



Fundamentals of Insulated Panel Installation

MBCEA 2016 Clearwater, FL

Fundamentals of Insulated Panel Installation

- Industrial Roof & Walls
- Not Architectural
- Not Cold Storage

Topics


- Preparation
- Installation Walls
- Installation Roof

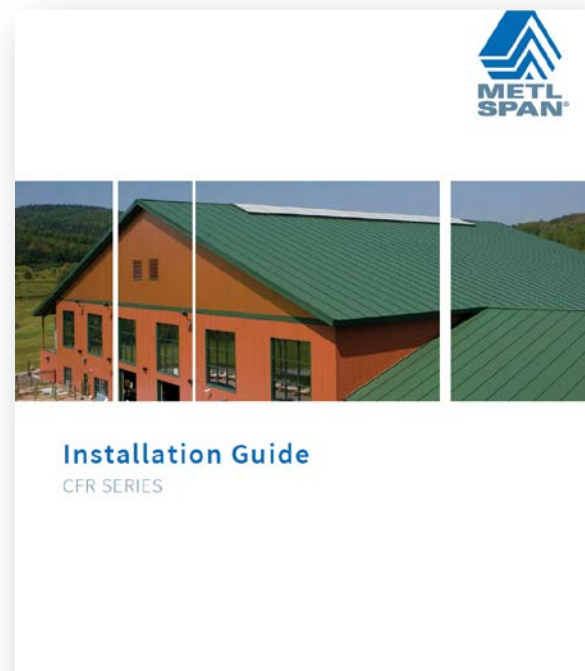
Preparation



Drawings & Installation Guides

- Read the instructions

Panel Product Information			Design Criteria	 1720 LAKEPOINTE DR. STE. 101 LEWISVILLE, TEXAS 75057 TEL: (972) 221-6656 FAX: (972) 436-7028 WWW.METLSPAN.COM
PANEL TYPE 1 PANEL INFO: 3" CF42 PROFILE: MSA/MSA CORE: URETHANE FACE 1 COLOR: AGED COPPER COLOR CODE: 430R2010 GAUGE: 22 FINISH: KYNAR 500 EMBOSSED: NON-DIRECTIONAL FACE 2 COLOR: POLAR WHITE COLOR CODE: 431R813 GAUGE: 22 FINISH: KYNAR 500 EMBOSSED: NON-DIRECTIONAL	PANEL TYPE 2 PANEL INFO: 4" CF40R PROFILE: ROF/MSA CORE: URETHANE FACE 1 COLOR: AGED COPPER COLOR CODE: 430R2010 GAUGE: 22 GRADE D FINISH: KYNAR 500 EMBOSSED: NON-DIRECTIONAL FACE 2 COLOR: POLAR WHITE COLOR CODE: 431R813 GAUGE: 22 FINISH: KYNAR 500 EMBOSSED: NON-DIRECTIONAL	PANEL TYPE 3 PANEL INFO: 2" CF38 PROFILE: MSA/KVA/ADF MSA CORE: URETHANE FACE 1 COLOR: ZINC GREY COLOR CODE: 432R1583 GAUGE: 22 FINISH: KYNAR 500 EMBOSSED: UN-EMBOSSED FACE 2 COLOR: POLAR WHITE COLOR CODE: 431R813 GAUGE: 22 FINISH: KYNAR 500 EMBOSSED: NON-DIRECTIONAL	<input checked="" type="checkbox"/> PROVIDED BY THE CUSTOMER <input type="checkbox"/> DEVELOPED BY METL-SPAN & MUST BE VERIFIED BY THE ENGINEER OF RECORD BUILDING CODE: FACTORY MUTUAL GLOBAL ANALYSIS METHOD: FM 1-28 GUST WIND SPEED (mph): VULT 120 IMPORTANCE FACTOR: 1.15 EXPOSURE CATEGORY: C FM RATING: SLOPE OF ROOF: 2:12 MEAN ROOF HEIGHT (ft): 54' ROOF INTERIOR ZONE 1: ROOF END ZONE 2: ROOF CORNER ZONE 3: WALLS TO MEET FM APPROVALS STANDARD 4881 WALL INTERIOR ZONE 4: (+ / -) WALL END ZONE 5: (+ / -) ZONE WIDTH (ft) (ft):	Rev.: 1 Date: 2/13/15 Rev.: Date: Drawings Prepared By: H.WILLIAM DATE: 1/28/14 STEEL CLAD, INC. GE GAS TURBINE TEST FACILITY Greenville, SC 29617 80697 IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE QUANTITY, COLOR, GAUGE, PROFILE, FINISH, AND DIMENSIONS OF ALL INSULATED PANELS. THIS APPROVAL BOX MUST BE SIGNED BEFORE DRAWINGS ARE CONSIDERED APPROVED OR APPROVED AS NOTED. TO MAINTAIN THE CURRENT DELIVERY SCHEDULE, APPROVED DRAWINGS MUST BE RETURNED BY: <input type="checkbox"/> APPROVED <input type="checkbox"/> APPROVED AS NOTED <input type="checkbox"/> NOT APPROVED, REVISE AND RESUBMIT BY: DATE:



Plan

- Fail to plan, plan to fail.
- Don't have panels delivered too far in advance.
- Verify panel lengths and locations
- Install supports at end laps & stack joints



Handling & Unloading

- Be familiar with packaging
- Bundle by elevation
- Strippable Film or Interleaf
- Minimize moving bundles



Fork Lift Unloading



Specialized Equipment



Fork Lift Modifications



Fork Lift Modifications



Forklift Damage



Crane Unloading



Crane Unloading

- Use straps
- Don't choke
- Pick points marked on bundles

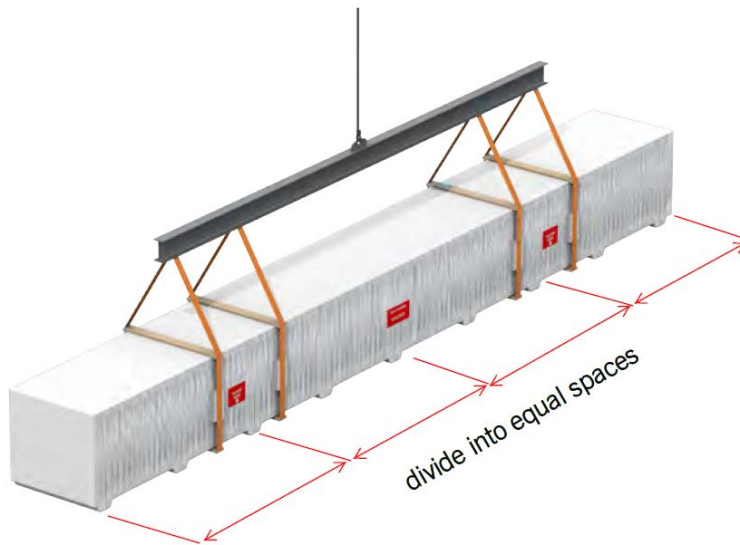
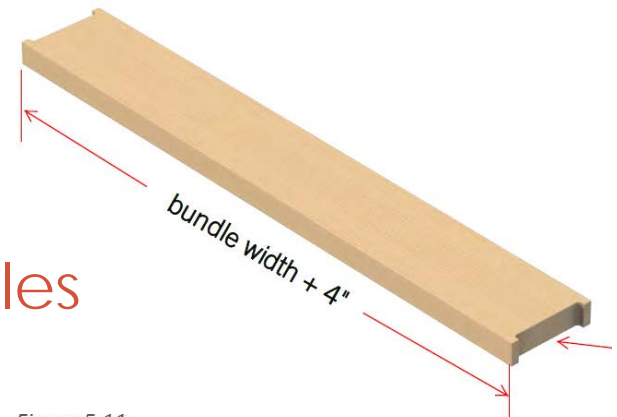


Figure 5.14

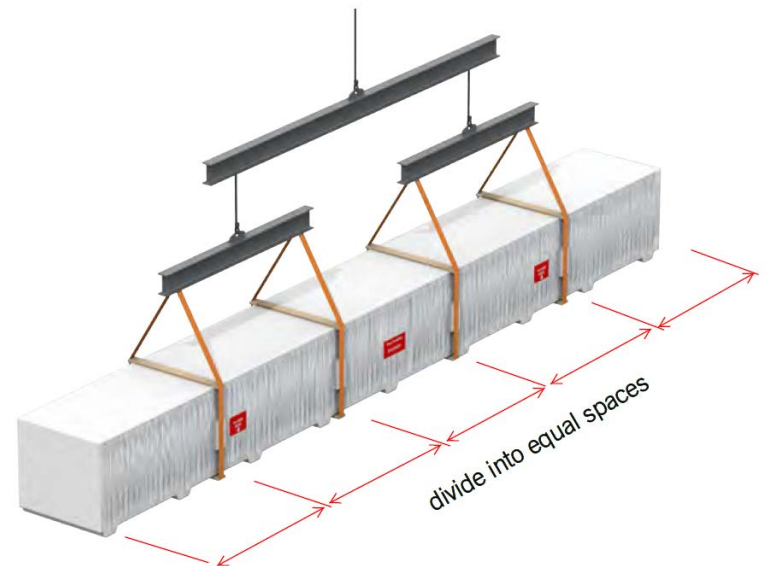


Figure 5.15

Unloading Errors



Handling

- Lift on edge not flat
- Do not lift by the top skin

NOT from here...

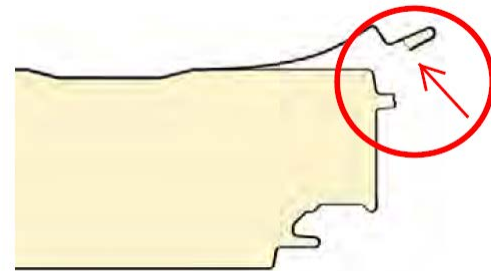
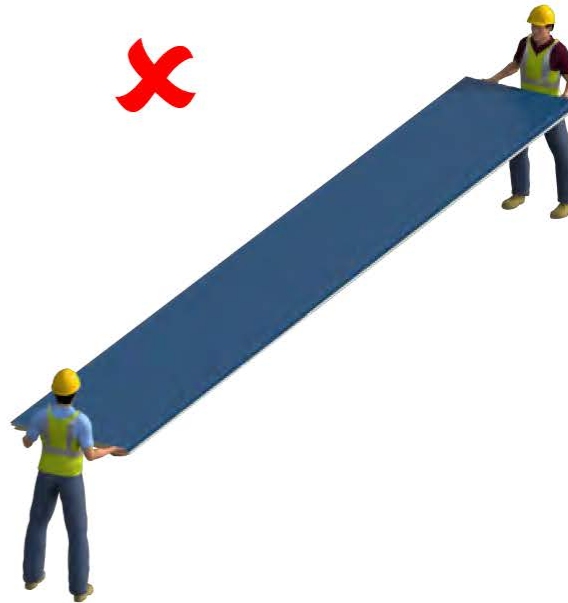
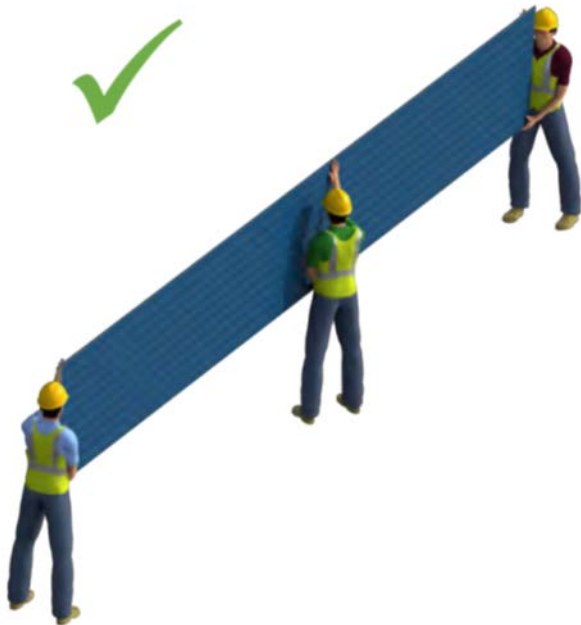
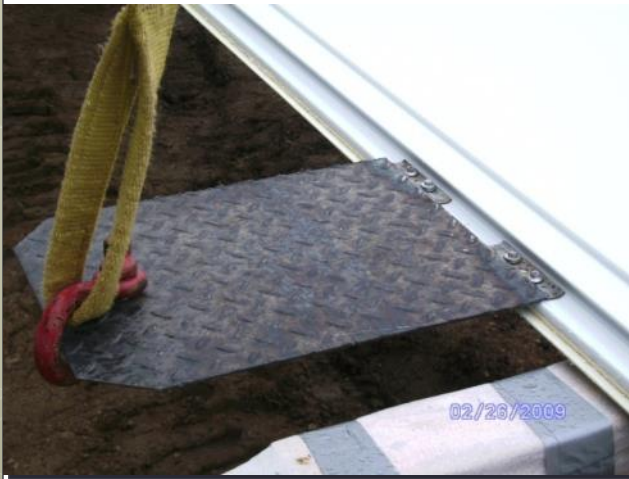


Figure 5.16i



Lifting Methods - Clamps

- Most common method
- Not commercially available
- Many are not engineered



Lifting Methods – Vacuum Lift

- Engineered for lifting IMP
- Primary method used in manufacturing



Proper Storage

- Slope to drain
- Stack no more than two bundles high
- Slit to allow air flow in bundles
- Do not move bundles after wrap removed

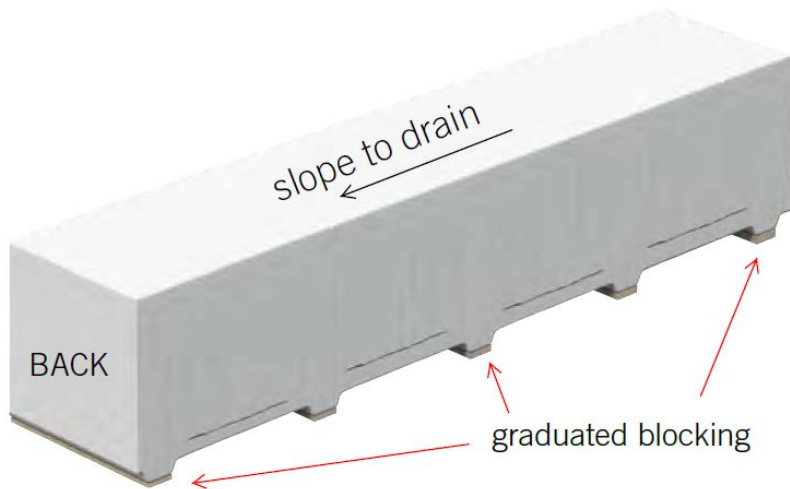


Figure 6.2



Storage

- Not correct storage



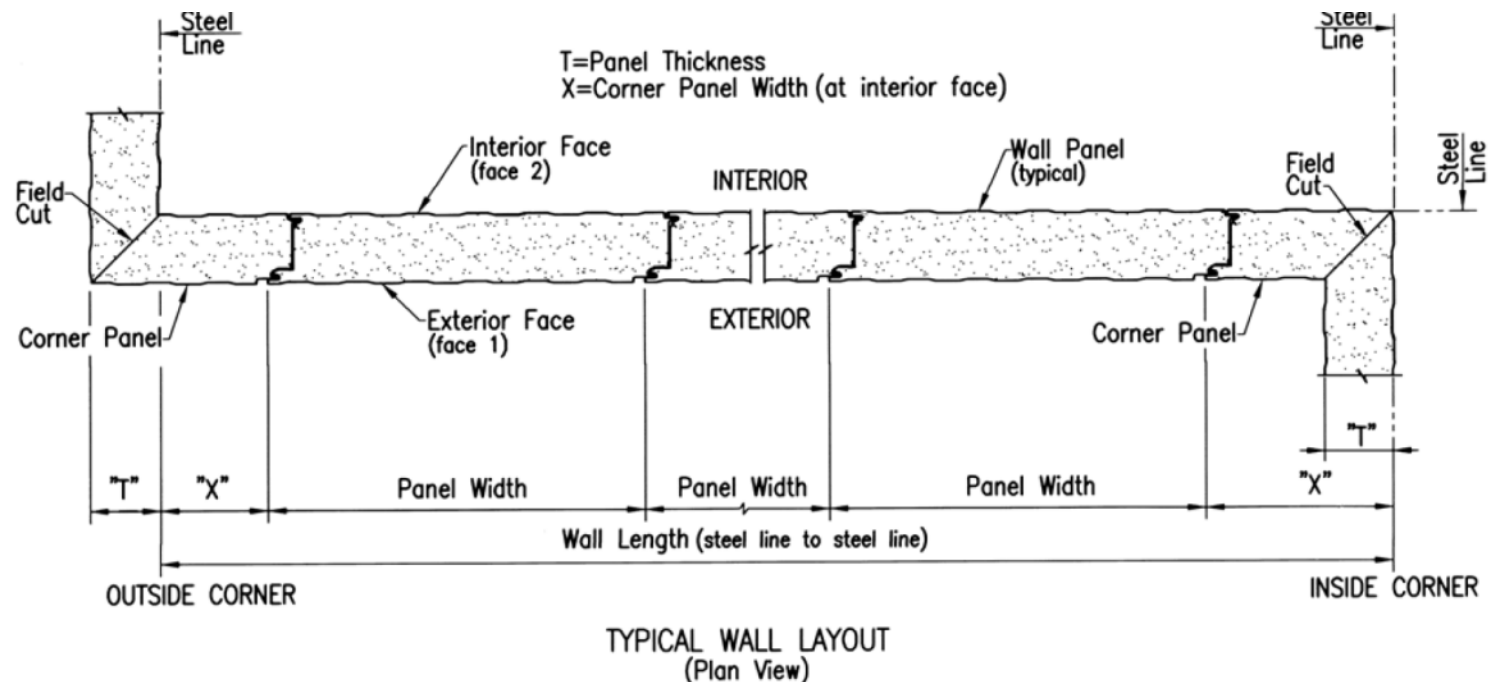
Cutting Panels

- Always use blades designed to cut metal.
- Do not cut panels with:
 - Abrasive blades
 - Reciprocating saws
 - Torch



Elevation Layout

- Walls can be installed both directions
- Roofs are directional
- Avoid narrow start or finish panels



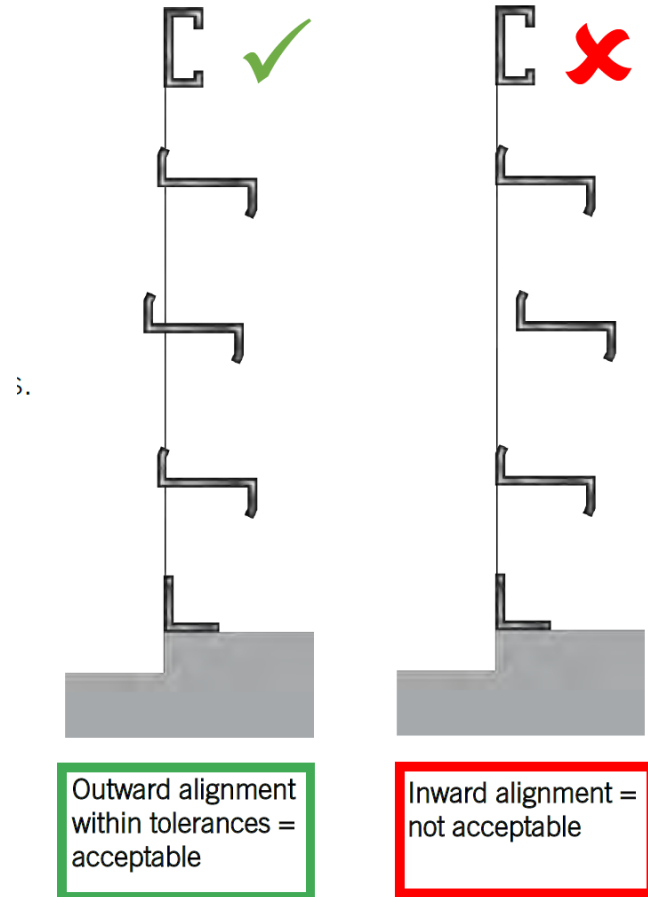
Stack Joints

- Alignment of panel seams is critical with stack joints.
- Best practice is to install bottom, middle and top courses at the same time.



Structural Alignment

- Verify installation of all structural framing and bracing.
- Verify alignment is acceptable.
- Shim voids as necessary.



Structure

- Structure must be complete, all bracing installed
- Structure must be square and plumb



Framing Alignment



Oil Canning

- Misaligned structure
- Over driven fasteners
- Longitudinal expansion
- Fastener pattern
- Movement of structure



Thermal Bow

- Normal Characteristic
- Bow is toward warm side

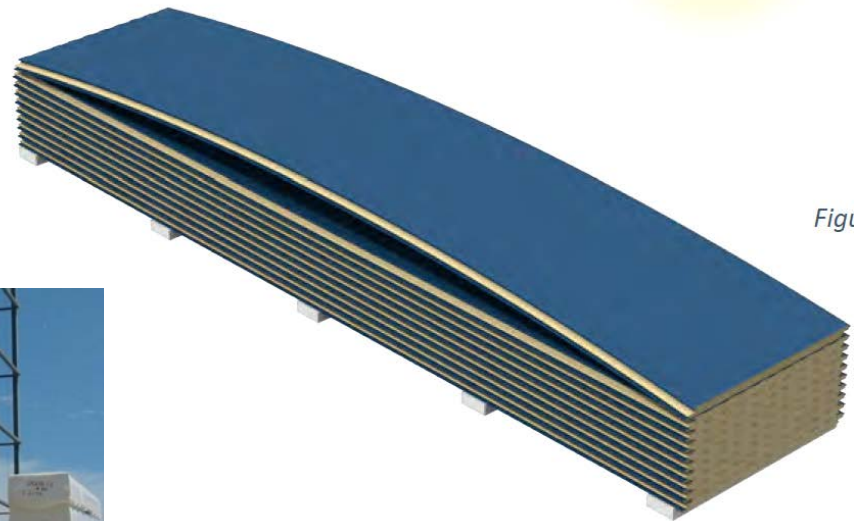
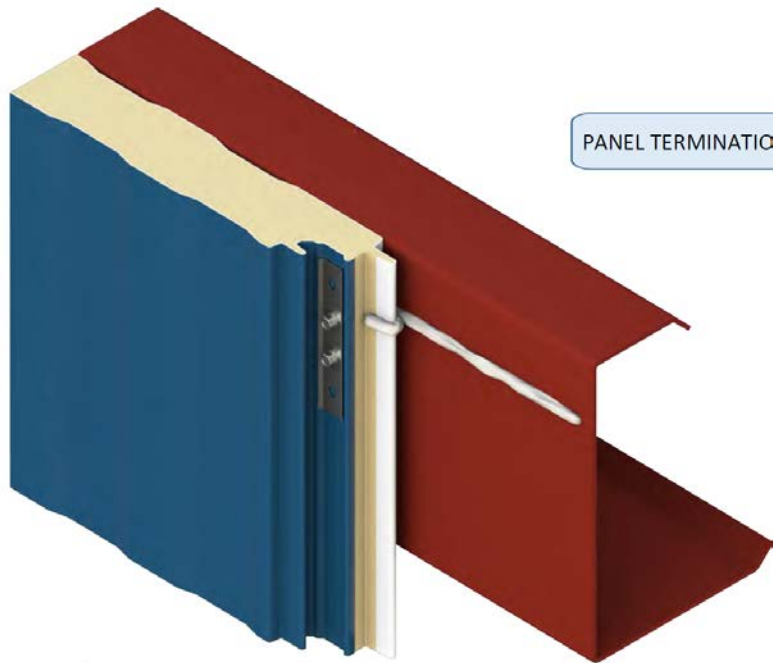


Figure 5.21b



Air Barriers

- Attention to sealants is critical
- Moisture moves from warm side to cool
- Perimeter sealants are critical.



Installation

Vertical Walls



Base

- Base or Stack Joint
- Install air barrier sealants



Figure 12.4a

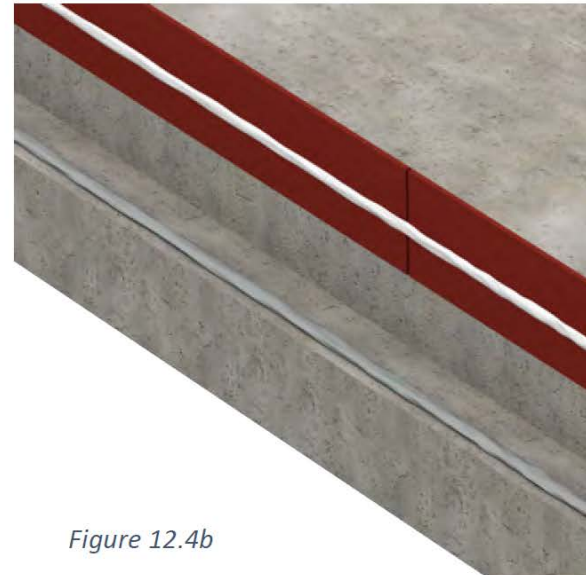


Figure 12.4b

Base

- Just like single skin

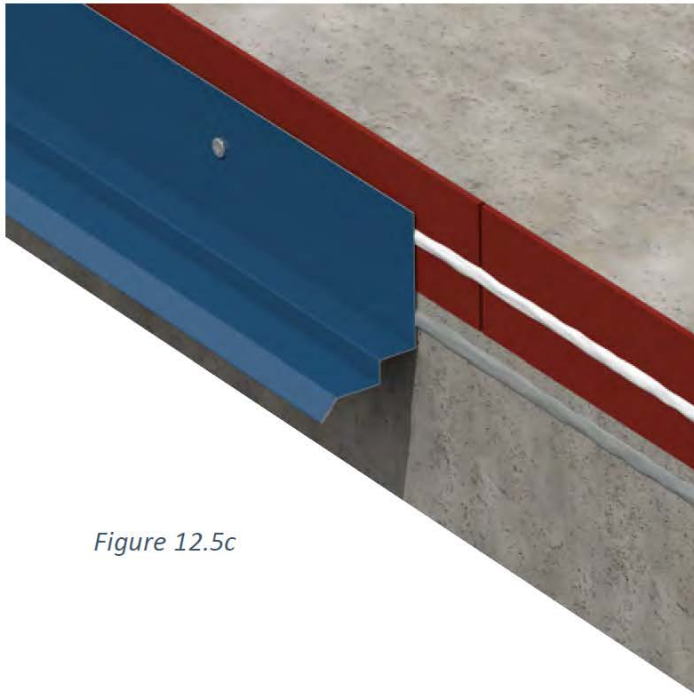


Figure 12.5c

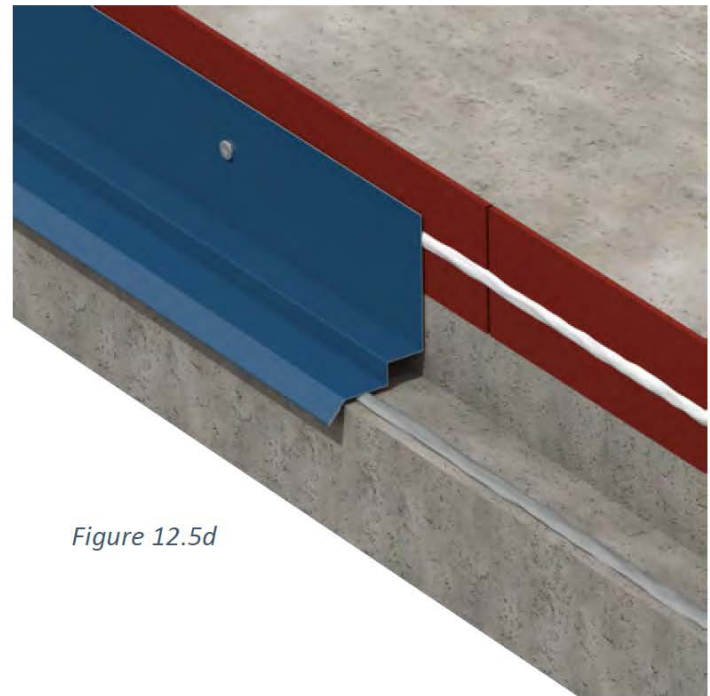


Figure 12.5d

Base

- Commonly missed detail

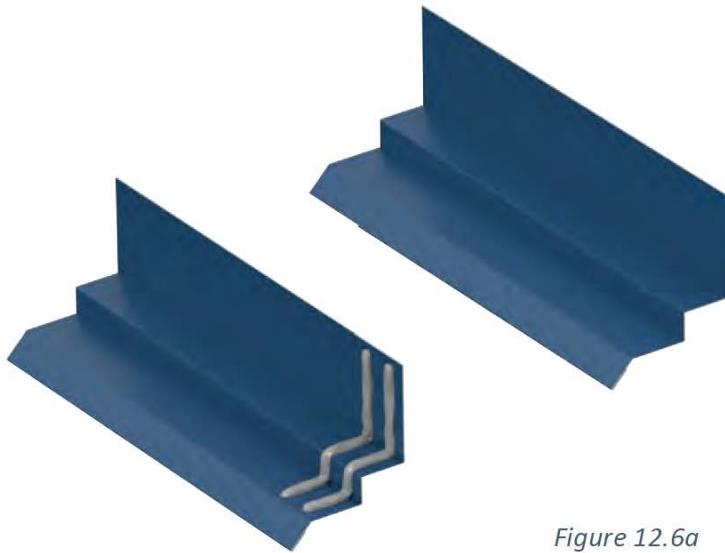


Figure 12.6a

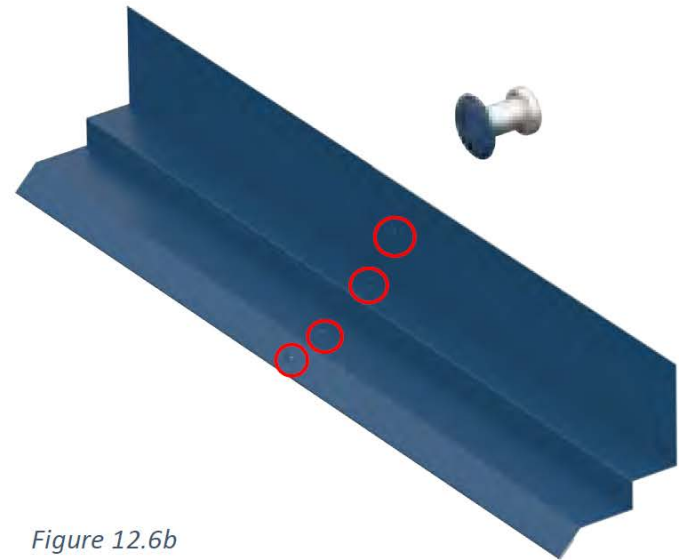


Figure 12.6b

Corner

- Interior corner trim
- Part of air barrier

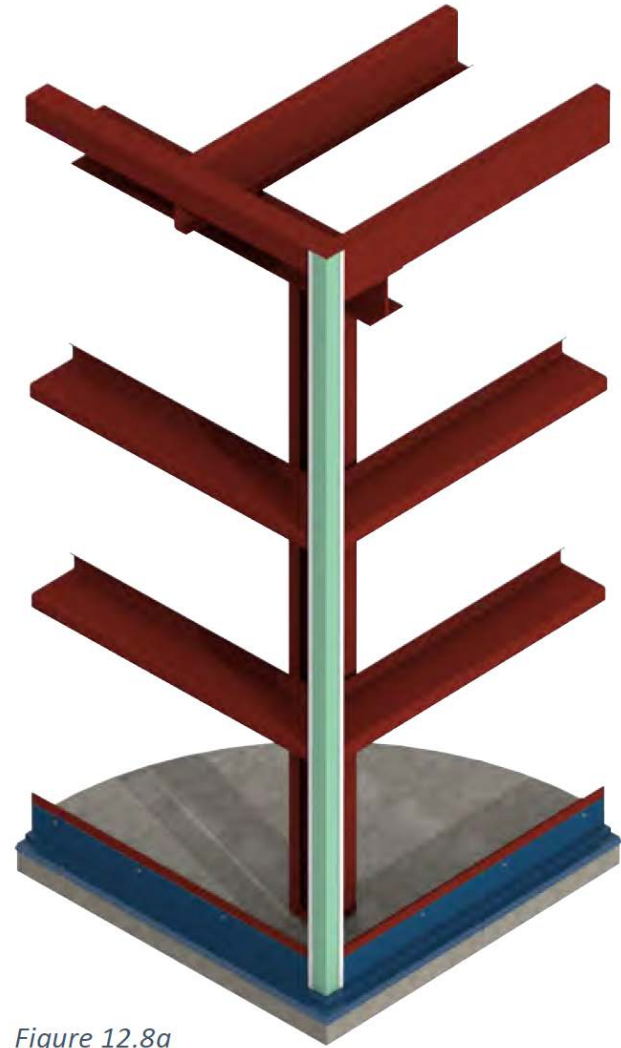


Figure 12.8a

exterior corner

Corner

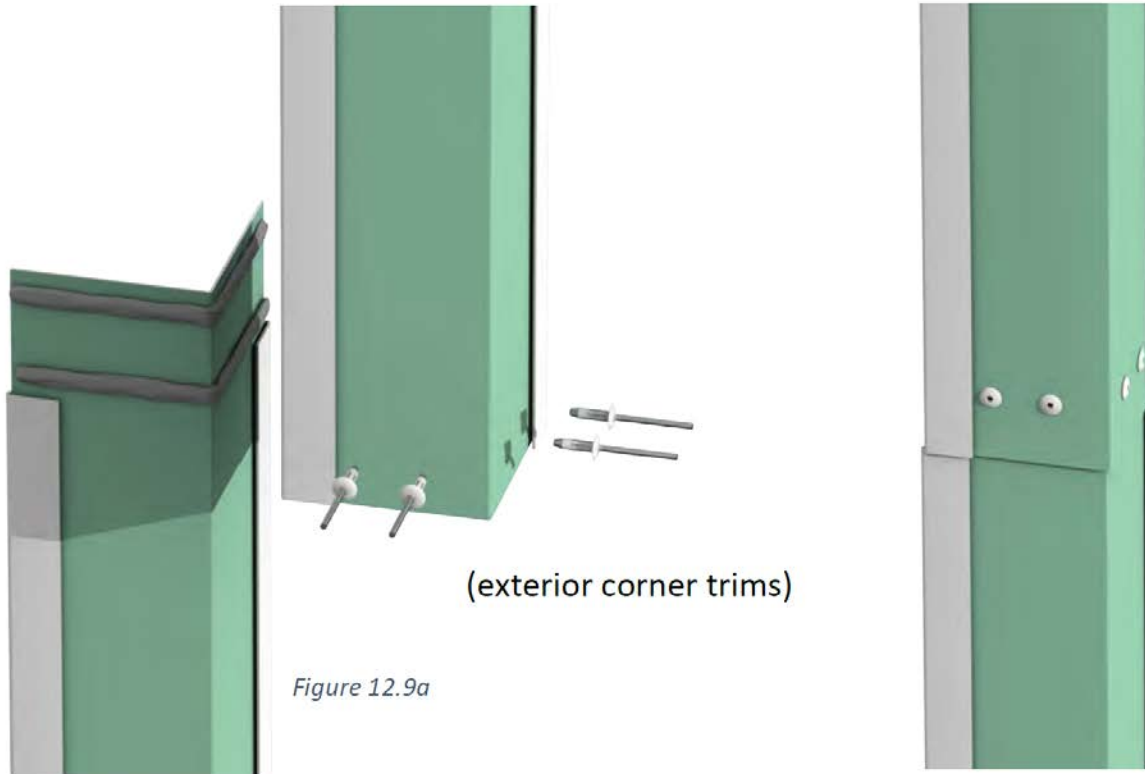


Figure 12.9a

Corners

- Air barrier
- Marry air barriers together



Figure 13.1

Framed Openings

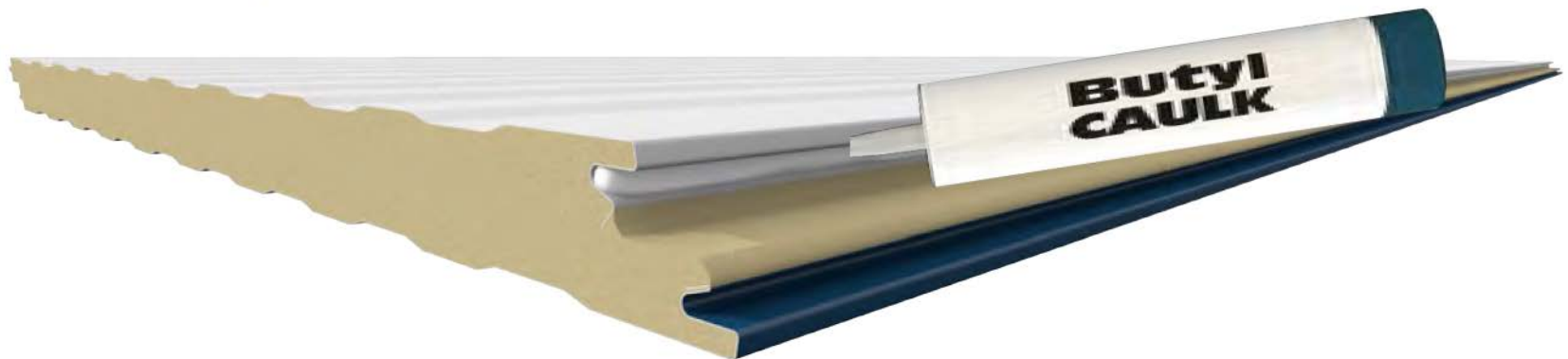
- Interior air barrier



Figure 12.10b

Seam Sealant

- Factory or field applied
- Look for contamination or gaps
- Reapply if damaged
- Cold sensitive



Setting Panels

- Avoid using narrow starter panels
- Plumb panel!

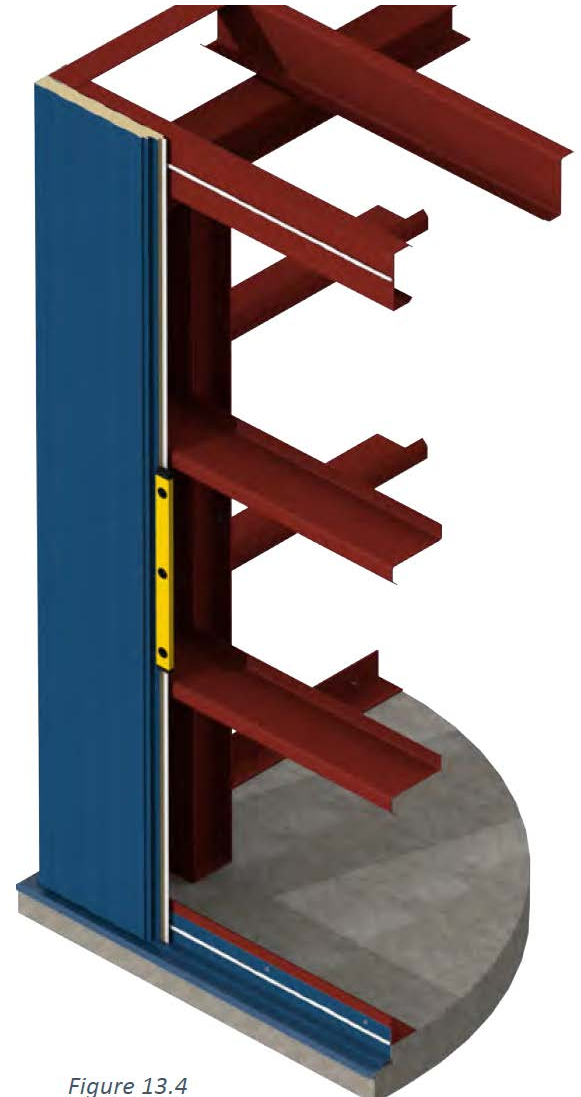
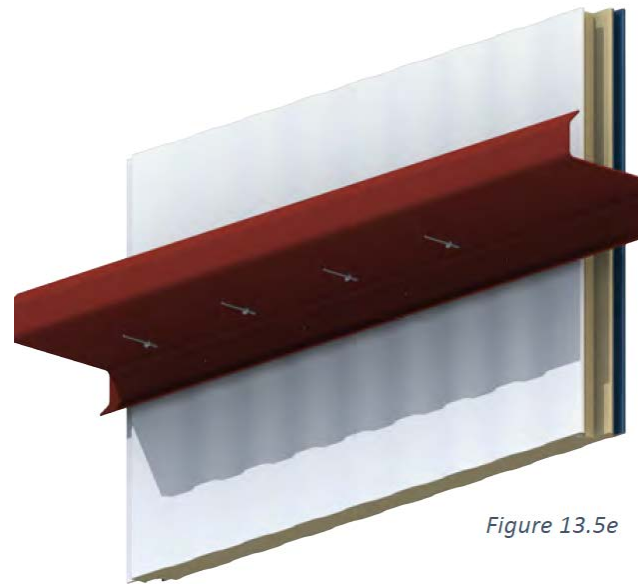


Figure 13.4

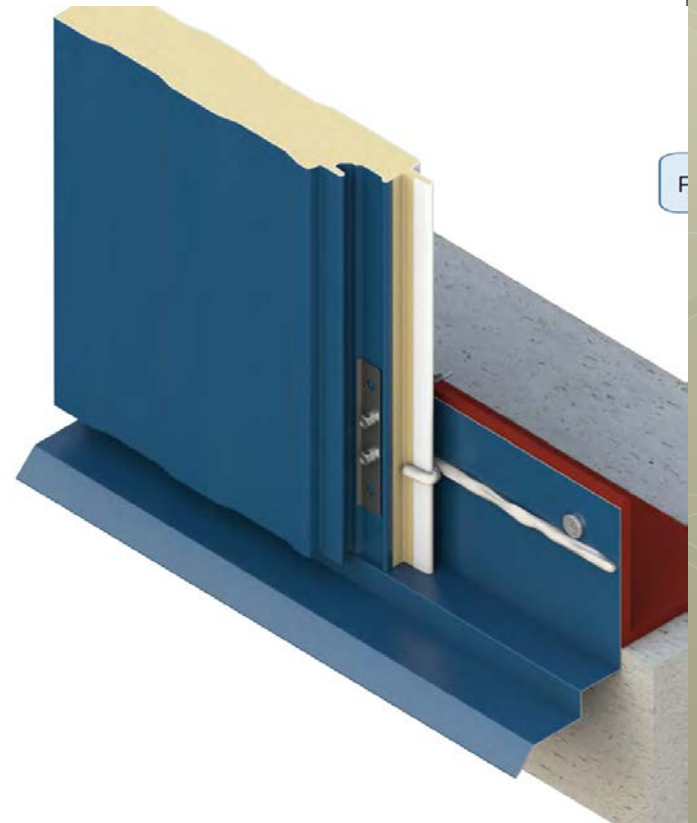
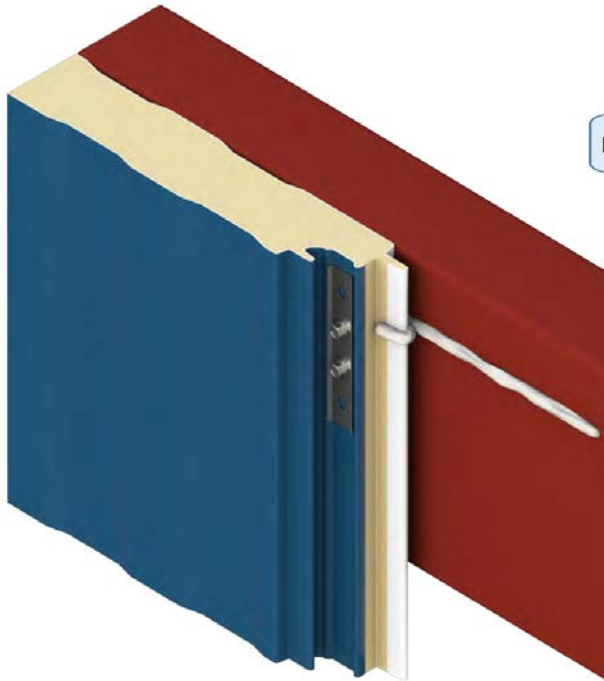
Panel Attachment

- Concealed Clips
- Do not over drive fasteners
- Back side fastening if required



Air Barrier

- Marry joint perimeter sealants



Setting Panels

- Install to module

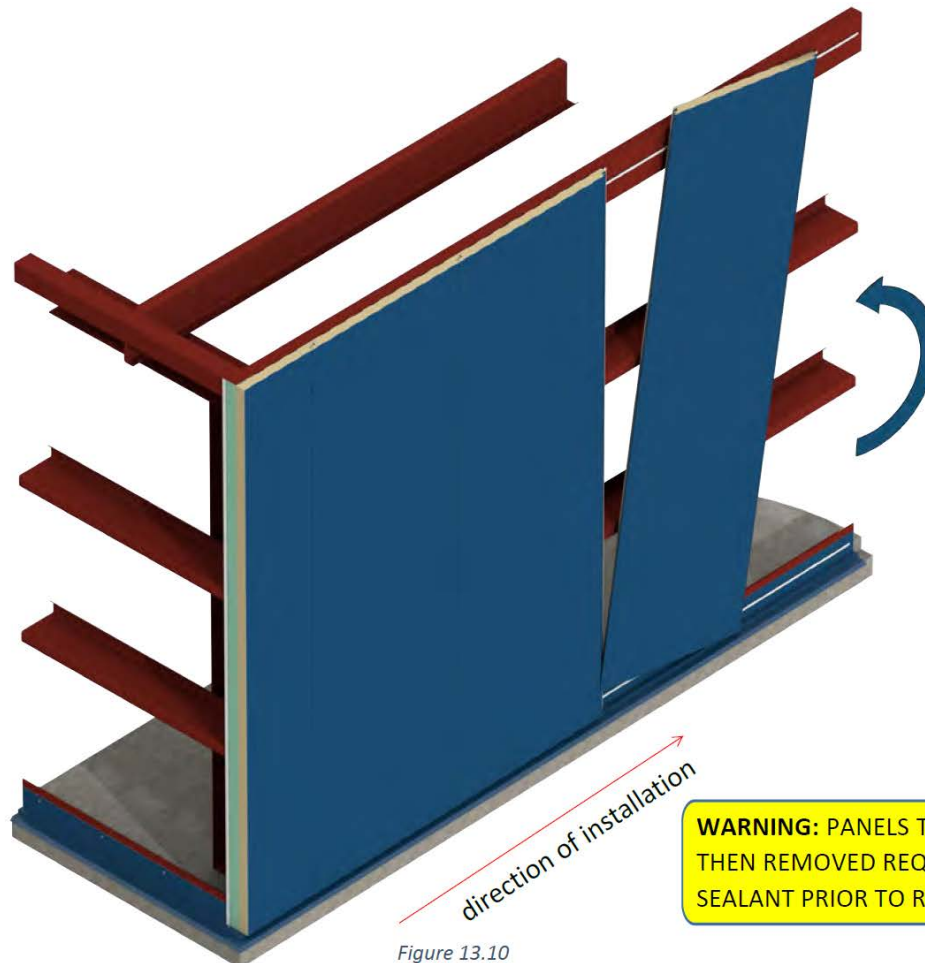
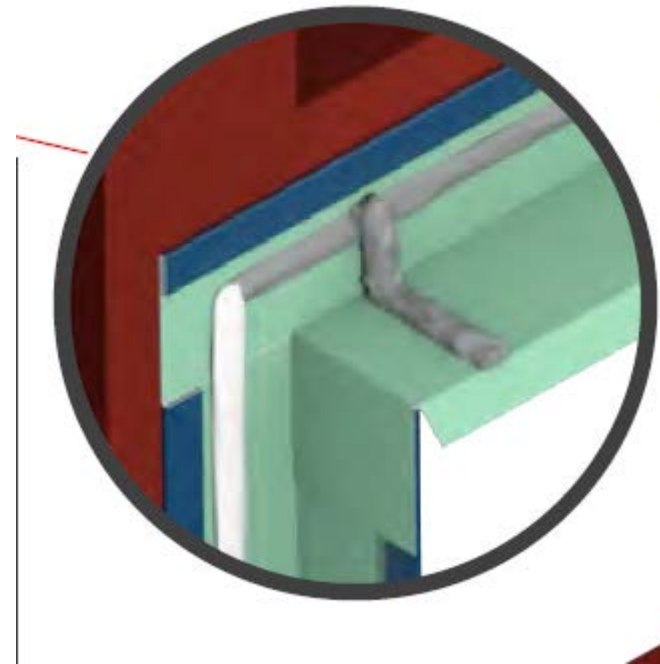
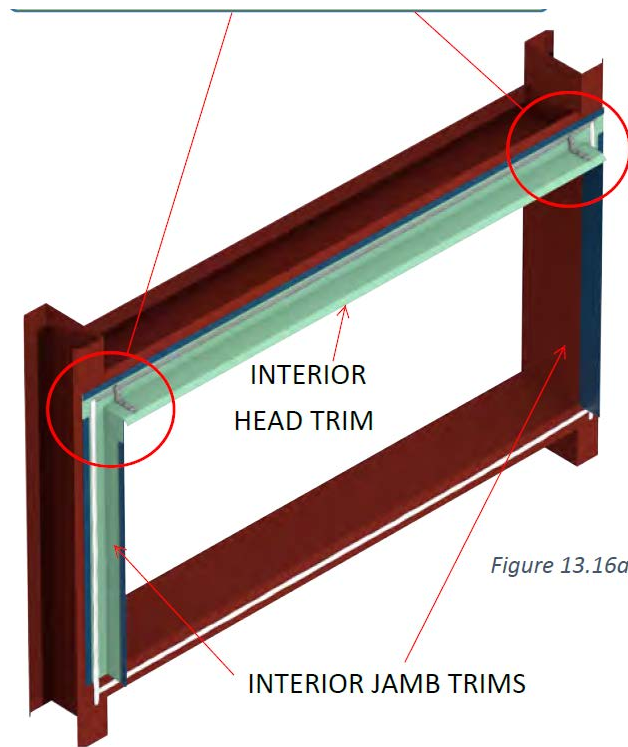


Figure 13.10

WARNING: PANELS THAT ARE INSTALLED AND THEN REMOVED REQUIRE RE-APPLICATION OF SEALANT PRIOR TO RE-INSTALLING.

Framed Openings

- Air barrier
- Water dam sealant



Framed Openings

- Install through fasteners
- Do not over drive

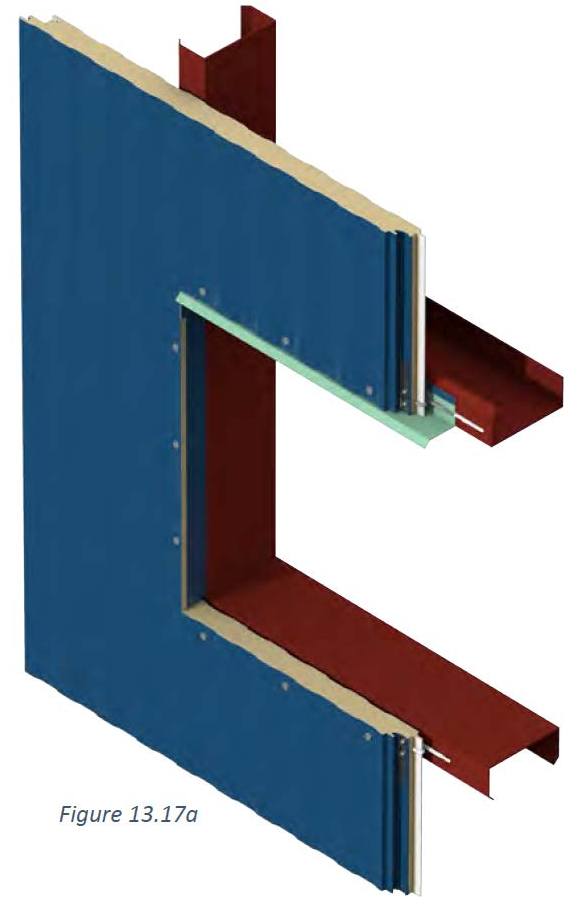
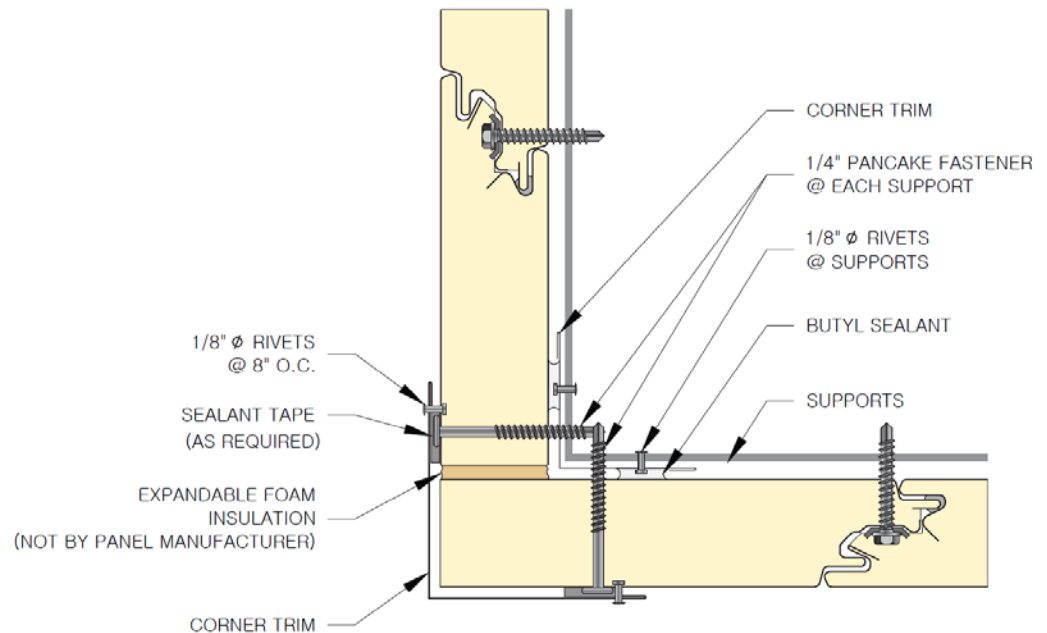


Figure 13.17a

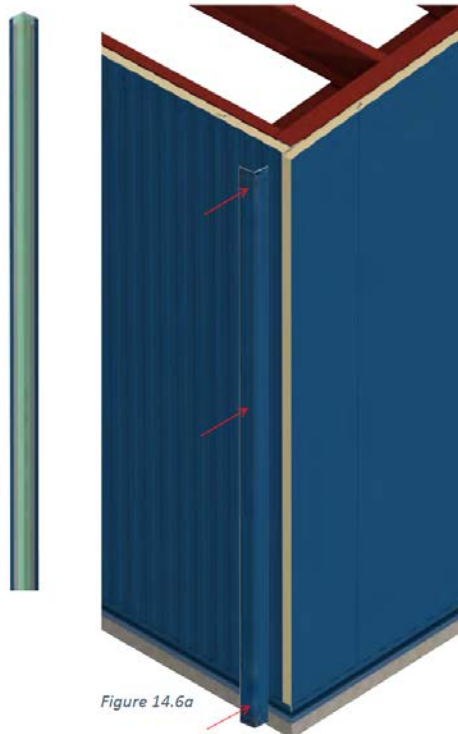
Exterior Trims

- Expandable foam to fill voids



Exterior Trims

- Screws or Rivets



Penetrations

- Cover plates
- Air barriers
- Field applied foam

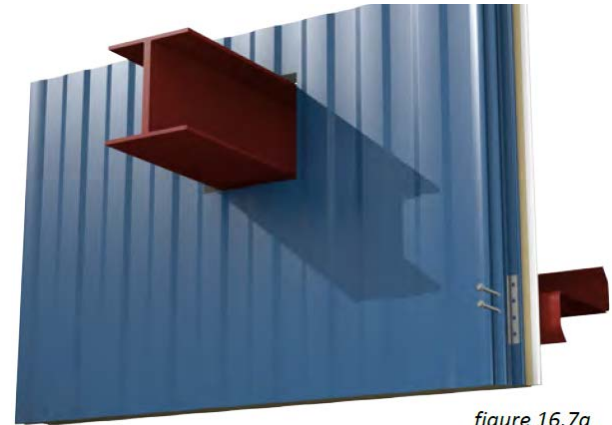
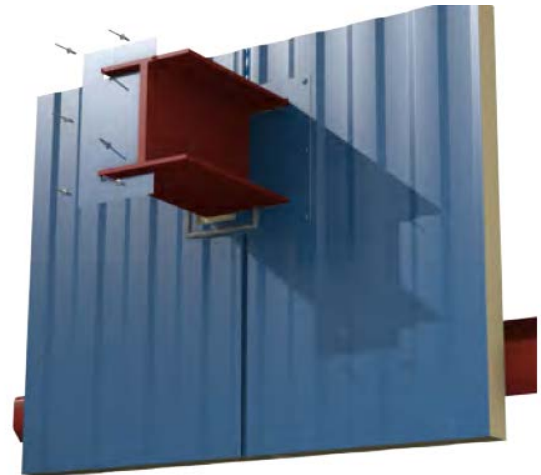


figure 16.7a



Installation

Standing Seam Roof



Roof

- Air barrier
- Connections
- Common Details
- Seaming
- Penetrations



Air Barrier

- ◉ Interior ridge trim
- ◉ Air barrier most critical for roof

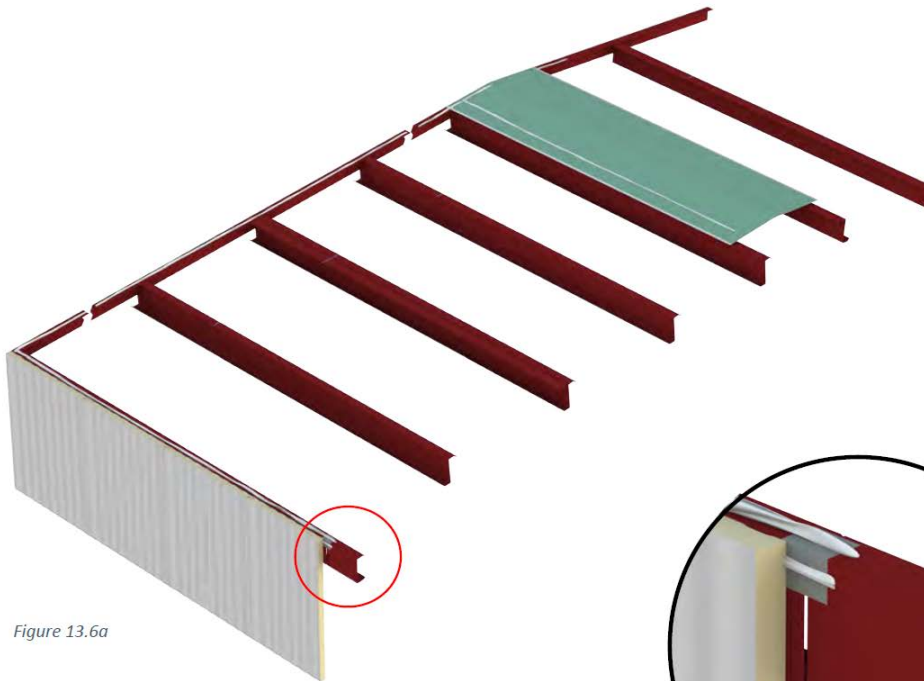


Figure 13.6a

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

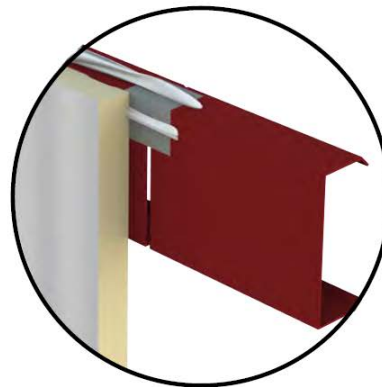
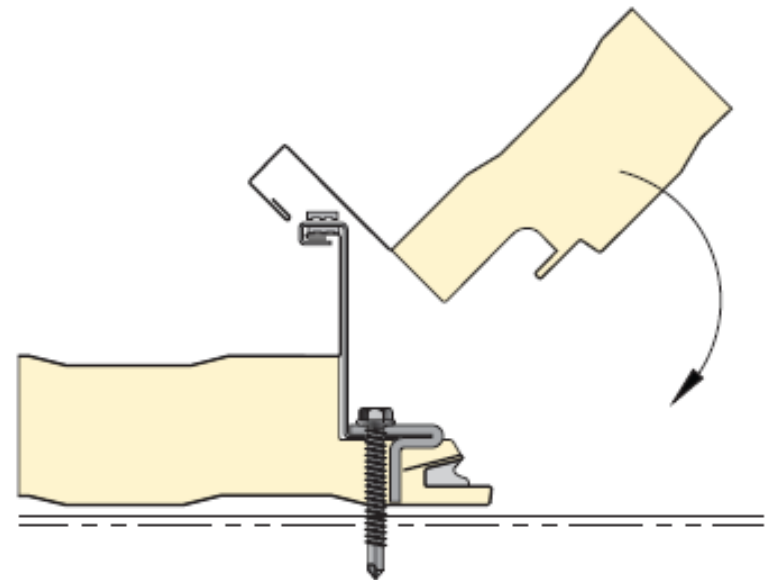
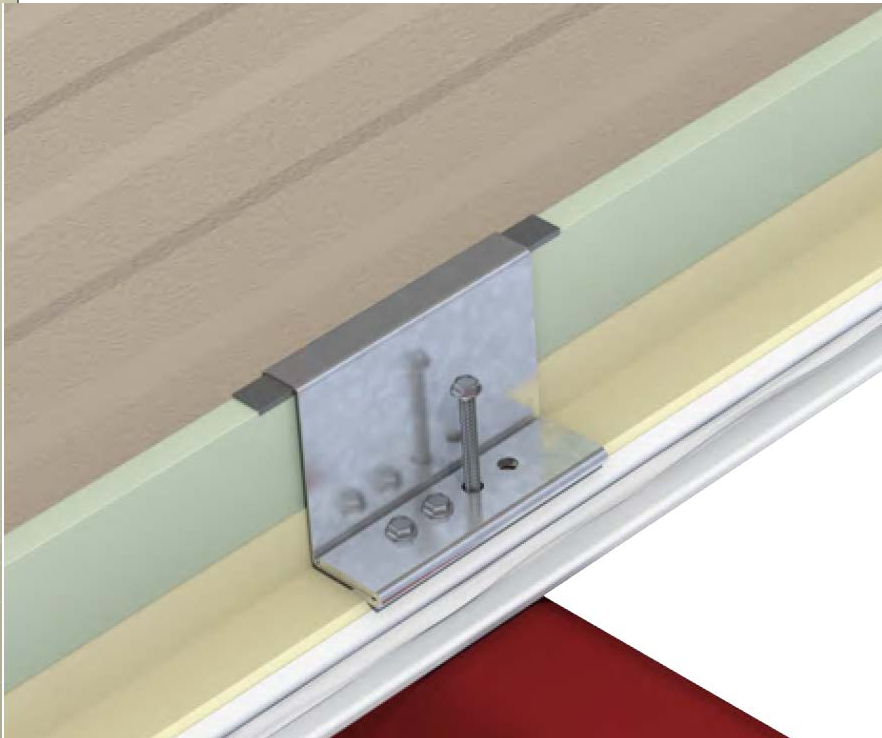


Figure 13.6b

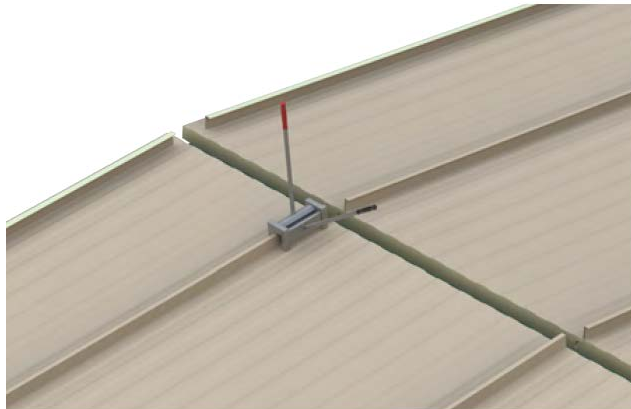
Connection

- Fixed Clip
- Concealed attachment



Seaming

- Hand seam at clips, end laps, and ends.



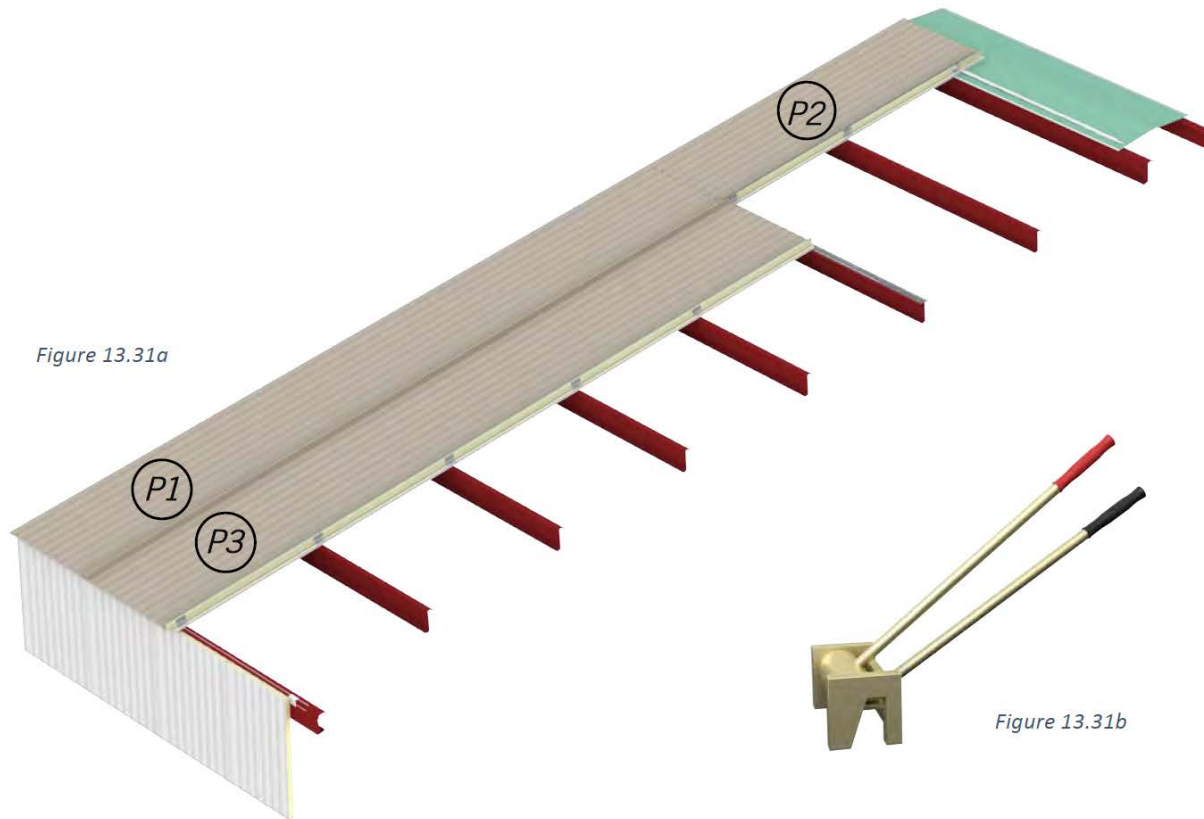
Seaming

- Mechanically Seamed at the end of project.



Installation Sequence

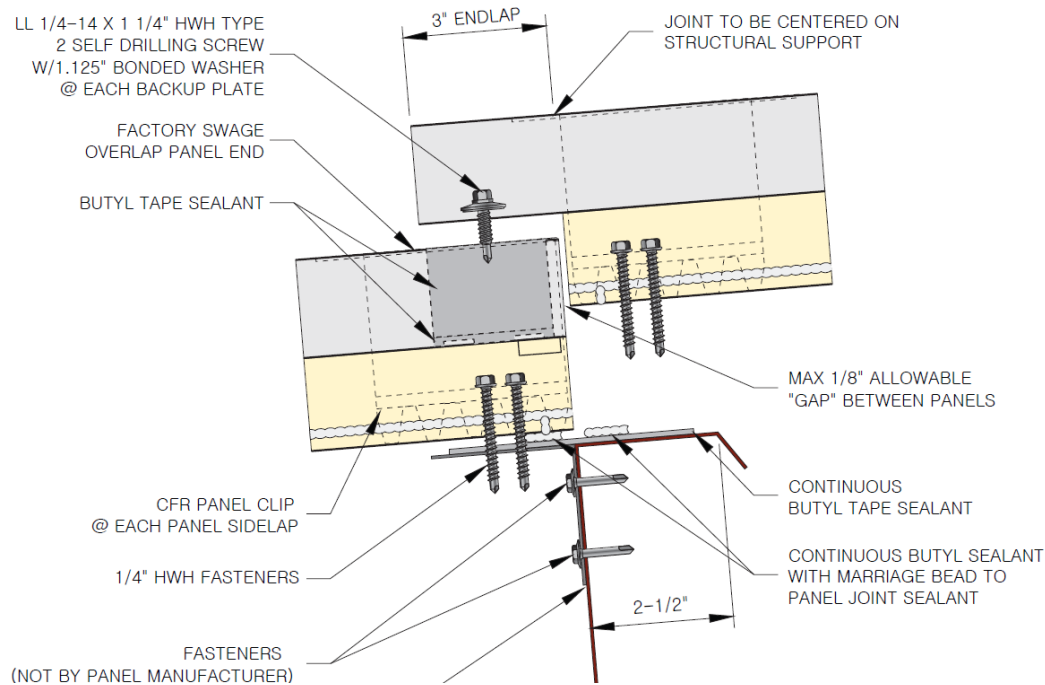
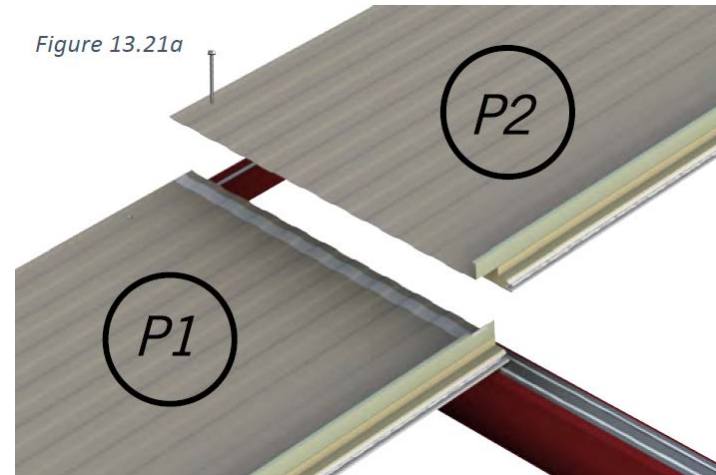
- Bottom to top
- May require staggered joints



End Laps

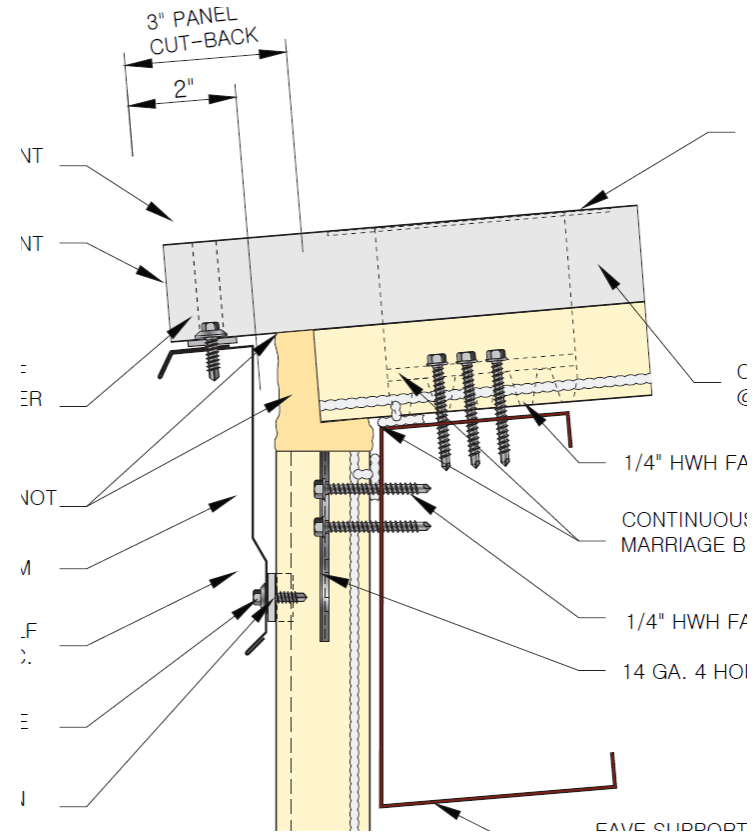
- Cut back
- Notch
- Field or Factory

Figure 13.21a

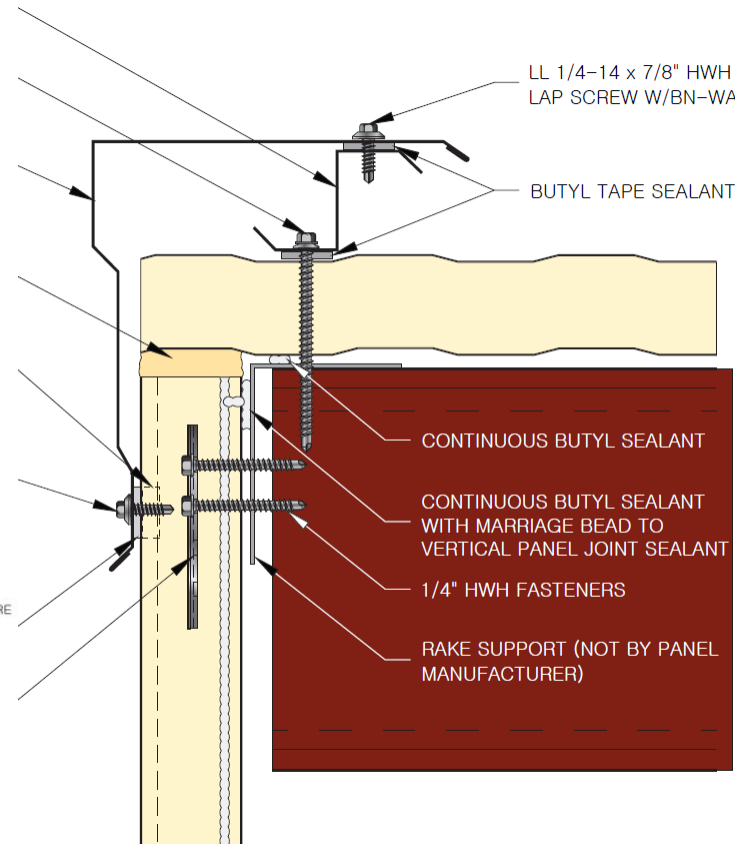
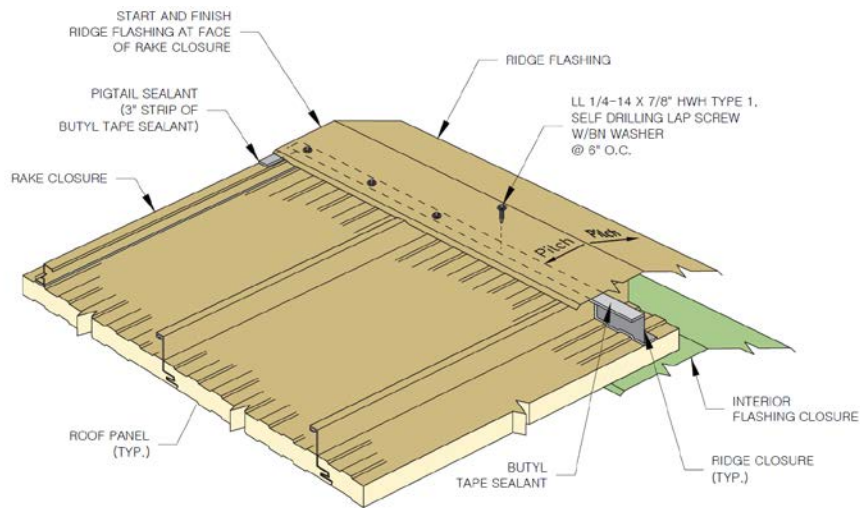


Low Eave

- Notching

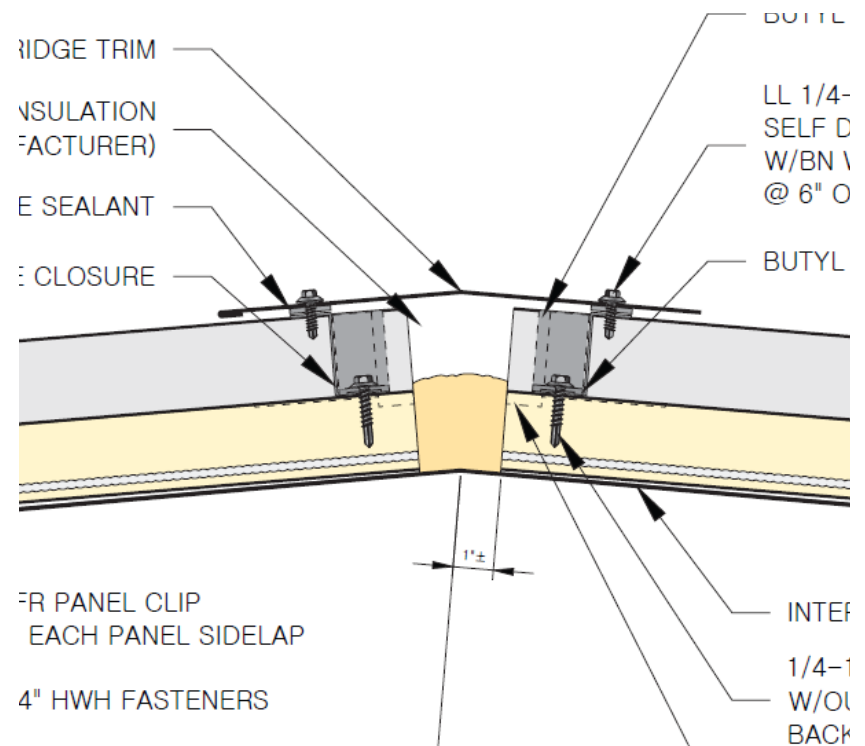


Common Details



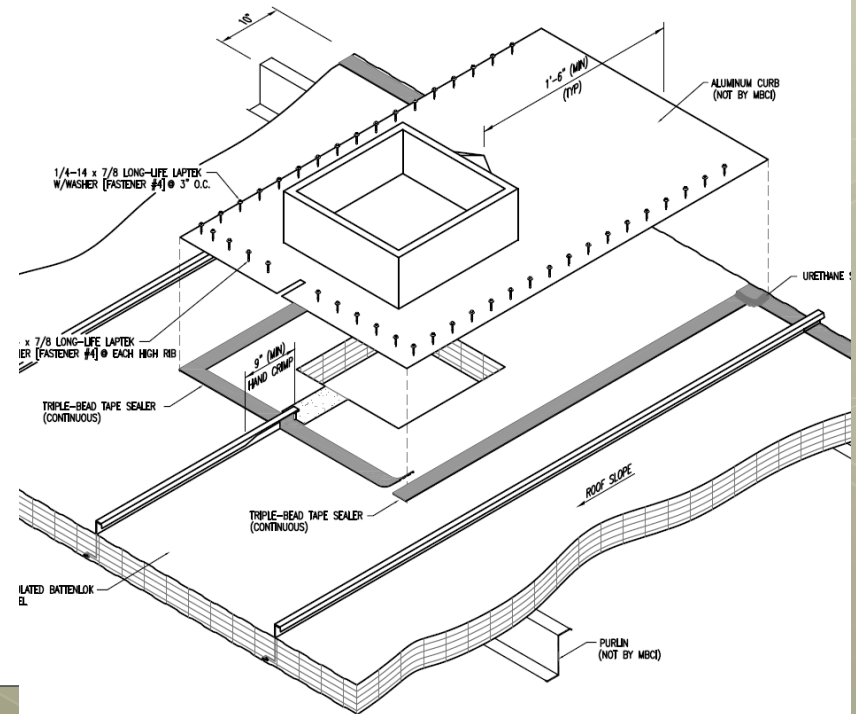
Exterior Trims

- Expandable foam to fill voids



Penetrations

- Use insulated curbs



Questions