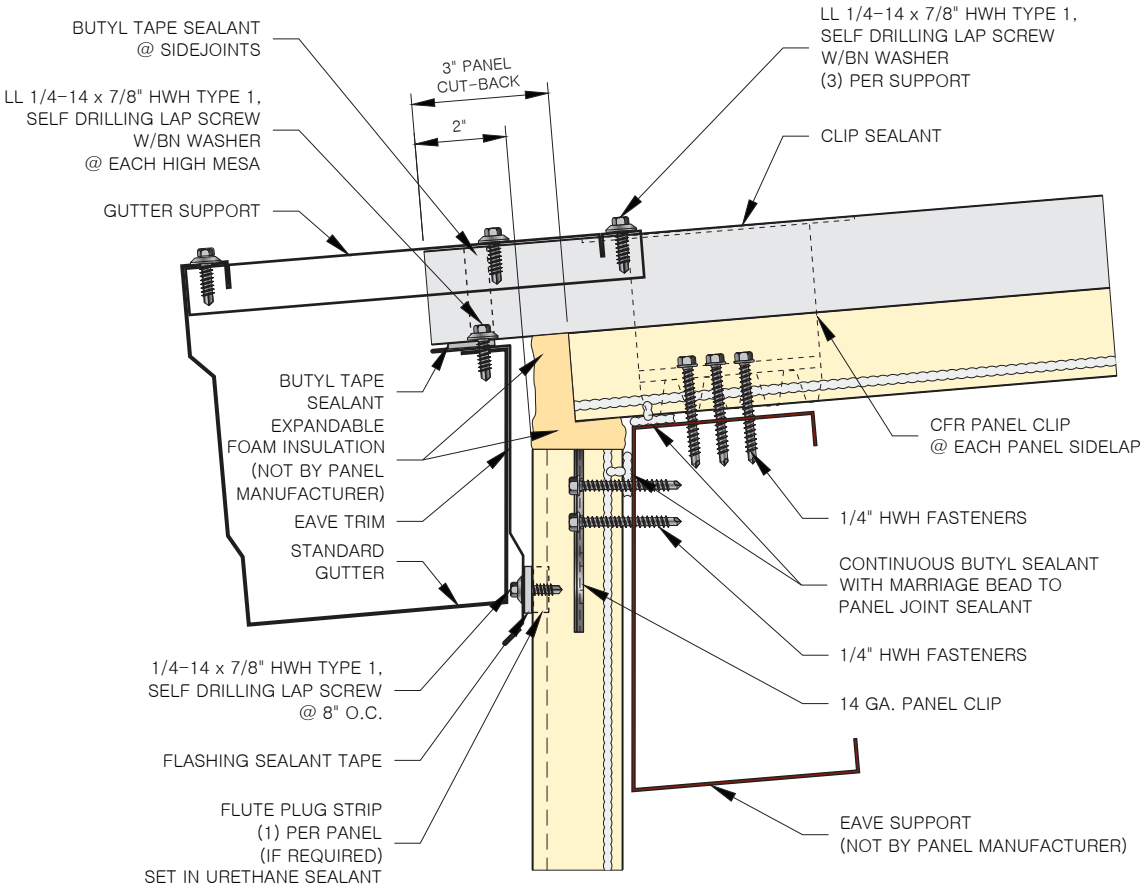


CI-CFR-EV-G1 LOW EAVE W/NORTHERN GUTTER

15. GENERAL DETAILS

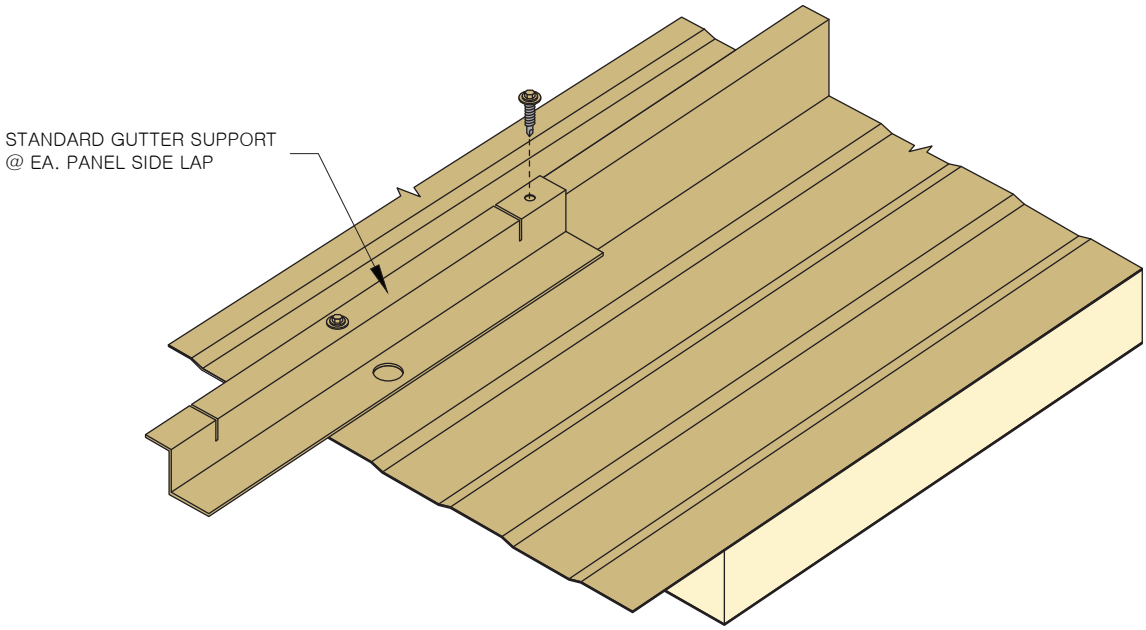


CI-CFR-EV-G2 LOW EAVE NORTHERN GUTTER HANGAR

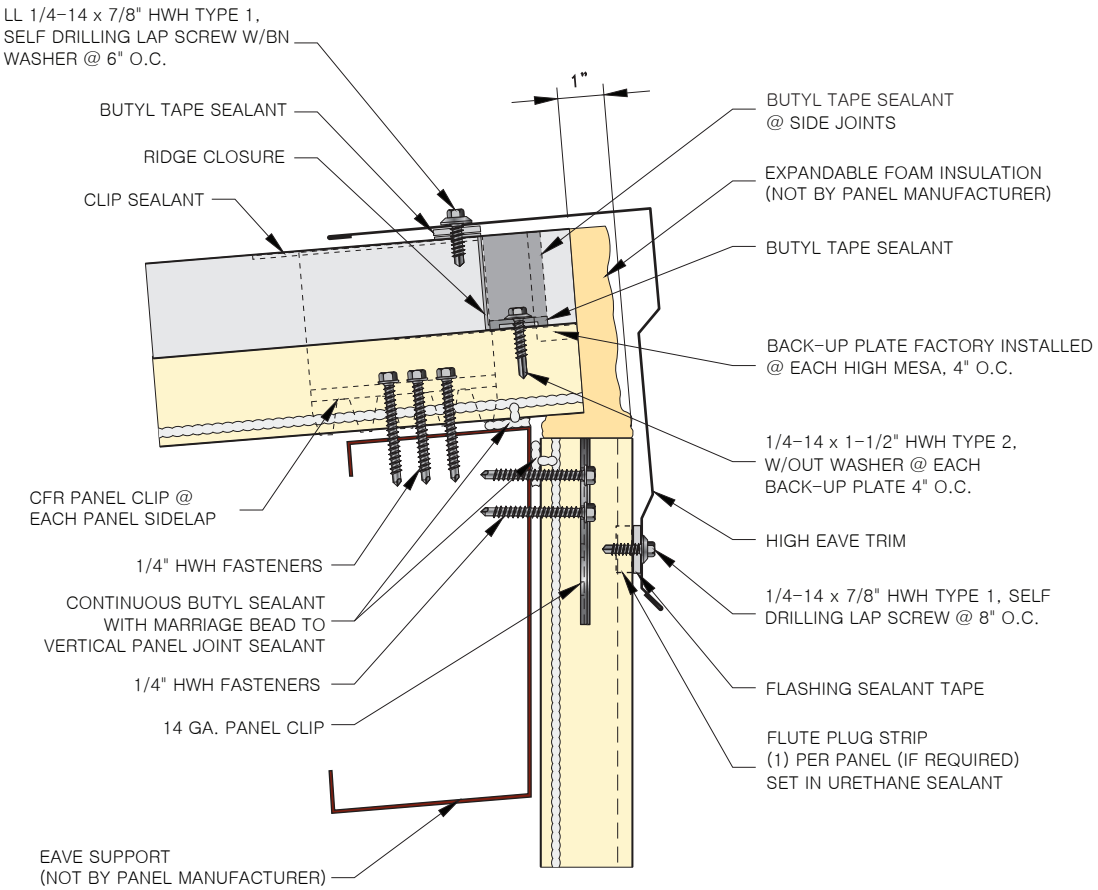


CI-CFR-EV-G3 LOW EAVE W/STANDARD GUTTER

15. GENERAL DETAILS

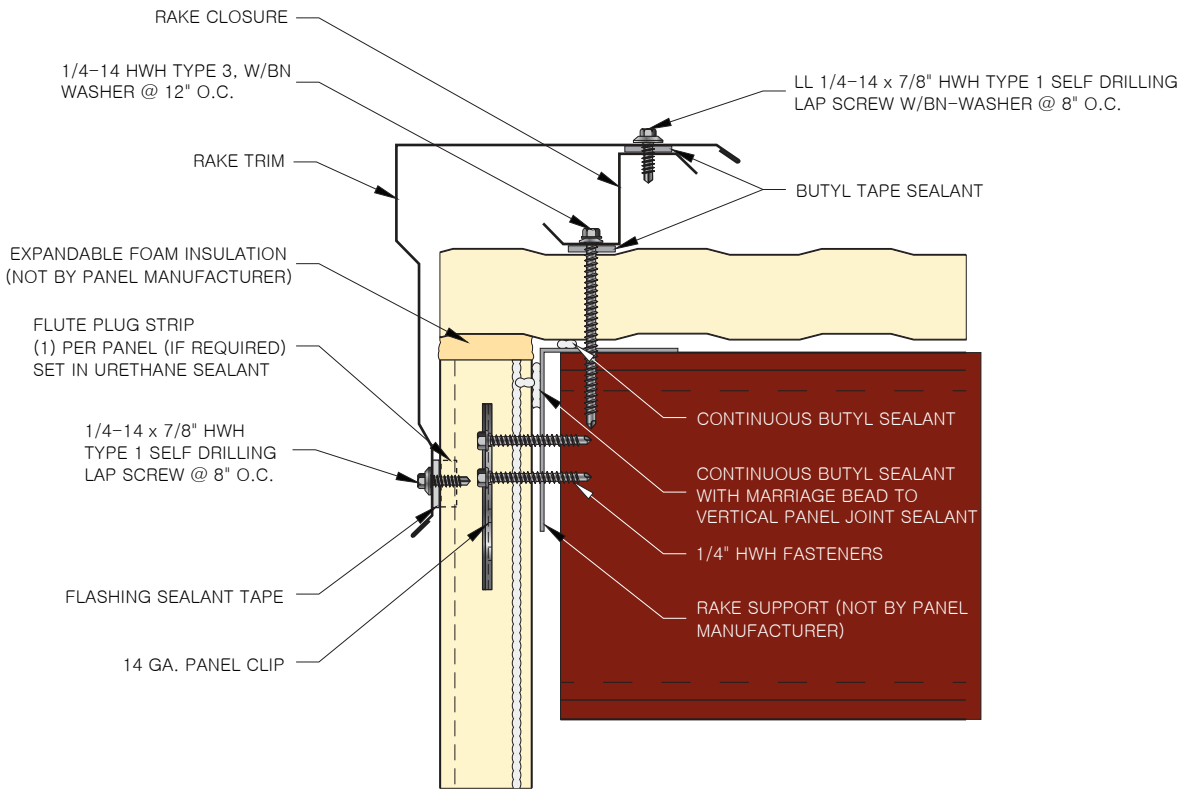


CI-CFR-EV-G4 LOW EAVE STANDARD GUTTER HANGAR

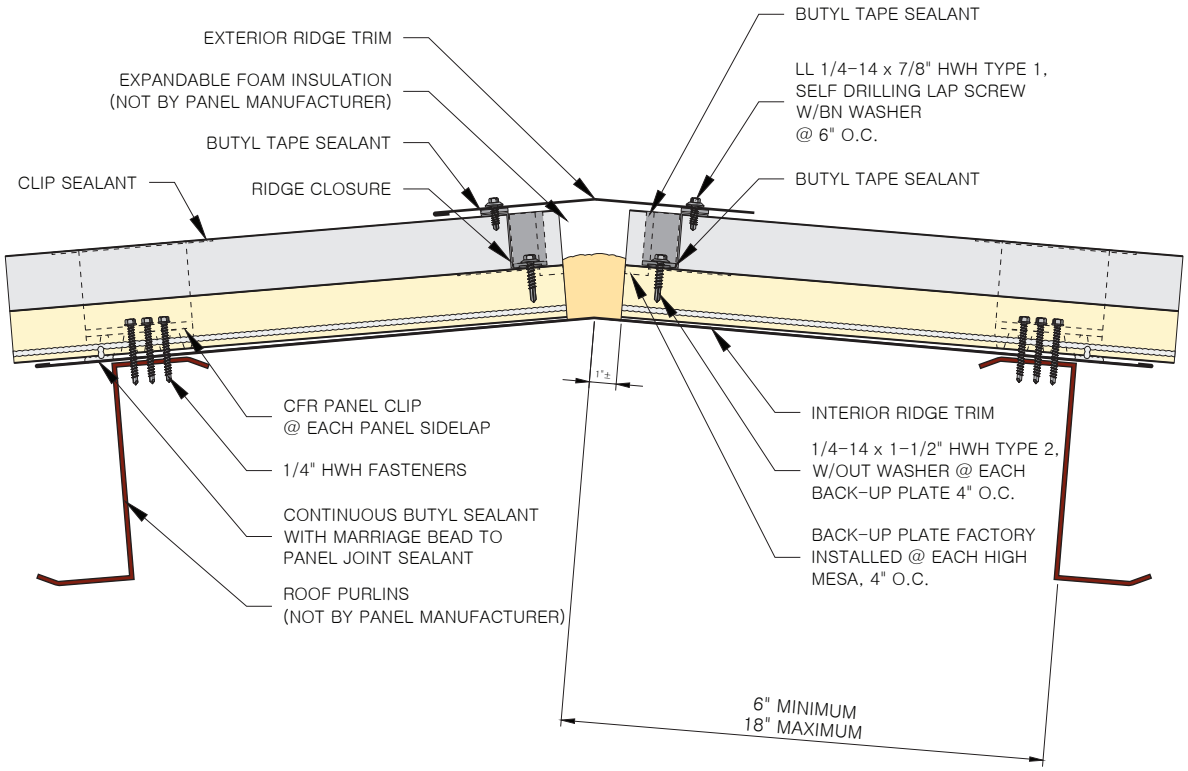


CI-CFR-EV-02 HIGH EAVE

15. GENERAL DETAILS

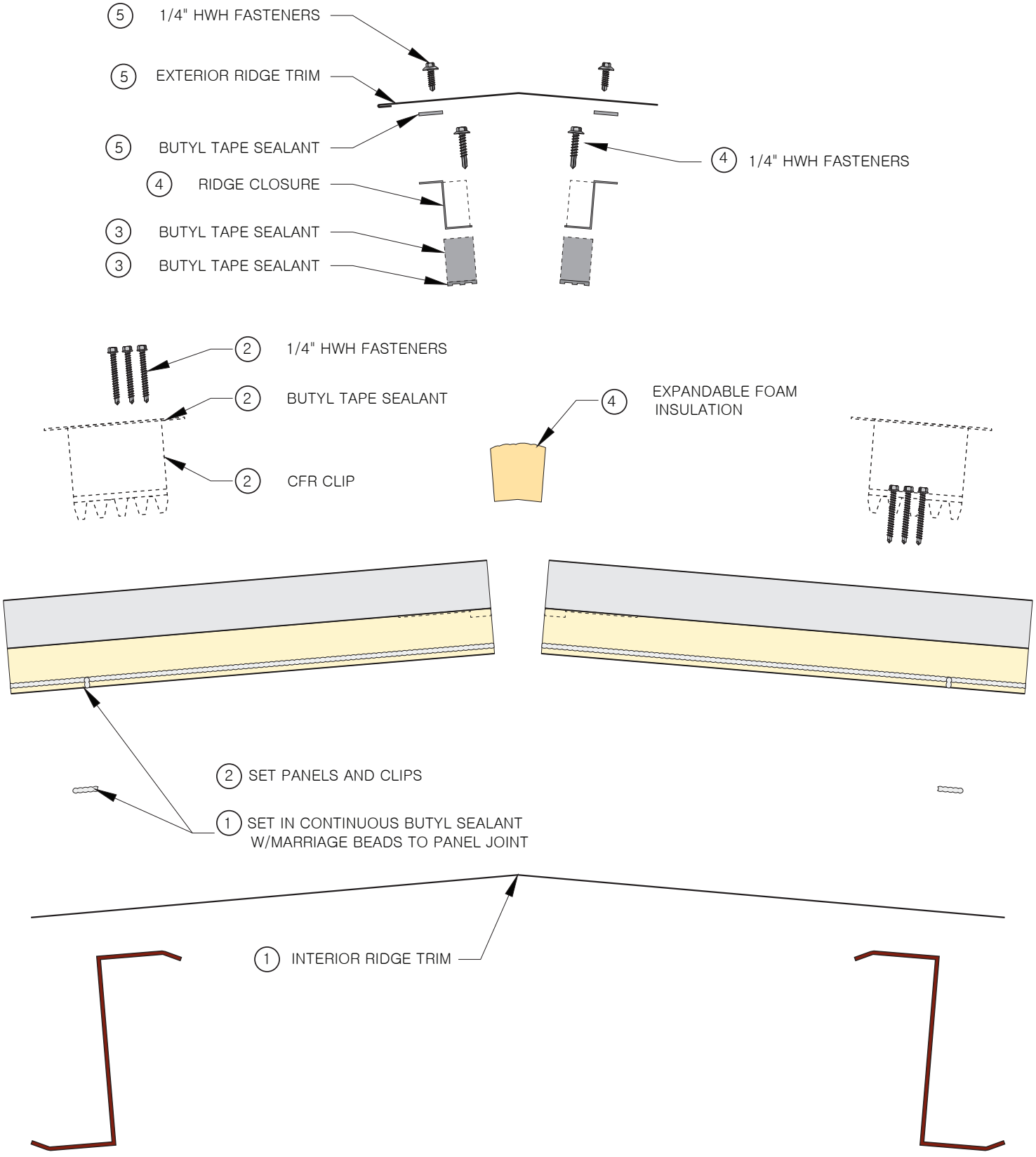


CI-CFR-RK-01 RAKE WITH HIGH PROFILE TRIM



CI-CFR-RG-01 RIDGE

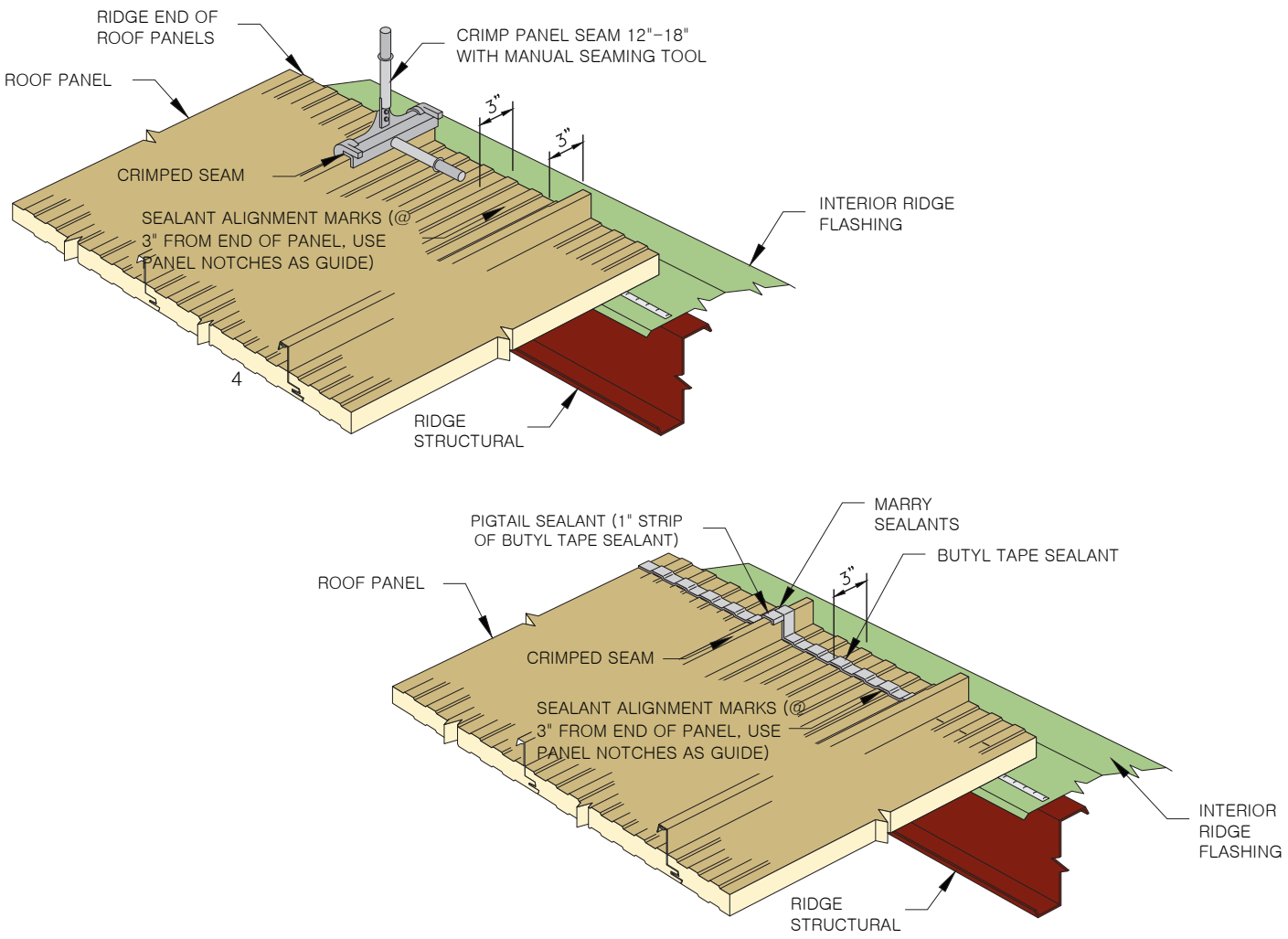
15. GENERAL DETAILS



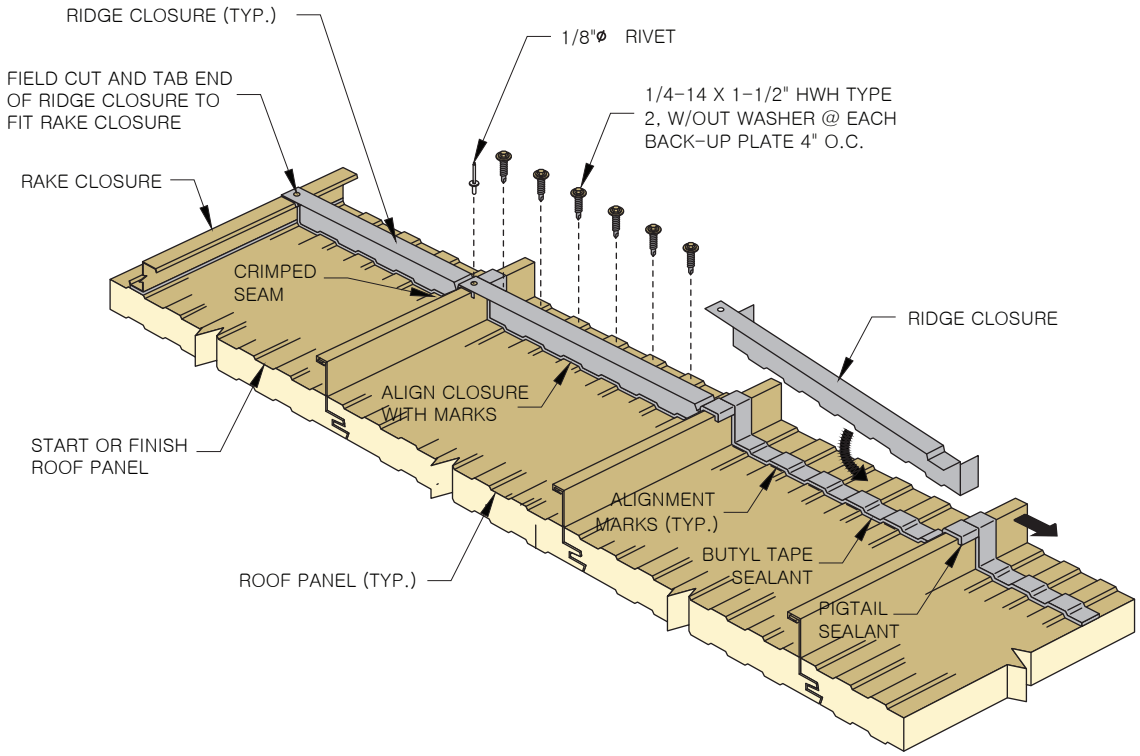
* NUMBERS REFER TO SEQUENCE OF INSTALLATION

CI-CFR-RG-02 RIDGE EXPLODED VIEW

15. GENERAL DETAILS

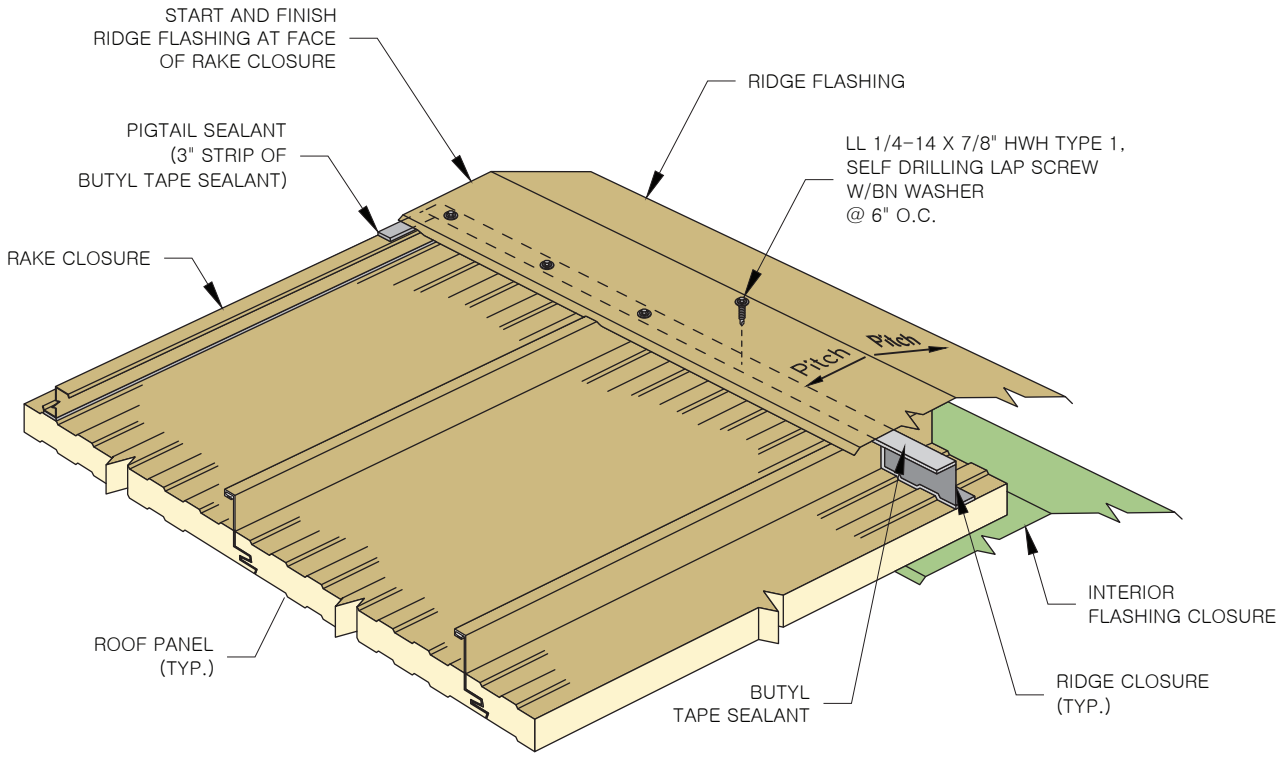


CI-CFR-RG-03 RIDGE CLOSURE ASSEMBLY (1 of 2)

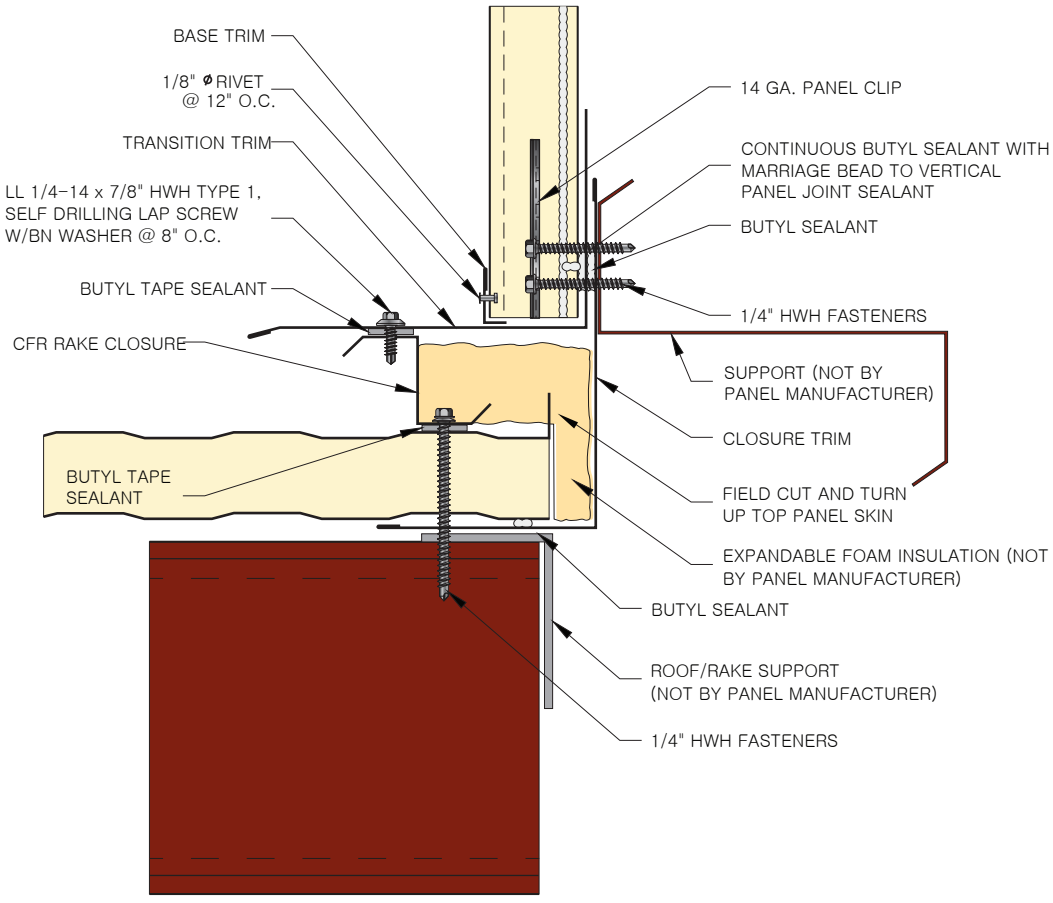


CI-CFR-RG-04 RIDGE CLOSURE ASSEMBLY (2 of 2)

15. GENERAL DETAILS

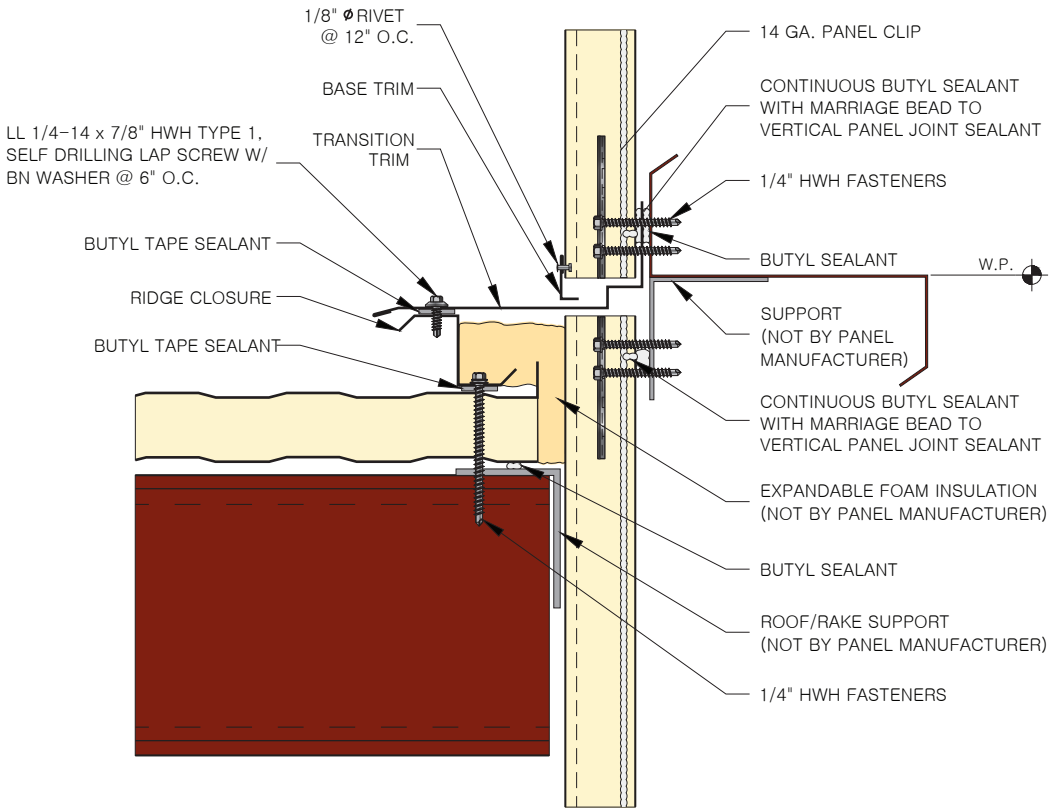


CI-CFR-RG-05 RIDGE FLASHING ASSEMBLY

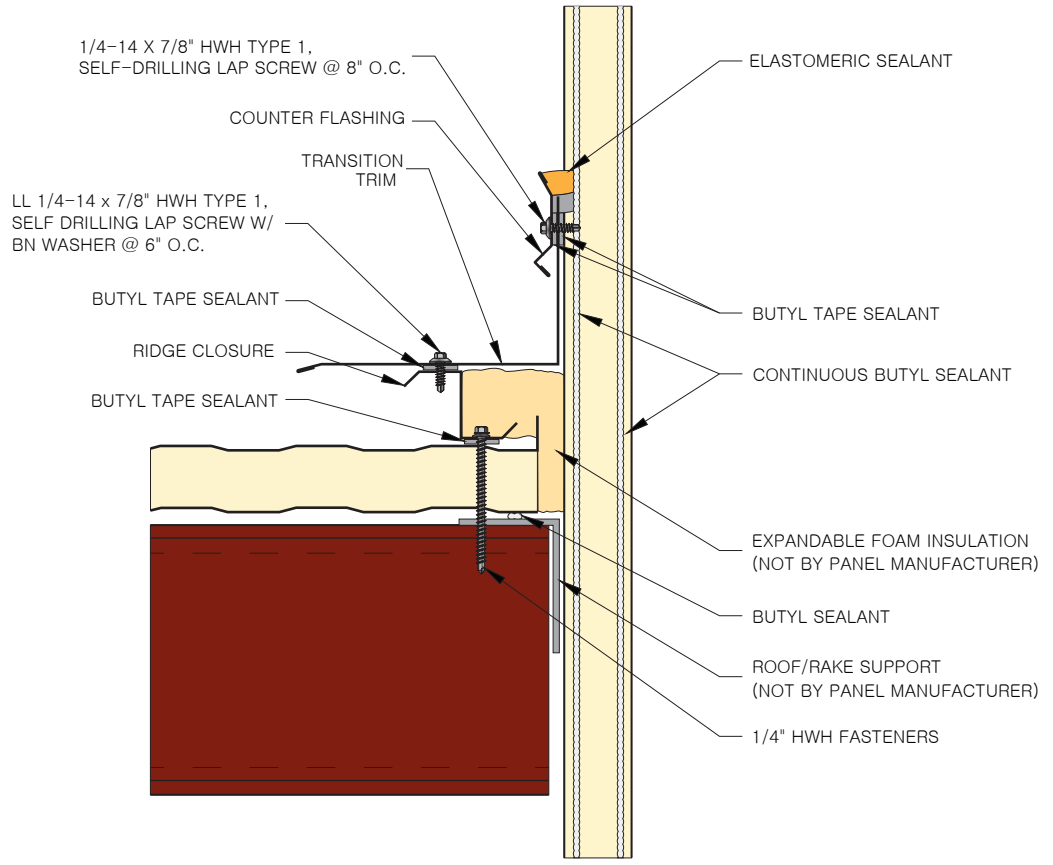


CI-CFR-TR-01 TRANSITION WALL TO ROOF RAKE

15. GENERAL DETAILS

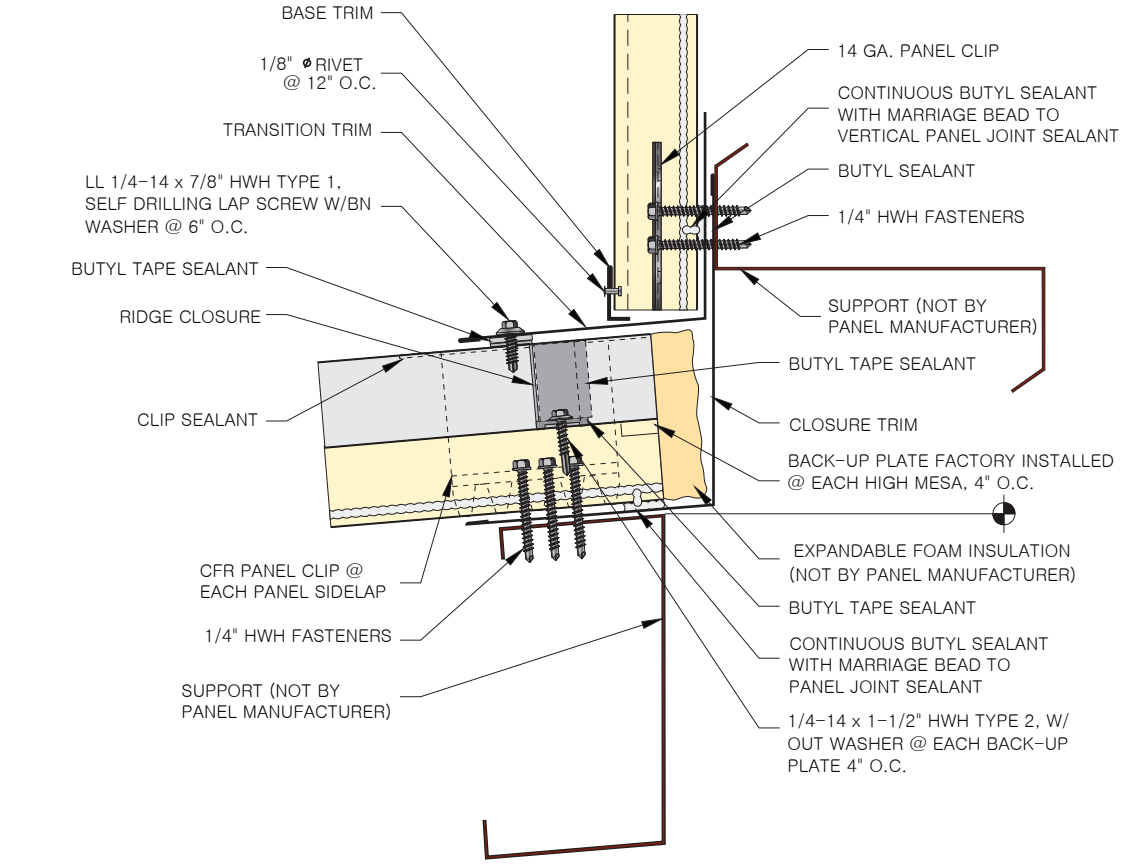


CI-CFR-TR-02 TRANSITION STACK JOINT TO ROOF RAKE

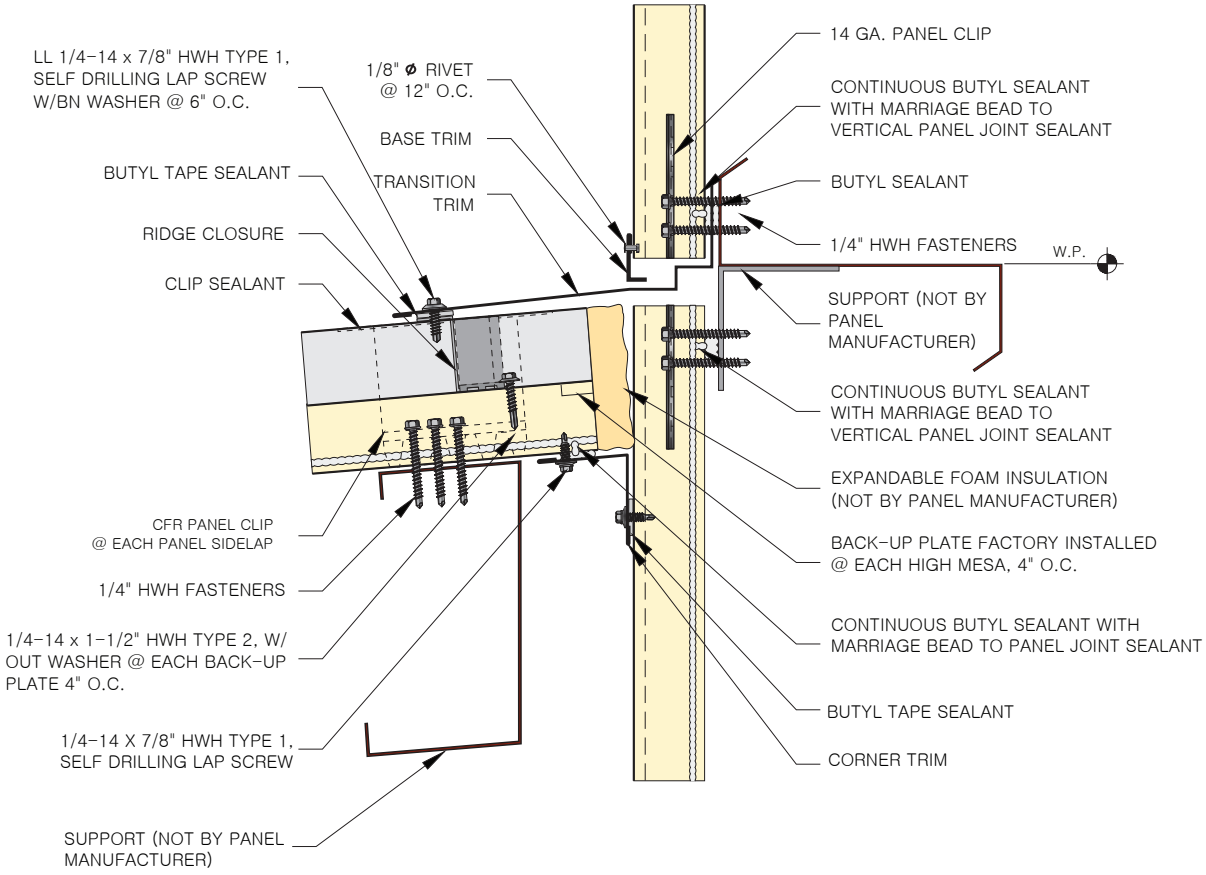


CI-CFR-TR-03 TRANSITION CONTINUOUS WALL TO ROOF RAKE

15. GENERAL DETAILS

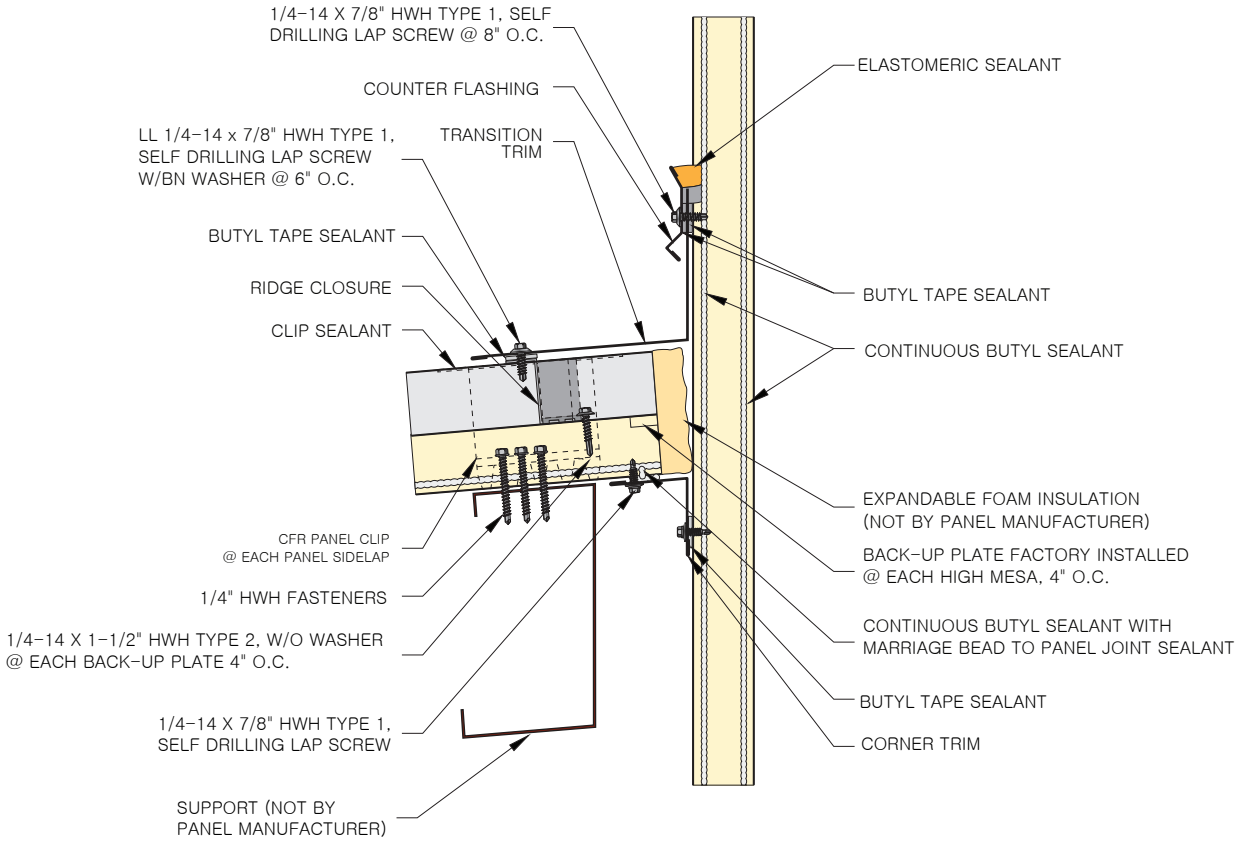


CI-CFR-TR-04 TRANSITION WALL TO HIGH EAVE

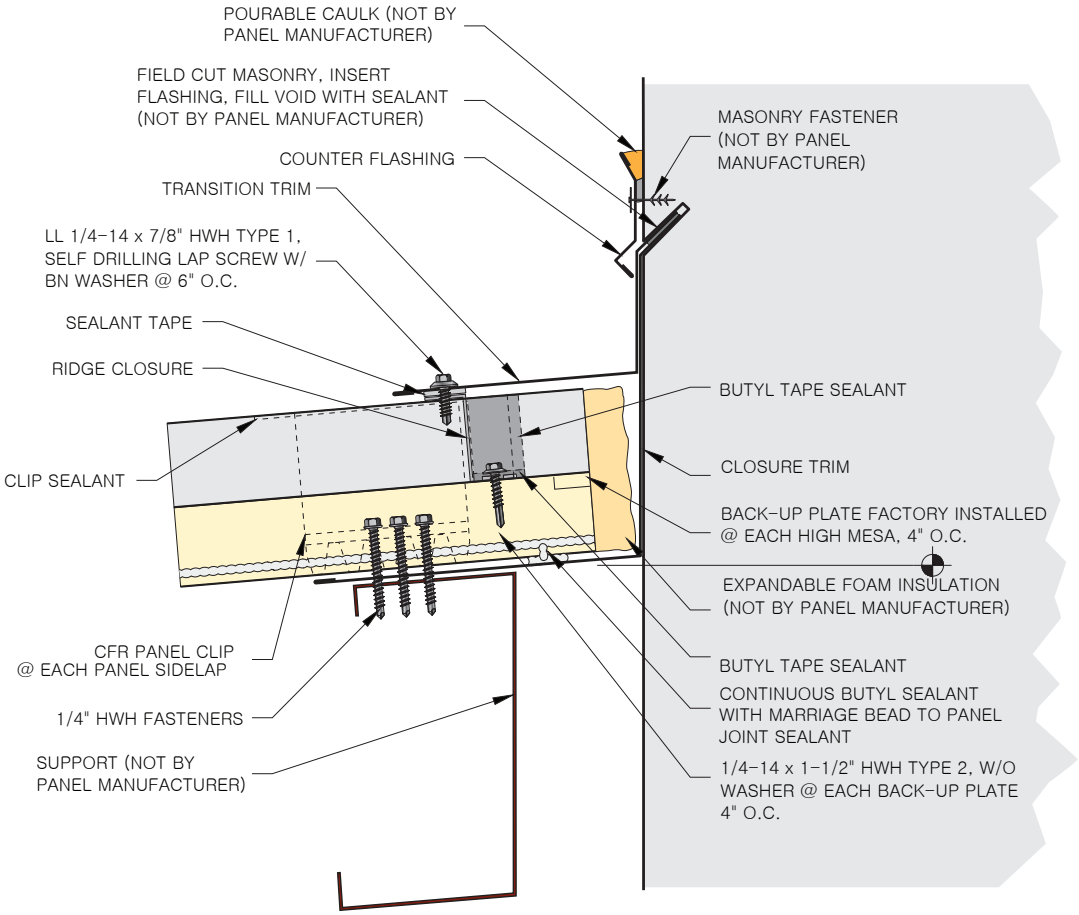


CI-CFR-TR-05 TRANSITION STACK JOINT TO HIGH EAVE

15. GENERAL DETAILS

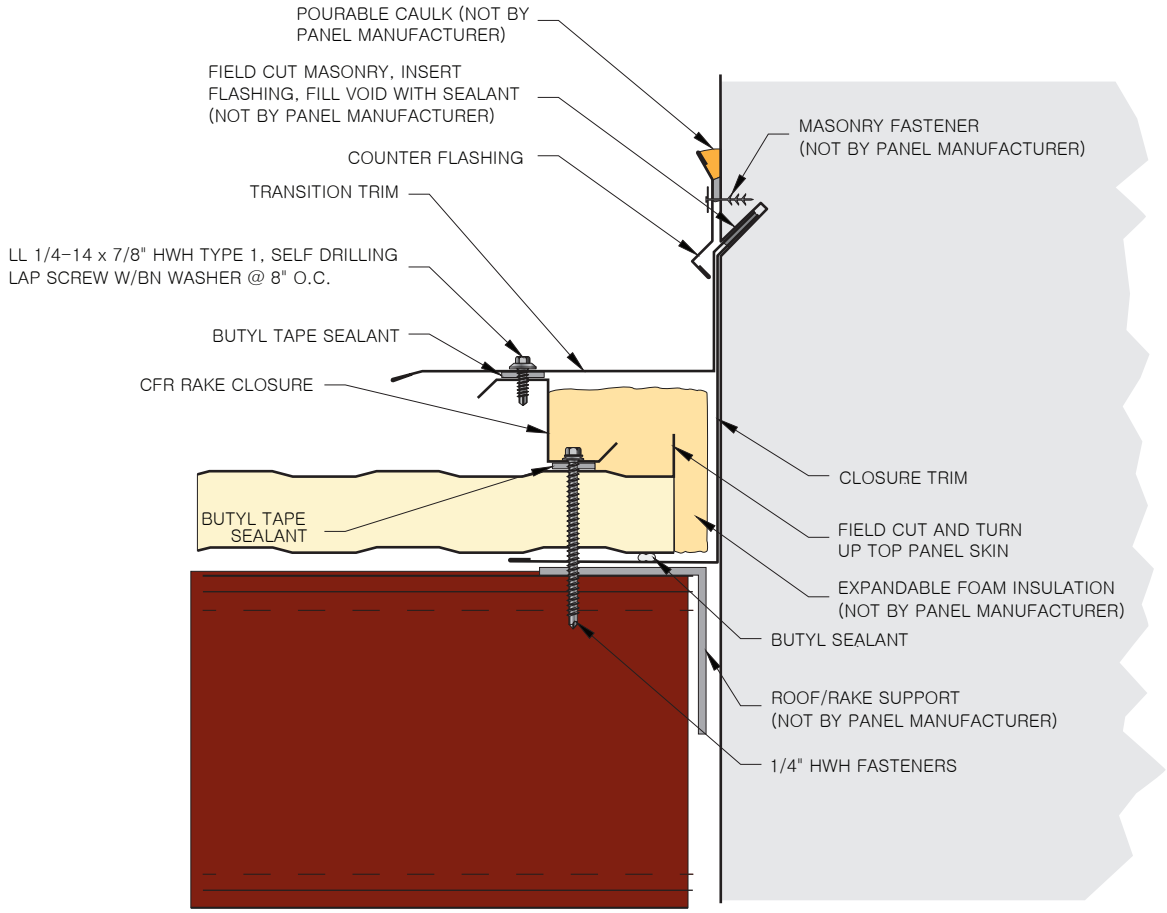


CI-CFR-TR-06 TRANSITION CONTINUOUS WALL TO HIGH EAVE

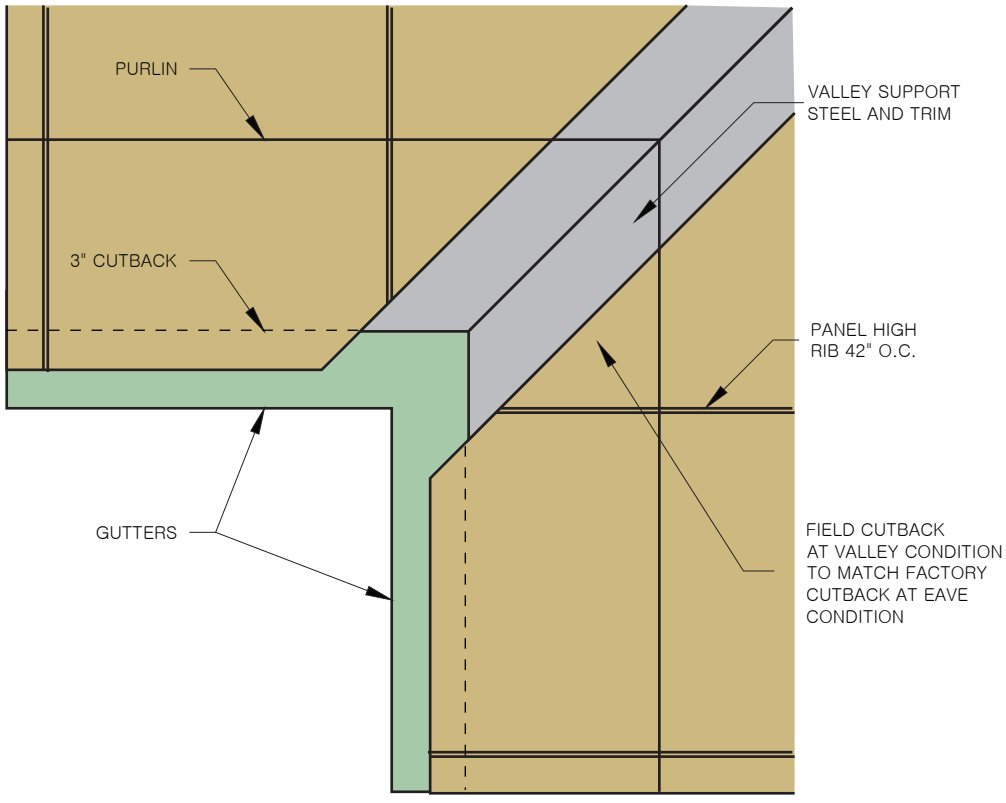


CI-CFR-TR-07 TRANSITION MASONRY WALL TO TO HIGH EAVE

15. GENERAL DETAILS

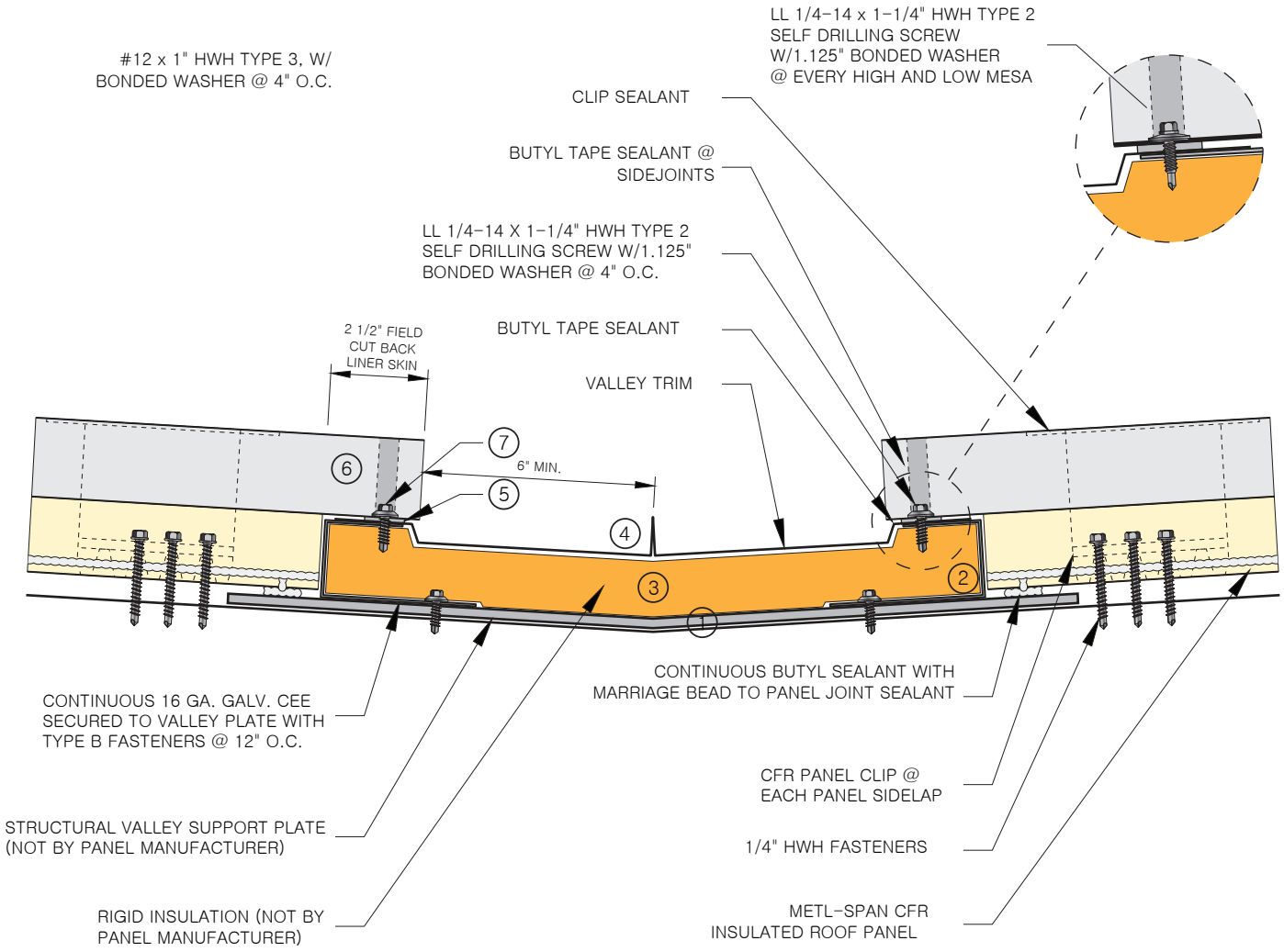


CI-CFR-TR-08 TRANSITION MASONRY WALL TO RAKE



CI-CFR-VL-02 VALLEY ROOF PLAN

15. GENERAL DETAILS



SEQUENCE OF INSTALLATION:

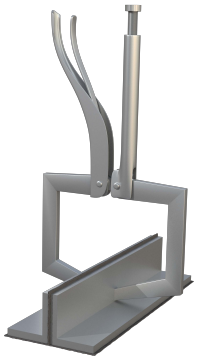
1. STRUCTURAL VALLEY SUPPORT PLATE
2. CEE SHAPED SECURED TO VALLEY PLATE
3. FILL VOID W/RIGID INSULATION
4. INSTALL VALLEY TRIM
5. APPLY SEALANT TAPE
6. FIELD CUT ROOF PANELS. REMOVE CUT BACK
7. FASTEN ASSEMBLY

NOTE: NOT FOR DORMER CONDITIONS –
CONTACT METL-SPAN FOR MORE INFORMATION

CI-CFR-VL-01 VALLEY ASSEMBLY

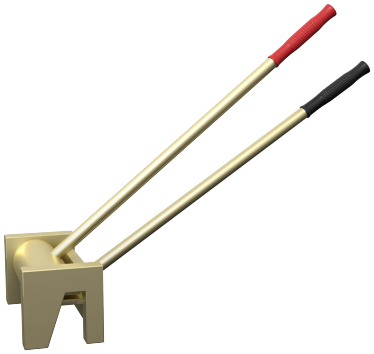
16. TOOLS, HARDWARE AND SUPPLIES

ROOF INSTALLATION TOOLS



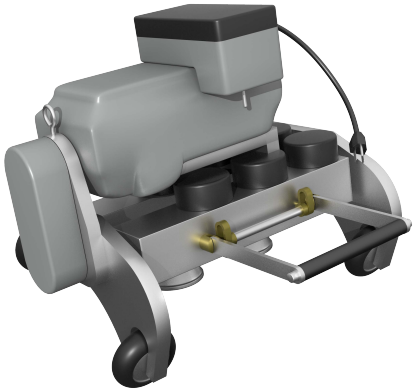
rib clamps

seam clamp



hand seamer

endlap assembly gauge



electric seamer

16. TOOLS, HARDWARE AND SUPPLIES

CUTTING AND BENDING TOOLS

circular saw w/carbide tip blade

panel saw

bread knife

Dremel kit

power shears

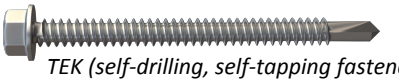
nibbler

snips

seamer/bender

duckbills

FASTENERS, CLIPS



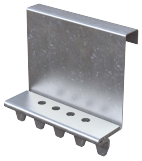
TEK (self-drilling, self-tapping fastener)

B point fastener

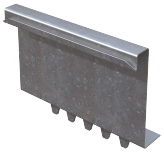
pancake fastener

pop rivets

stitch screw



panel clip (std.)



panel clip (diaphragm)

SEALANTS

butyl tape

MISCELLANEOUS

level

caulking gun (electric)

power drill

Philips head bit

#2, #3 square drive bits

hex head socket set

deburring tool

scraper

tape measure

pop rivet tool

pop rivet tool (electric)

NOTES

NOTES

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LEWISVILLE, TX 75057

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INFO@METLSPAN.COM