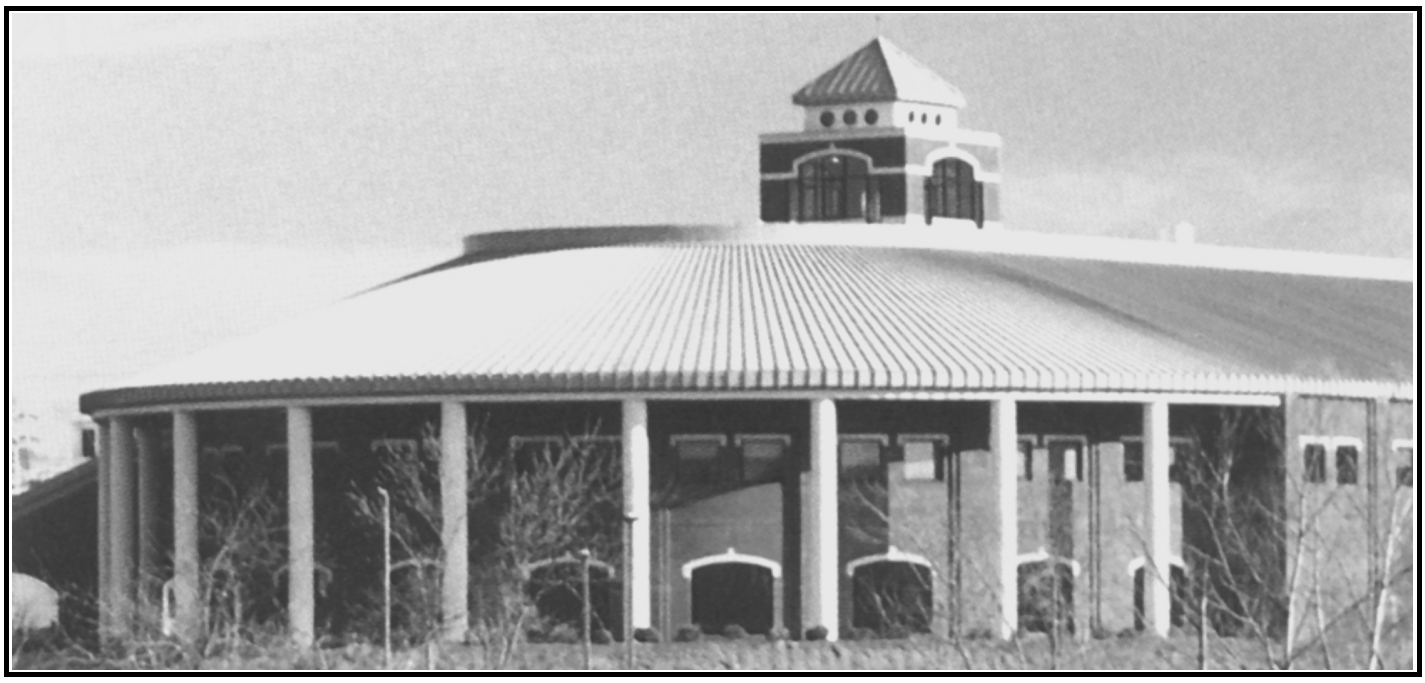
FABRAL®

A FLACK GLOBAL METALS COMPANY

PowerSeam™ Roofing System

Installation Manual



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1-800-4FABRAL (432-2725)

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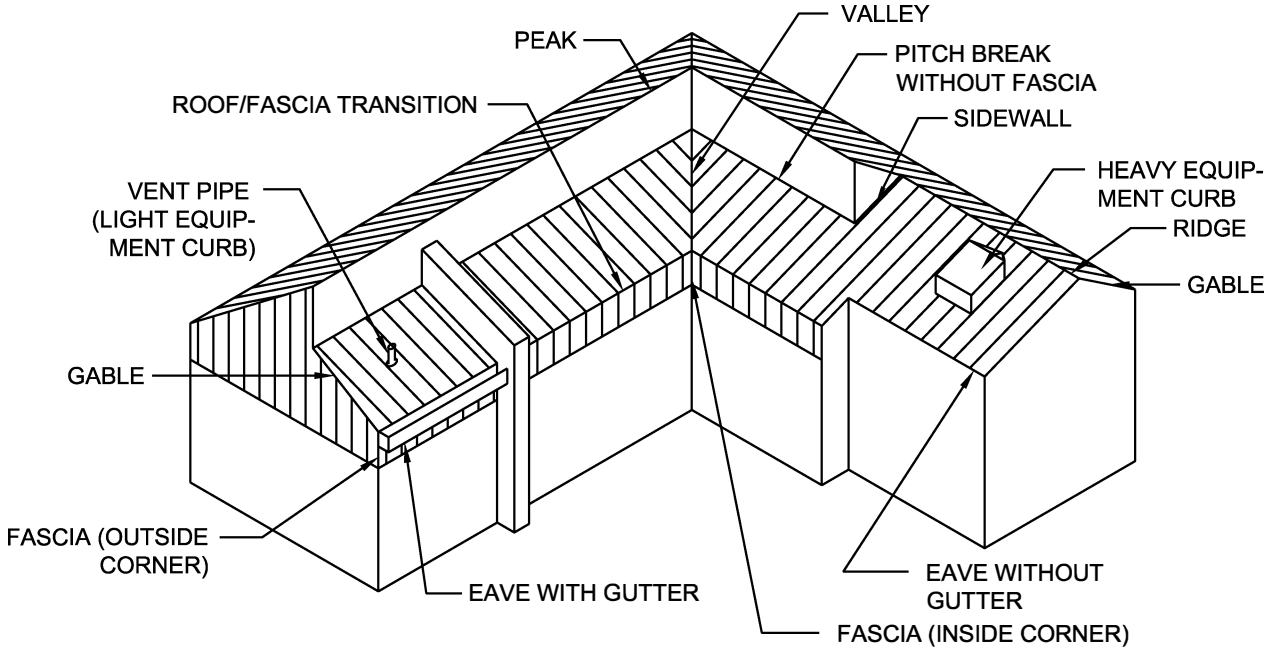


PowerSeam™

GENERAL NOTES

The details in this manual are suggested methods for installing Fabral's PowerSeam roofing system and are proven methods of construction. However, the details may require adaptations, changes, or revisions for your particular project since conditions vary and may be unique.

It is the responsibility of the designer and installer to ensure that the details are adapted and applied to meet the particular building requirements and to provide adequate weathertightness. Weathertightness can be assured through the use of these details, good materials and workmanship, the use of the right types of sealant, and sealing all joints adequately. Fabral shall be held harmless from any and all claims arising from a lack of weathertightness as a result of following these suggested typical detailed drawings.

The designer and installer must be aware of, and allow for, expansion and contraction of roof panels when designing and/or installing panels and flashings. To allow thermal movement in one direction, the panel must be fastened to the substrate below, either at the top of the panel or at the bottom of the panel. NEVER FASTEN BOTH ENDS OF THE PANEL. Always use a sliding ridge with a fixed eave. Always use a fixed ridge with a sliding eave. An eave bend-down detail will fix the panel at the eave.

The installer must be familiar with all erection instructions before starting work. Before beginning installation of the panels, the installer must examine the substrate to ensure that all supporting members are straight, level, plumb, and true in accordance with minimum tolerances. Report any variations and potential problems to the general contractor. Do not start work until unsatisfactory conditions have been corrected.

The roofing/fascia system shall be installed plumb, straight, and true to adjacent work. Horizontal panel endlap joints are not acceptable. Metal closures shall be caulked around their perimeter. Panel clips allow for thermal movement and shall be installed at all panel joints. Longitudinal spacing of clips shall be as specified for design loads. No perforations shall be made in the panels by fasteners except as shown on the drawings.

All flashings, closures, and accessories shall be provided by Fabral as indicated and as necessary to provide a weathertight installation. Installation procedures which are not indicated shall be in accordance with Fabral's printed instructions and details or approved shop drawings. Flashing and trim shall be installed true and in proper alignment with any exposed fasteners equally spaced for the best appearance.

Sealant for joints and flashing endlaps shall be nondrying, nontoxic, and non-shrinking and shall have a serviceable temperature of -50° to 212°F. Sealant shall be field-applied on dry, clean surfaces. To ensure weathertightness, the sealant shall be installed where indicated without skips or voids. Sealants shall be furnished by others.

The installer should utilize details provided and procedures recommended for installation of materials. Fabral will review alternate details which you may wish to use. Some field-cutting and fitting of panels and flashings is expected of the installer and minor field corrections of materials is a part of normal erection work. Workmanship will be by the best industry standards, and installation shall be performed by experienced metal craftsmen. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) architectural sheet metal manual specifications shall govern for material and workmanship not shown. Oil-canning in panels is common to the industry and shall not be cause for product refusal.

<u>Miscellaneous Design Information</u>

Shadow lines are standard on PowerSeam panels. The panels can be custom tapered to a minimum width of 2” and a maximum width of 18”. The maximum length of tapered panels is 40 ft. Shadow lines are not available on tapered panels. The maximum purlin spacing for PowerSeam panels is 5 ft. The minimum roof pitch is 1:12. Panel lengths range from 4 to 65 feet. The clearance between the clip and the bottom of the panel is 0.25 inches.

PowerSeam

SPECIFICATIONS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes: all material, labor, and equipment to complete installation of PowerSeam as shown on the drawings and herein specified. Include all copings, gutters, and flashings contiguous with the panels.

B. Related Sections
   1) Metal decking
   2) Rough carpentry, plywood, and underlayment
   3) Insulation
   4) Membrane roofing
   5) Flashing and sheet metal
   6) Joint sealers: sealants and caulk
   7) Structural framing.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1) ASTM A 653: Steel Sheet, Zinc-Coated by the Hot Dip Process
   2) ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process.
   3) ASTM E 283: Air leakage
   4) ASTM E 331: Water penetration

B. Underwriters Laboratory
   1) UL Building Materials Directory

C. Sheet Metal and Air Condition Contractors National Association, Inc. (SMACNA)
   1) SMACNA Architectural Sheet Metal Manual, 1993 Edition.

D. American Iron and Steel Institute (AISI)
   1) AISI Cold Formed Steel Design Manual

E. Metal Construction Association (MCA)
   1) Preformed Metal Wall Guidelines

F. Code references
   1) ASCE, Minimum Loads for Buildings and Other Structures
   2) BOCA National Building Code
   3) UBC Uniform Building Code
   4) SBC Standard Building Code

1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide factory formed, prefinished, mechanically seamed, concealed clip, structural standing seam metal roof system, that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
   1) Provide UL90 rated roofing system that has been tested in accordance with UL 580 test procedure.
   2) Resistance to air leakage: 0.01 cfm/ft. of joint leakage when tested in accordance with ASTM E 283 at static pressure differential of 15 psf.
   3) Resistance to water penetration: No leakage through panel joints when tested in accordance with ASTM E 331 at static pressure differential of 6.24 psf.

B. Structural Requirements: Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute *Cold Formed Steel Design Manual*, using “effective width" concept.

C. Maximum clip spacing shall be 5' o.c.

1.04 SUBMITTALS

A. Product Data: submit manufacturer's specifications, standard profile sheet, product data brochure and finish warranty.

B. Shop Drawings: shop drawings showing roof plan with layout of panels, clips, clip attachment, underlayment and sections of each flashing/trim condition shall be submitted for approval prior to fabrication. Drawings shall contain material type, metal thickness and finish. Drawings shall distinguish between factory and field fabrication.

C. Samples:
   1) Submit sample 12" long x full width panel, showing proposed metal gauge, seam profile and specified finish.
   2) Submit manufacturers standard colors for Architect's selection.

D. Test Reports:
   1) Submit the test reports prepared by Underwriters Laboratory indicating wind uplift rating of proposed roof system. The manufacturer must be listed by name in the UL Directory
   2) Air leakage per ASTM E 283 and water penetration per ASTM E 331. (Actual independent laboratory certified test results must be submitted).

DI. Certification: Submit manufacturer's certification that materials and finishes meet specification requirements.

1.05 QUALITY ASSURANCE

A. Panel manufacturer shall have a minimum of ten (10) years of experience in manufacturing architectural roofing in a permanent stationary indoor facility.

B. Panel installer shall have a minimum of two (2) years experience in the installation of concealed clip architectural standing seam metal roofing and show evidence of successful completion of at least three (3) projects of similar size, scope, and complexity.

1.06 DELIVERY, STORAGE, and HANDLING

A. Panels and flashings shall be protected and properly packaged to protect against transportation damage in transit to the jobsite.

B. Upon delivery, exercise care in unloading, stacking, moving, storing, and erecting panels and flashings to prevent twisting, bending, scratching, or denting.

C. Store panels and flashings in a safe, dry environment under a waterproof covering to prevent water damage. Allow for adequate ventilation to prevent condensation. Panels and flashings with strippable film shall not be stored in direct sunlight.

D. Upon installation immediately remove strippable film from panels and flashings. Protect panels and flashings from foot traffic and from all other trades.

1.07 PROJECT CONDITIONS

A. Field dimensions shall be taken prior to fabrication to verify jobsite conditions.

B. Minimum recommended pitch for this panel is 1:12.

C. Maximum panel length is 65' (contact the factory for longer panels.

1.08 WARRANTIES

A. Panel manufacturer shall provide a twenty (20) year warranty on the paint finish covering chalking, cracking, checking, chipping, blistering, peeling, flaking, and fading.

B. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight conditions.

Part 2 PRODUCTS

2.01 PRODUCT DESCRIPTION

A. PowerSeam structural standing seam roof system as manufactured by Fabral,1-800-432-2725.

B. The PowerSeam panel shall have a coverage of 12", 16", or 18". Seams shall be 2" high.

C. Roof panels shall use a two-piece roof clip allowing for thermal movement of the panel system.

D. The panel shall have a factory-applied mastic and be mechanically seamed with a field operated electric seaming machine provided by the manufacturer.

E. The panel system shall be as a true standing seam shape requiring no trapezoidal foam closures, plugs, or fillers at eaves.

F. Panels have 1" shadowlines as a standard.

2.02 PRODUCT SUBSTITUTIONS

A. Requests to use alternate systems shall be submitted in writing to the project designer at least ten (10) days prior to bid date. Request shall demonstrate proposed substitution meets or exceeds specified performance requirements. Certified statements, samples and descriptive data shall be included in this submittal request.

PowerSeam

SPECIFICATIONS

B. Manufacturers listed in this section are prequalified manufacturers. Substitution of manufacturer's products for those specified shall not be allowed at anytime during construction.

2.03 MATERIALS AND FINISHES

A. Panel materials
1. 24 or 22 gauge, Grade 50 (50 ksi yield strength) structural steel with G90 (0.90 oz./ft.^{2}) hot dipped galvanized coating, both conforming to ASTM A 653.
2. 24 or 22 gauge, Grade 50 (50 ksi yield strength) structural steel with AZ50 (0.50 oz./ft.^{2}) aluminum-zinc alloy coating, both conforming to ASTM A792.

B. Texture: panels shall be smooth.

C. Finish: paint shall be full strength 70% polyvinylidene fluoride (Kynar® 500/ Hylar® 5000* fluorocarbon) baked-on coating, factory applied prior to roll forming. The treatment shall be a two-coat system consisting of a single coat of 0.2 mil primer followed by a finish coat of 0.8 mil topcoat with a total dry film thickness of 1.0 mil ± 0.2 mil. The reverse side of the panels shall be treated with a back coat system consisting of a 0.2 mil primer with a 0.3 mil topcoat for a total dry film thickness 0.5 mil.

2.04 ACCESSORIES

A. Concealed roof clips:
1. 2 pc.: 18 ga. sliding UL90 rated clip designed for thermal movement.
2. 1 pc.: 18 ga. fixed clip (for use with short panel lengths only).

B. Flashing and Trim
1. All flashing and trim shall be of the same material, gauge, finish, and color as the roof panels and fabricated in accordance with standard SMACNA procedure and details.
2. Provide transition rib covers where roofing changes pitch.
3. Fabricate gutters and downspouts in the same gauge, material, finish, and color as the roof panels.

C. Fasteners
1. Clips to substrate: Screw shall be #12 or #14 diameter, self tapping type, zinc-plated steel.
2. Flashings to panels: exposed screws shall be zinc plated with a #14 x □" combination steel and neoprene washer, color to match panel.
3. Pop rivets: #43 stainless steel, color finish to match panel.

D. Sealants
1. Shall not contain oil, asbestos, or asphalt.
2. Factory applied sealant shall be applied in the seam and designed for metal to metal concealed joints.
3. Field applied panel end sealant shall be mastic tape sealant.
4. Exposed sealant shall be one-part polyurethane joint sealant. Coordinate color with roof panels.

E. Closures
1. Ridge and hip closures shall be protected and supported by a formed metal closure manufactured from the same material, color, and finish as the panels.
2. Metal closures shall be factory-fabricated and field-cut as needed.

F. Thermal blocks
1. Thermal blocks shall be:
   a. Non-treated wood as per manufacturer's recommendation.
   b. Extruded polystyrene block.
   c. EPDM membrane.

G. Vapor Retarder:
1. Retarder with a permeance of 0.05 or less as determined by ASTM E 98.

2.05 RELATED MATERIALS

A. Refer to other sections listed in Related Sections paragraph for related materials.

2.06 FABRICATION

A. Roof panels shall be formed in continuous lengths. End laps will not be allowed.

B. Panels shall to be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers, rented or owned by the installer, are not acceptable.

C. Fabricate flashings from the same material as the roof system.

2.07 SOURCE QUALITY

A. Source Quality: obtain metal panels and accessories from a single manufacturer.

B. Fabrication tolerances: follow tolerances in MCA's Preformed Metal Wall Guidelines.

C. Tests and inspections

D. Verification of performance

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product cartons for installation.

3.02 EXAMINATION

A. Installer shall:
1. Inspect roof purlins and/or roof deck to verify that it complies with shop drawings and is smooth, even, sound, and free of depressions.
2. Report variations and potential problems in writing to the architect.

3.03 INSTALLATION

A. Conform to the standard set forth in the SMACNA architectural sheet metal manuals and the approved shop drawings detailed for the project.

B. Install panels plumb, level, and straight with the seams parallel, conforming to the design as indicated.

C. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations. Abrasive devices shall not be used to cut on or near roof panel system.

D. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.

F. Remove any strippable film immediately upon exposure to direct sunlight.

G. Hand-crimp seams at each clip or mechanically seam before workers stand on panels.

H. Seam panels together with electric-powered seaming machine supplied by the panel manufacturer for a weathertight seam.

I. Vapor retarder: The joints, perimeter, and all openings shall be sealed per the manufacturer's instructions to provide a continuous vapor retarder.

J. Underlayment (solid substrate):
1. Provide one layer of 30# felt with horizontal overlaps and endlaps staggered between layers.
2. Provide ice and water shield membrane at all valley and eave conditions as well as any area at less than a 3:12 slope.
3. Lay parallel to ridge line with 2½" horizontal laps and 6" vertical laps

3.04 CLEANING

A. Dispose of excess materials and debris from jobsite.

B. Remove filings, grease, stains, marks, or excess sealants from roof panel system to prevent staining.

C. Protect work from damage from other trades until final acceptance.

* Kynar® 500 is a registered trademark of Elf Atochem North America, Inc.
Hylar® 5000 is a registered trademark of Ausimont USA, Inc.

PowerSeam

SPECIFICATIONS

ALLOWABLE WIND UPLIFT LOADS (PSF)

Gauge	Width	3.0’	3.5’	4.0’	4.5’	5.0’
24	12”	53	53	53	53	53
24	16”	41	41	41	41	41
24	18”	35	35	35	35	35
22	12”	70	70	70	70	70
22	16”	55	55	55	55	55
22	18”	47	47	47	47	47

Notes:
1. Allowable loads are based on 1980 edition of AISI specifications.
2. Deflection is limited to L/240 of span.
3. Loads are based on spans of 3 or more.
4. FY = 50 ksi.
5. Uplift values based on attachment to 16 ga. purlins with 2 #10-16 x 1” SD ST screws.

WIND UPLIFT, AIR INFILTRATION, AND WATER PENETRATION TEST SUMMARIES

(ALL RESULTS ARE FOR 16" WIDE PANELS)

WIND UPLIFT (UL90): 24 ga. steel panels over open purlins (16 ga. steel) spaced a maximum of 5'-0" o.c. with one screw per clip (UL Construction No. 90, 176, and 180).

WIND UPLIFT (UL90): 24 ga. steel panels with clips spaced a maximum of 4’ 0” o.c. over rigid insulation (min. 1” thick and 2.0 pcf) over 22 ga. steel deck with one #11 x 3 ¾” long self-drilling screw and a 3” x 3 ¼” x .050” bearing plate per clip (UL Construction No. 238).

WIND UPLIFT (UL90): 24 ga. steel panels over 2" plywood deck with clips spaced 2'-0" o.c. and fastened with 2 #12-14 x 1” pancake head wood screws per clip (UL Construction No. 548).

WIND UPLIFT (UL90): 24 ga. steel panels with clips a maximum of 5’ 0” installed over 5/8” plywood with two #10 x 1” pancake head screws per clip (UL Construction #549). Fabral recommends a maximum clip spacing of 2’ 0” for installations over plywood.

WATER PENETRATION (ASTM E 331): There was no water penetration with a 5 gal./hr spray at 6.24 psf pressure differential.

AIR INFILTRATION (ASTM E 283): There was 0.01 cfm/ft.^{2} of leakage when tested at 15 psf pressure differential.

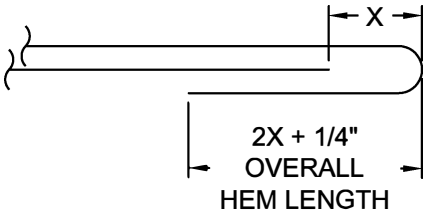
RAIN-CARRYING CAPACITY (MAXIMUM RUN LENGTH IN FEET)

roof slope	½ :12	¾ :12	1:12	1 ½ :12	2:12	2 ½ :12	3:12	4:12	5:12
16" wide	93	103	110	123	133	141	149	164	178
12" wide	91	100	108	120	130	138	146	160	174

1. Values indicate point when water will reach top of rib during storm of 4"/hour intensity.
2. Slopes less than 2:12 are not recommended.
3. Penetrations can greatly reduce the rain carrying capacity.

HEM LENGTHS

The length of the hem at the end of a panel will vary with the change in temperature that the panel experiences and the length of the panel. Unless a more exact analysis of the temperature during installation compared to the maximum and minimum anticipated temperature is conducted, use the following equation and Thermal Movement Table. When installing panels, be sure to leave room at the end of the panel that will experience movement for the "starting gap" which is the required air space (X) between the panel and cleat.



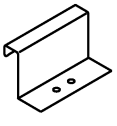
THERMAL MOVEMENT TABLE

Panel movement (in.) with a 100°F temperature change in the panel and a 50°F temperature change in the substrate.

PANEL MATERIAL	SUBSTRATE MATERIAL	PANEL LENGTH(FT.)		
		10'	50'	100'
steel	rigid insulation	3/32"	13/32"	25/32"
	wood	1/16"	3/8"	5/8"
	steel	1/16"	3/8"	13/32"
	concrete	1/16"	3/8"	15/32"

ACCESSORIES

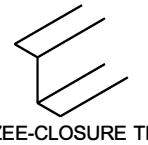
CLIPS



ONE-PIECE ROOF CLIP, 18 ga. GALV. STEEL, TWO HOLES, "FIXED CLIP." (FOR USE ON SHORT PANEL LENGTHS ONLY)

TWO-PIECE ROOF CLIP, 18 ga. GALV. STEEL, TWO HOLES, UL 90 RATED. (MAXIMUM CLIP SPACING IS 5'-0" O.C.)

CLOSURE

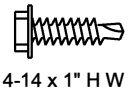


ZEE-CLOSURE TRIM

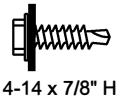
FASTENERS

#12-14 x 1" INDENTED HEX HEAD, "TYPE A", SELF TAPPING SCREW.

#12-14 x 1" H W H , SELF-DRILLING, PLATED STEEL.

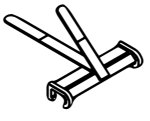


#14-14 x 1" H W H, SELF-DRILLING SCREW.

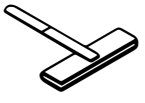


#14-14 x 7/8" H W H, SELF-DRILLING

TOOLS



HAND CRIMPING TOOL, "FIRST BEND" TOOL



END DAMMING TOOL

ELECTRIC SEAMER

TAPE MASTIC

TOUCH-UP PAINT

PowerSeam

SEAMING POWERSEAM PANELS

PowerSeam panels require seaming adjacent panels to one another by folding the sidelap. This increases the strength and weathertightness of the panel system over other panel types. PowerSeam panels have a single 90 degree folded seam. This seam may be made with a hand tool or an electric power seamer. Only use hand tools and power seamers from Fabral. Fabral cannot be responsible for damage to panels caused by equipment that is not ours. Included with the power seamer are detailed instructions on how to use it and the hand tool. This page provides an overview of that material. Refer to the diagrams on the next page for additional seaming information.

Pre-seaming Information

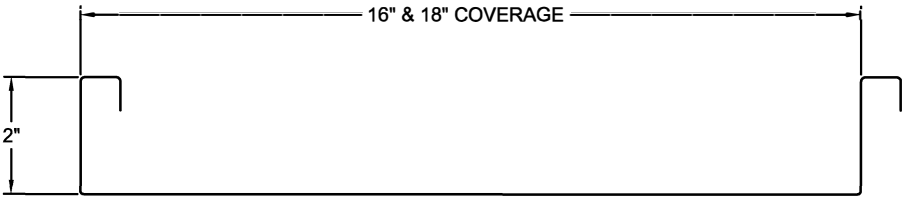
1. Locate instruction manual in seamer box and review operating procedures.
2. Check seams for proper engagement (see drawings on next page).
3. Clean dirt, debris, and excess sealant from seams and panel surfaces to avoid interfering with the seaming operation.

Seaming Information

1. Panels must be hand crimped at each clip as they are installed to prevent their separation by a strong wind. Panels should be seamed with electric seamer as soon as possible after installation.
2. To use hand tool: place the side with the 90 degree angle against the panel rib away from the fold. Hold the handle in place firmly while rotating the opposite handle until both handles are 180 degrees apart. As the handle rotates, it will make a 90 degree fold on the seam. See picture on next page.
3. The electric seamer needs only to be run one time on the seam. The seamer can be run either uphill or downhill. To determine the direction of the seamer, stand at the eave and look upslope. If the roof is being installed left to right, the seamer will run downslope (the fold is on the right of the seam while looking upslope). If the roof is being installed right to left, the seamer will run upslope (the fold is on the left of the seam while looking upslope).

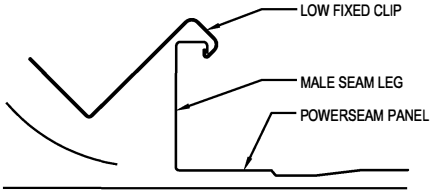
Please note: If the roof slope is 6:12 or greater, the seamer must be run downhill. Therefore you will want to make sure the panels are installed so that they run left to right.

4. To begin seaming, set seamer on seam with the locking bar up, and to the open side of the seam. The rear wheels should be even with the edge of the roof panel. Push the locking bar down to engage the rolls and turn the seamer on. Be careful that the seamer does not fall off of the roof at the end of the seam! Stop seamer about one foot from end of panels. Disengage locking bar and remove the electric seamer. Finish seam with hand tool.

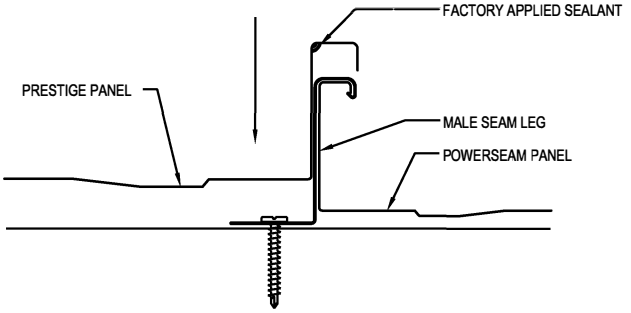


POWERSEAM PANEL PROFILE

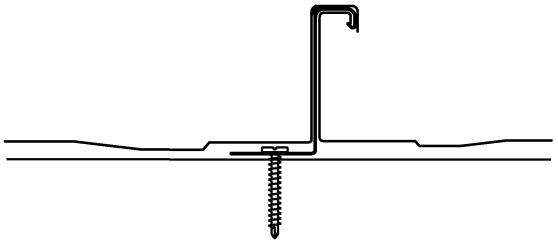
STEP 1: ROOF CLIP ENGAGES ONTO MALE SEAM LEG.



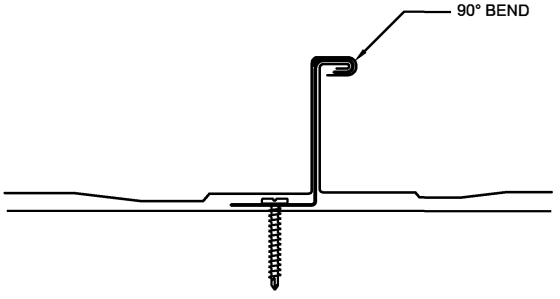
STEP 2: ADJACENT PANEL IS POSITIONED ONTO MALE SEAM LEG.



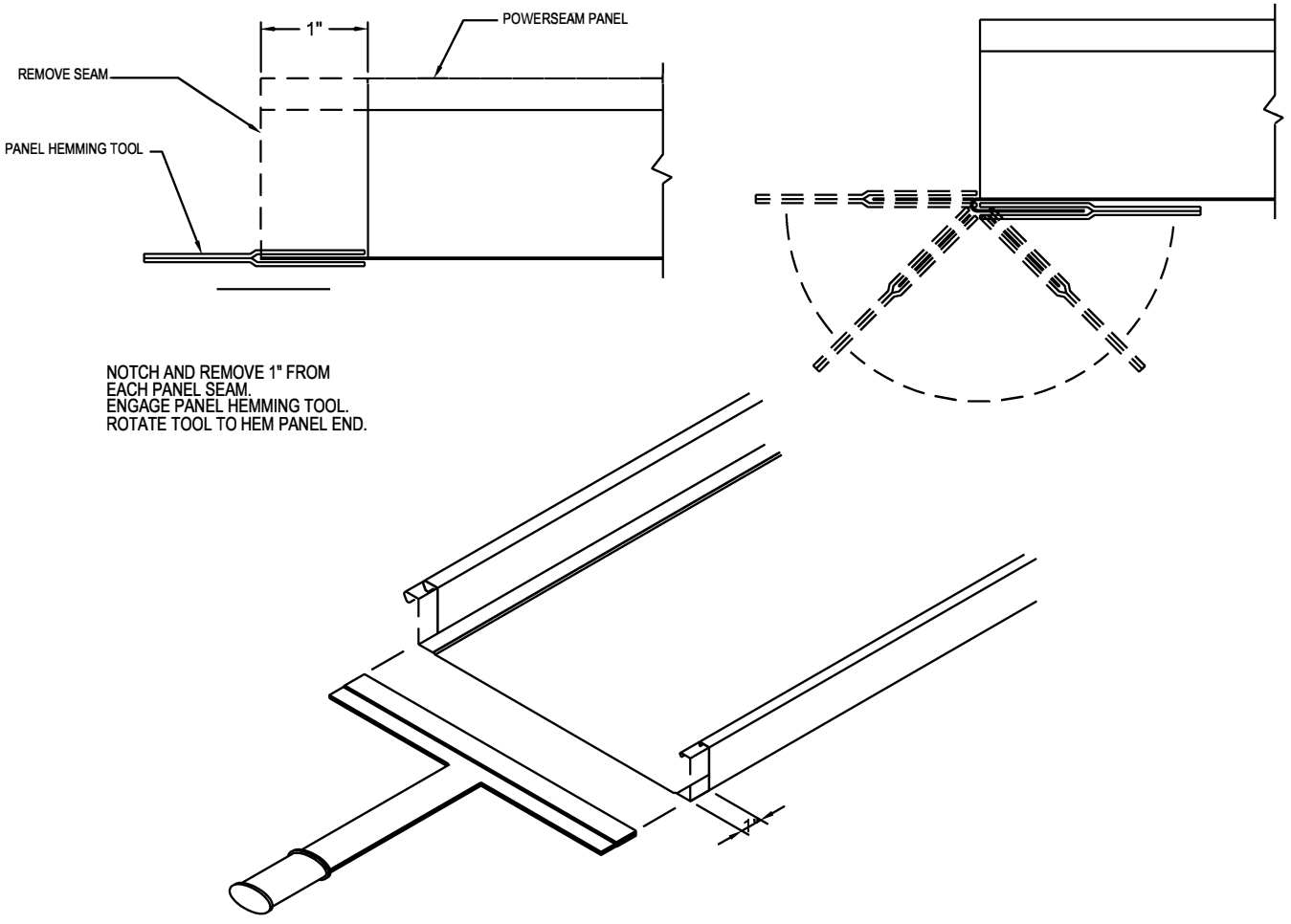
STEP 3: PANELS BEFORE SEAMING.



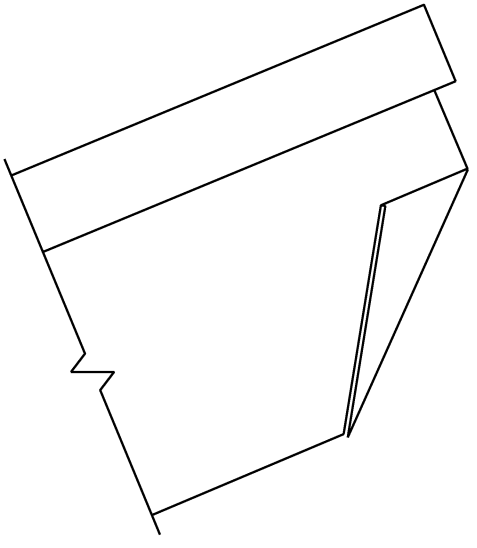
STEP 4: PANELS AFTER SEAMING.



Panel boxed ends are used at the ridge, hip, peak, and end wall conditions. The bend-up at the panel end closes off the roof, preventing water penetration. Boxing the panel ends may be used in place of the EPDM closures for the details shown in this manual.



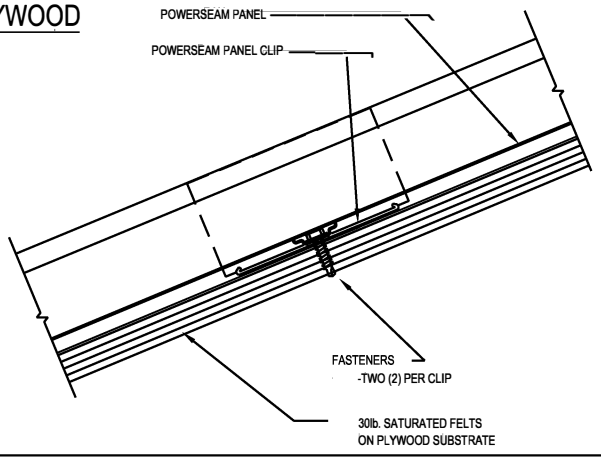
PANEL BOXED END



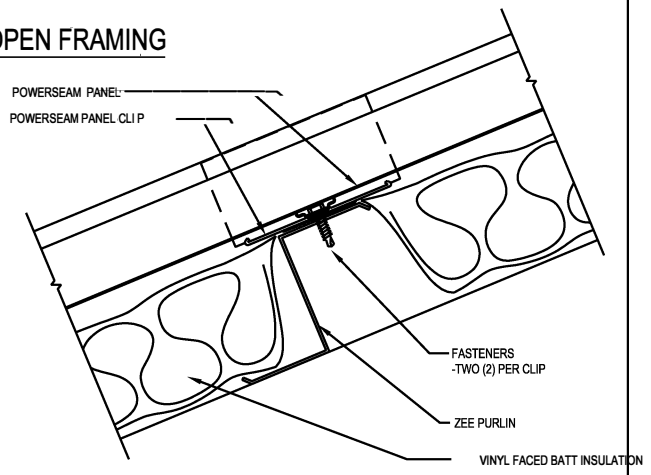
ALTERNATE PANEL BOXED END

PowerSeam panels can be installed over a variety of substrates and can accomodate most insulation requirements. Continuous horizontal members are required for roof clip attachment and must be spaced to meet loading requirements.The horizontal members must have a flat surface at least as wide as the clip. Two fasteners per clip are required. Because PowerSeam is a type of standing seam roof that accommodates thermal movement, the roof panels will not act as a diaphragm for wind design, or purlin bracing. Therefore, bracing is required to resist wind loads.

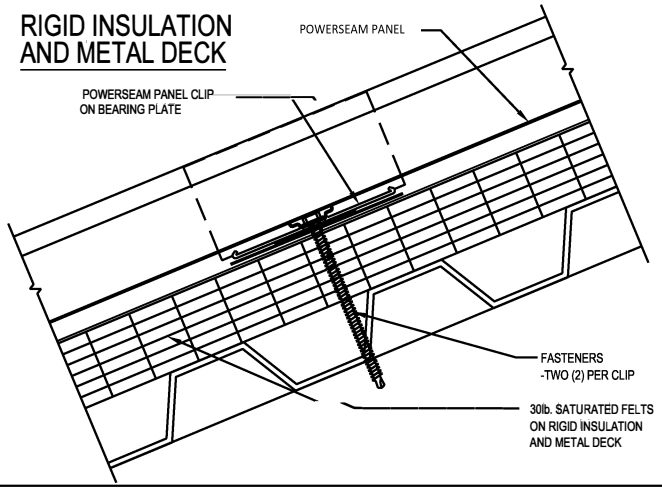
PLYWOOD



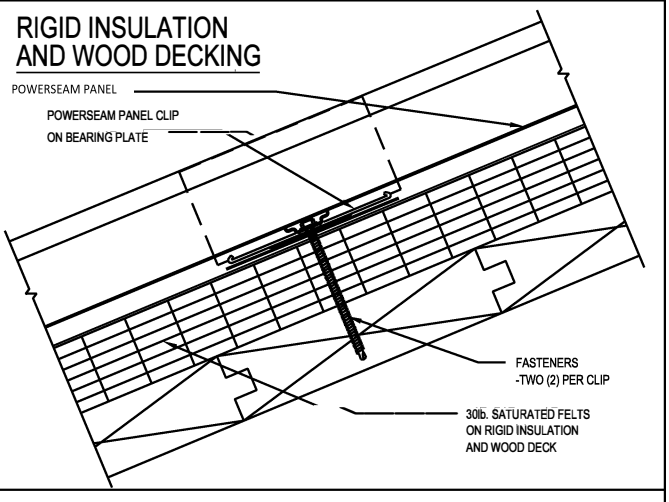
OPEN FRAMING



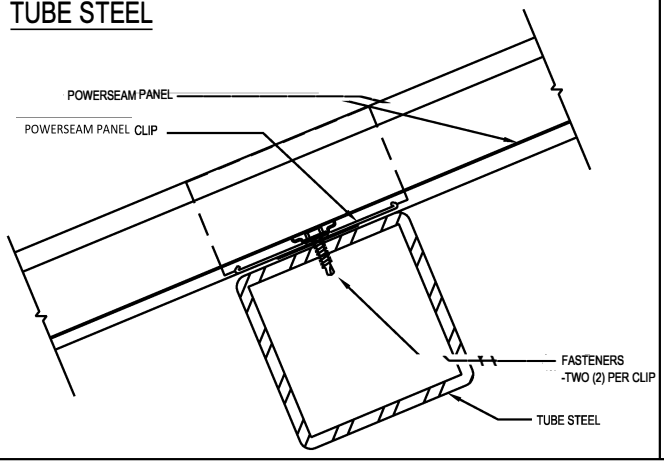
RIGID INSULATION AND METAL DECK



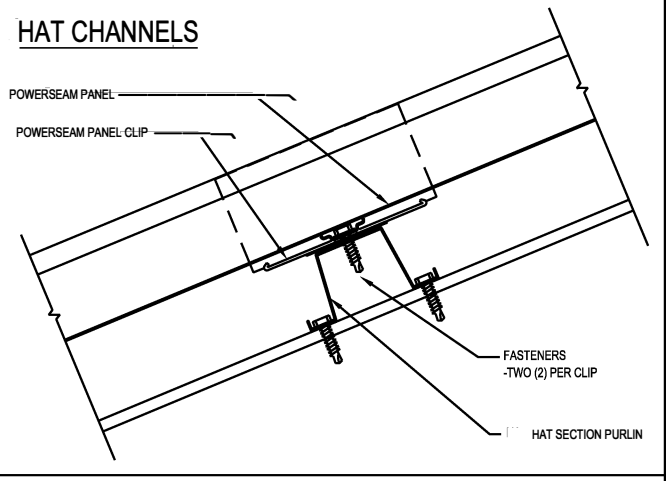
RIGID INSULATION AND WOOD DECKING



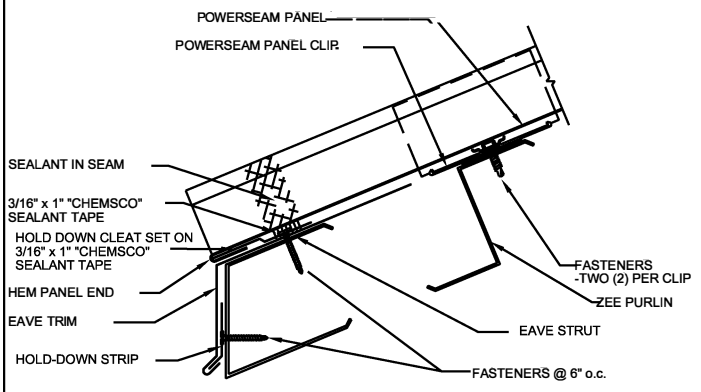
TUBE STEEL



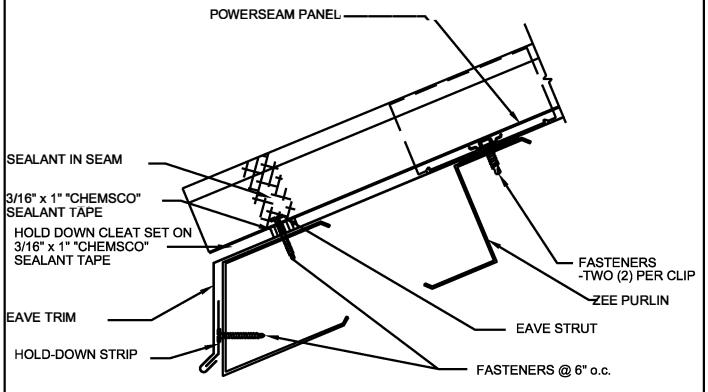
HAT CHANNELS



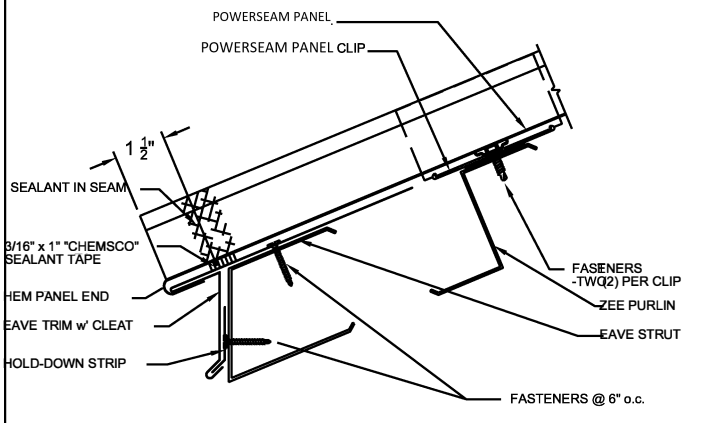
NOTE: PURLIN TELEGRAPHING WILL OCCUR WHENEVER PANELS ARE INSTALLED OVER OPEN PURLINS. THE CLIP BASE PAD CAN REDUCE, NOT ELIMINATE, PURLIN TELEGRAPHING. CLIP BASE PADS SHOULD BE USED IN ALL OPEN PURLIN APPLICATIONS AND MUST BE USED WHENEVER BLANKET INSULATION IS USED.



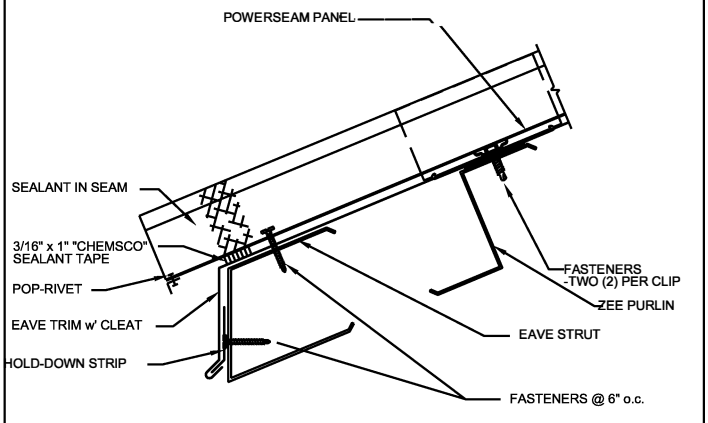
SLIDING EAVE DETAIL (USE WITH SLIDING VALLEY AND FIXED RIDGE, HIP, AND END WALL DETAILS)



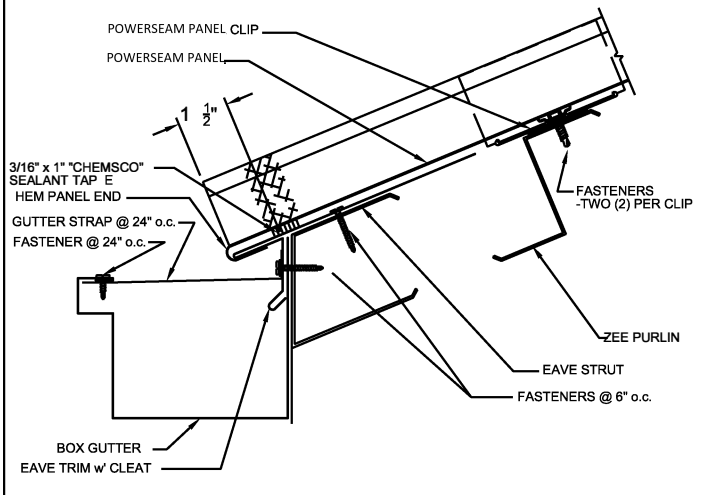
FIXED EAVE DETAIL (USE WITH SLIDING RIDGE, HIP, AND END WALL DETAILS)



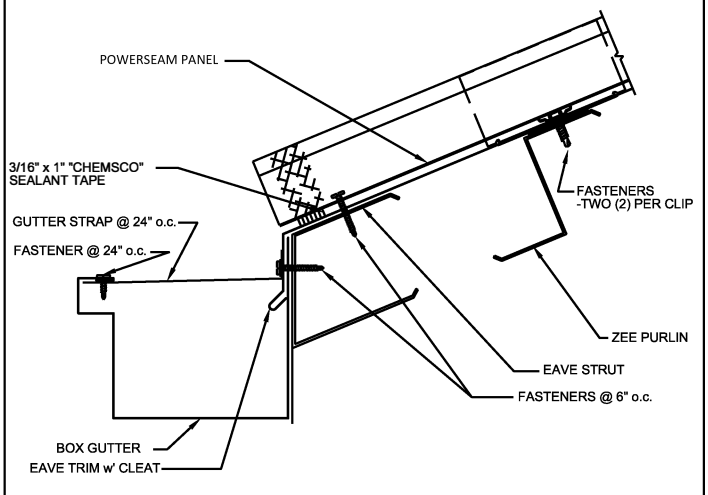
SLIDING EAVE DETAIL (USE WITH SLIDING VALLEY AND FIXED RIDGE, HIP, AND END WALL DETAILS)



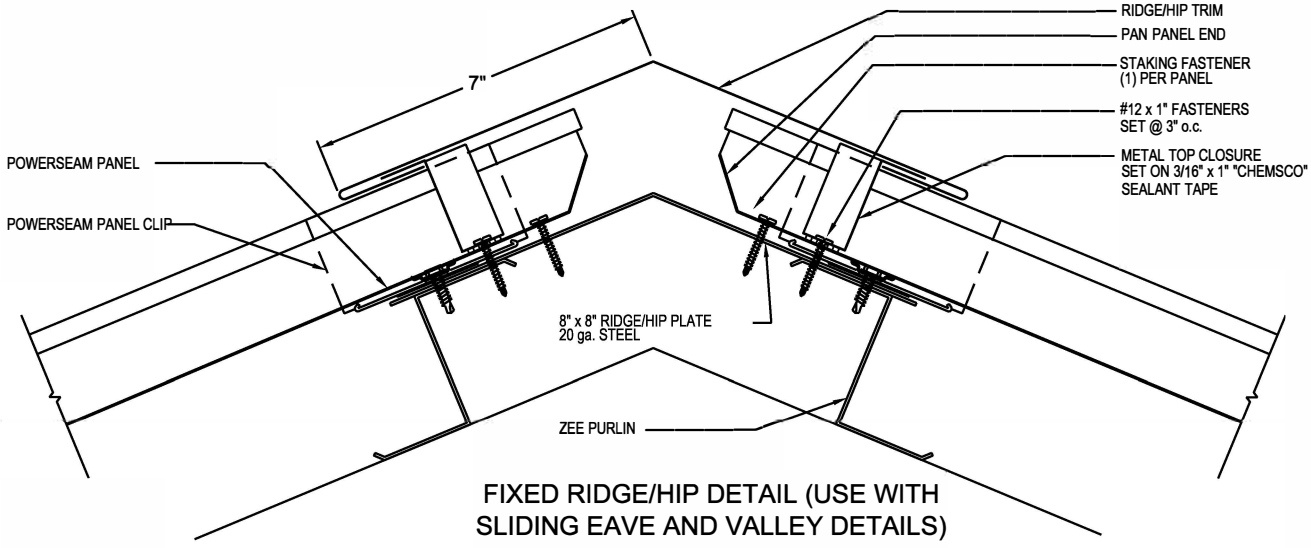
FIXED EAVE DETAIL (USE WITH SLIDING RIDGE, HIP, AND END WALL DETAILS)



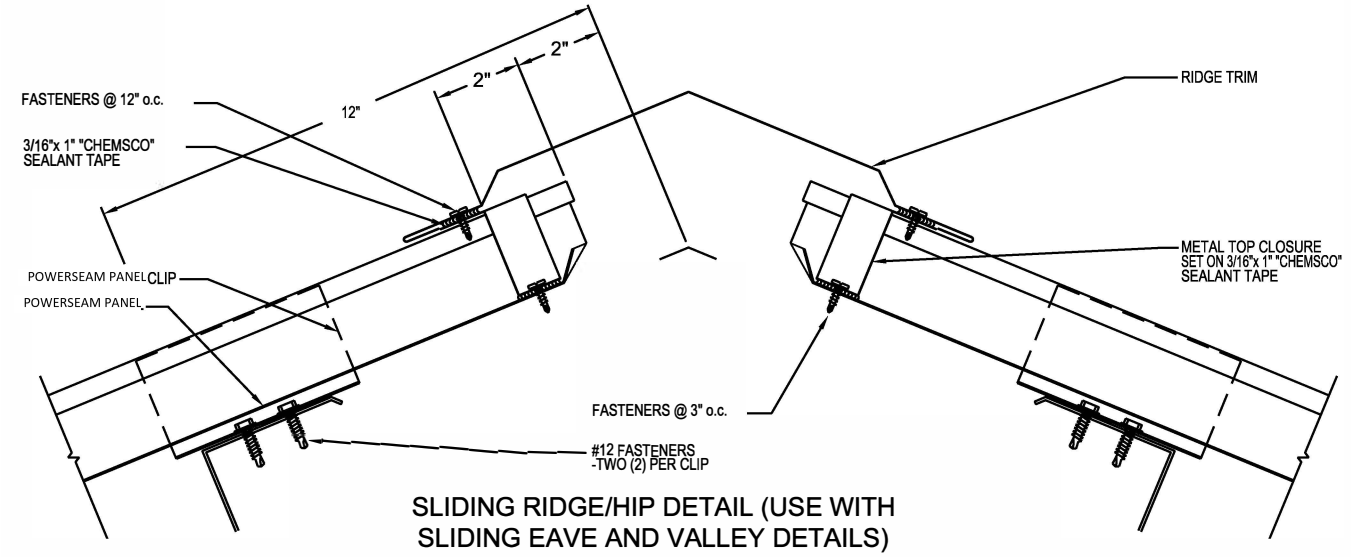
SLIDING EAVE WITH GUTTER DETAIL (USE WITH FIXED RIDGE, HIP, AND END WALL DETAILS)



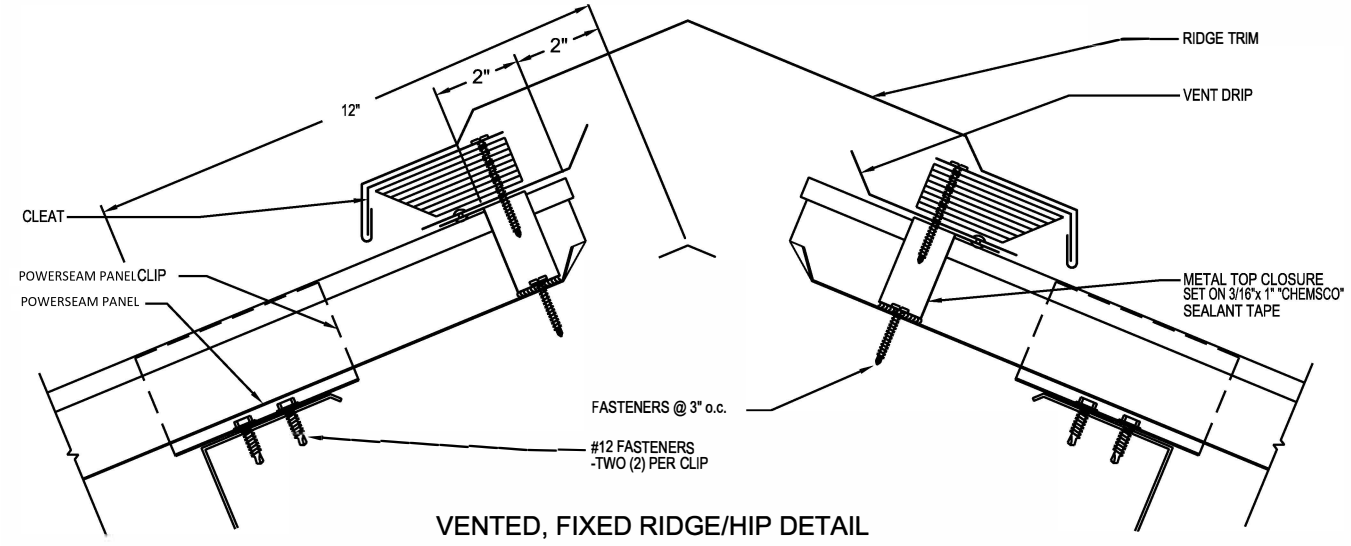
FIXED EAVE WITH GUTTER DETAIL(USE WITH SLIDING RIDGE, HIP, AND END WALL DETAILS)



FIXED RIDGE/HIP DETAIL (USE WITH SLIDING EAVE AND VALLEY DETAILS)

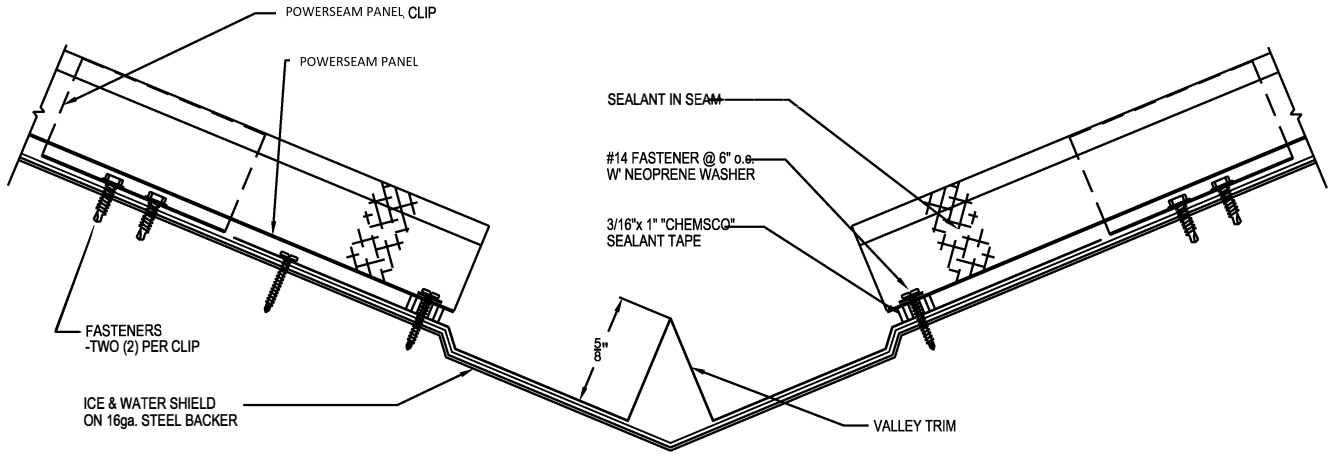


SLIDING RIDGE/HIP DETAIL (USE WITH SLIDING EAVE AND VALLEY DETAILS)



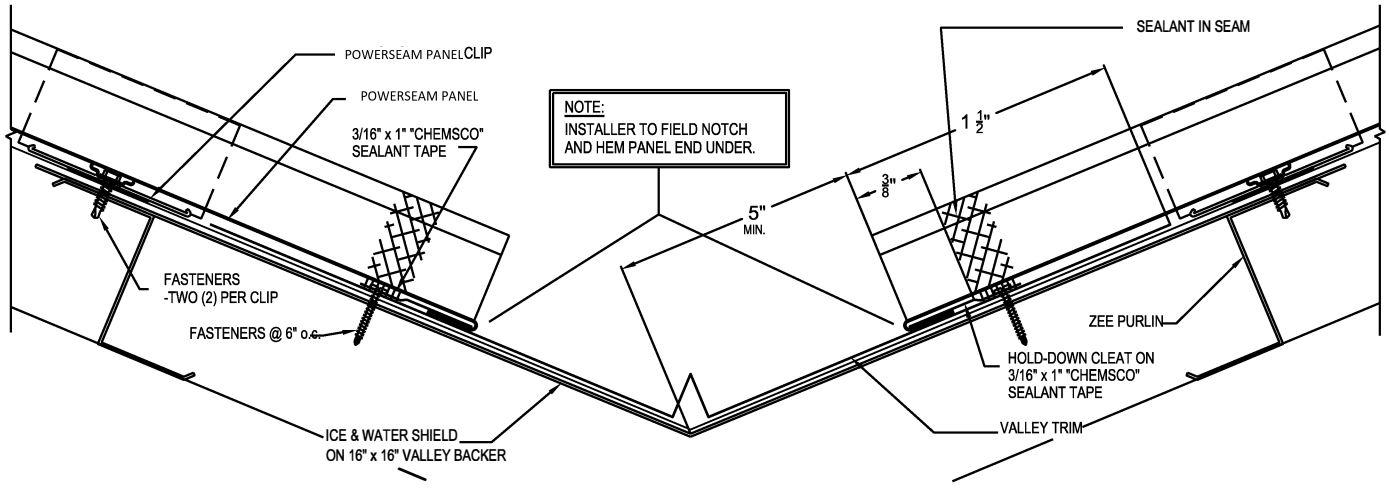
VENTED, FIXED RIDGE/HIP DETAIL (USE WITH SLIDING EAVE AND VALLEY DETAILS)

* CLIP SCREWS MUST HAVE LOW-PROFILE HEADS. PURCHASE FROM FABRAL ONLY.



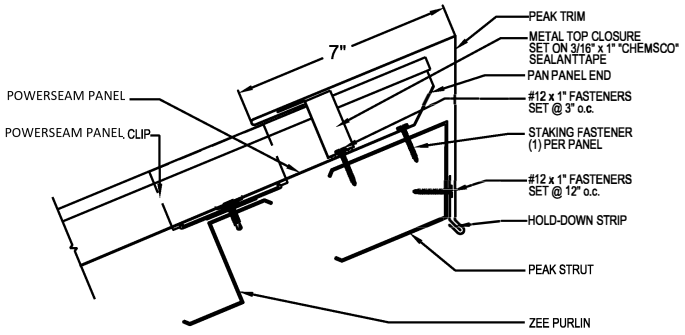
FIXED VALLEY DETAIL (USE WITH FIXED EAVE AND SLIDING RIDGE, HIP, AND END WALL DETAILS)

* CLIP SCREWS MUST HAVE LOW-PROFILE HEADS. PURCHASE FROM FABRAL ONLY.

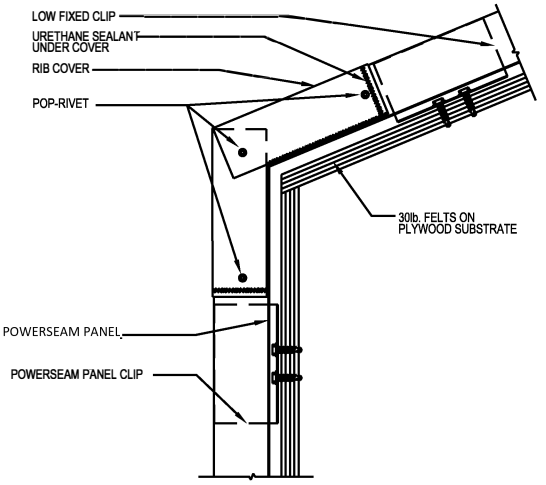


SLIDING VALLEY DETAIL (USE WITH SLIDING EAVE AND FIXED RIDGE, HIP, AND END WALL DETAILS)

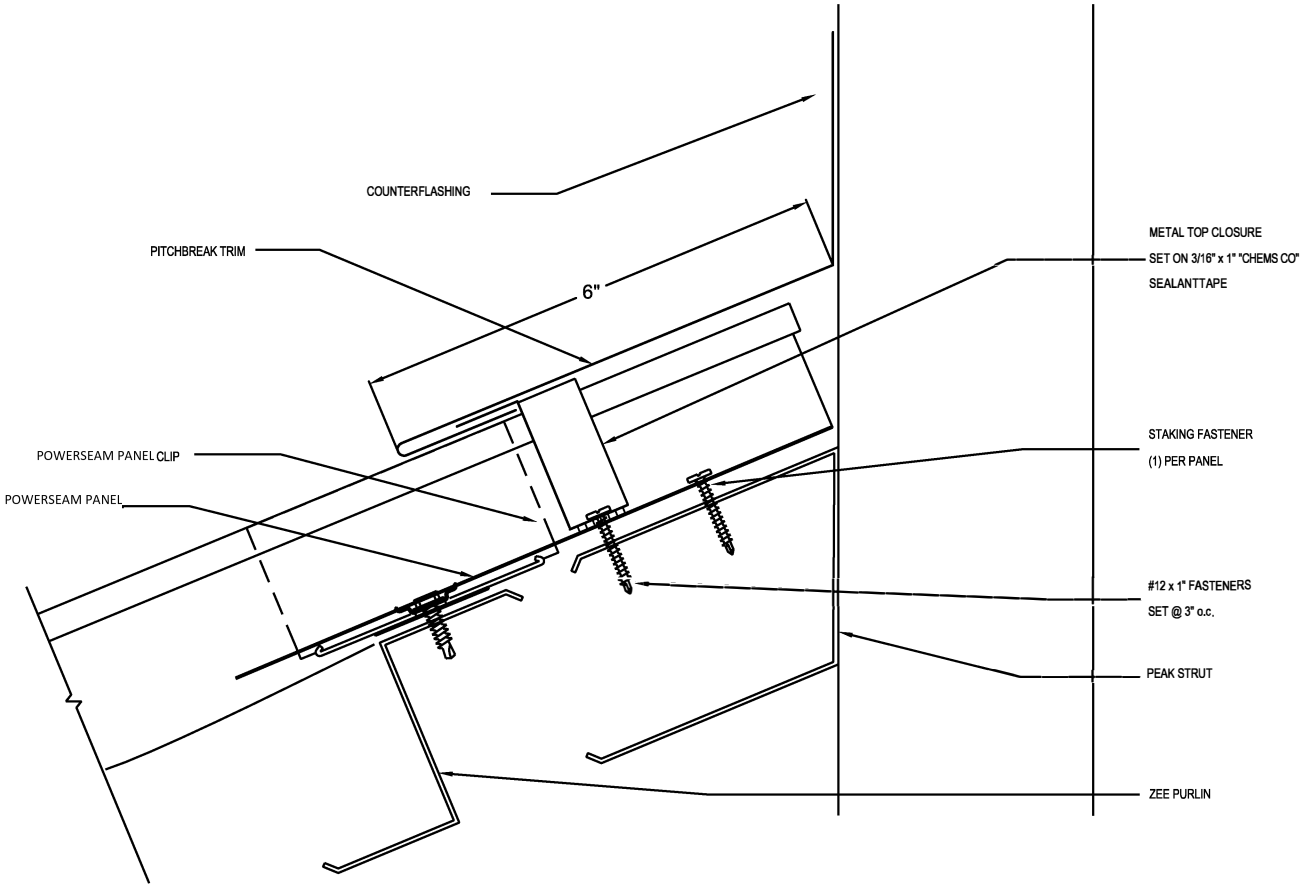
* CLIP SCREWS MUST HAVE LOW-PROFILE HEADS. PURCHASE FROM FABRAL ONLY.



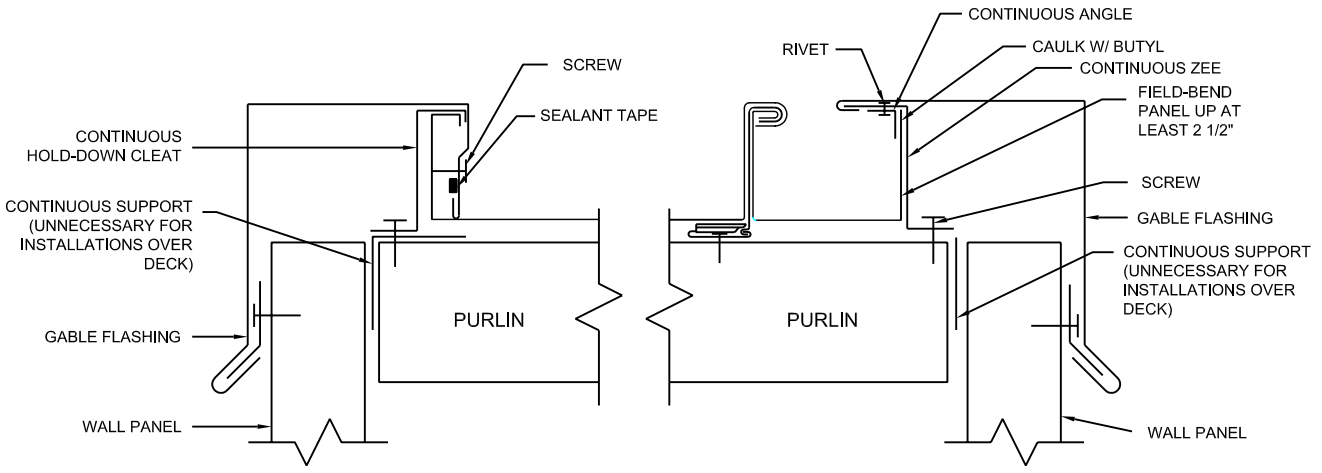
FIXED PEAK DETAIL
(USE WITH FIXED RIDGE, HIP, AND END WALL DETAILS AND SLIDING EAVE AND VALLEY DETAILS)



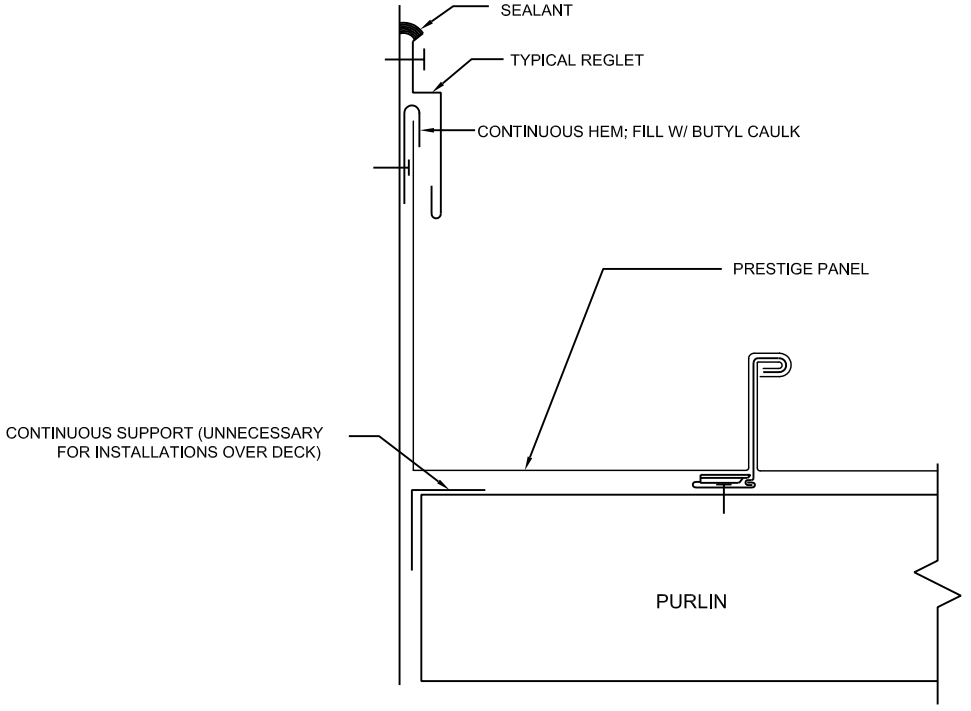
ROOF/FASCIA TRANSITION (FIXED AT TRANSITION; USE WITH SLIDING RIDGE, HIP, AND PEAK DETAILS AND SLIDING DETAIL AT FASCIA BOTTOM)



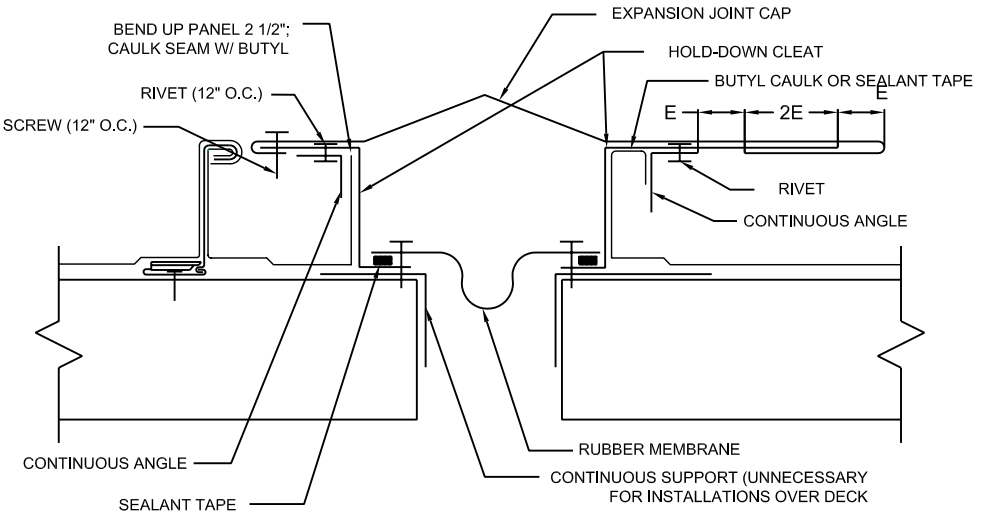
FIXED END WALL DETAIL WITH SURFACE-MOUNTED REGLET (USE WITH SLIDING EAVE AND VALLEY DETAILS)



START GABLE END GABLE

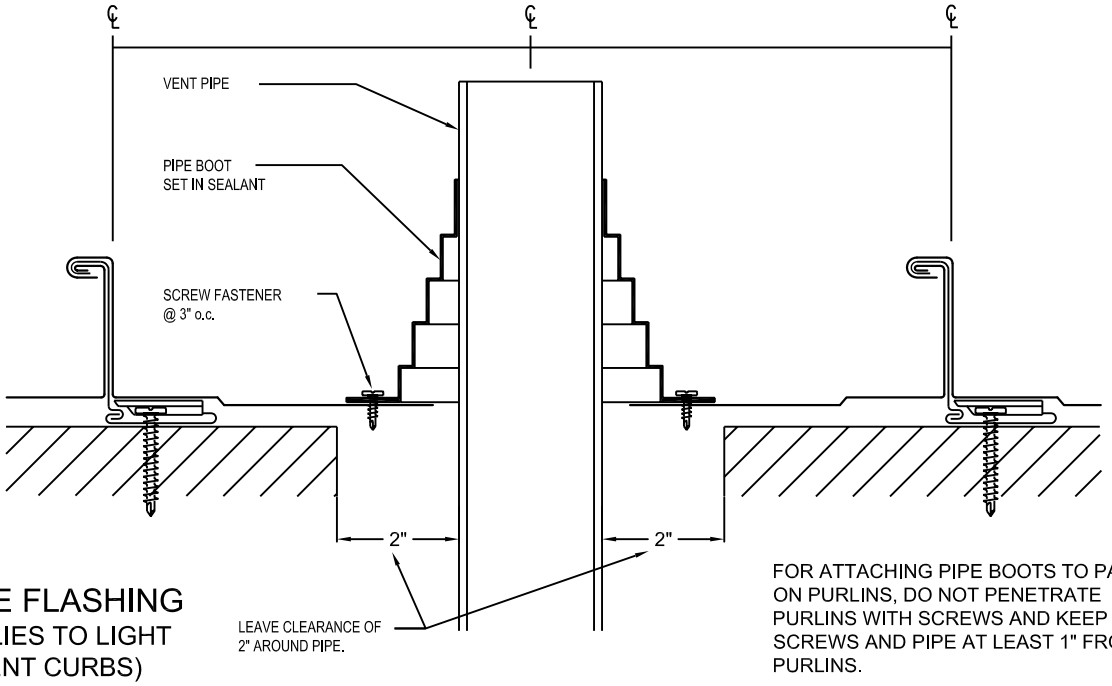


SIDEWALL DETAIL



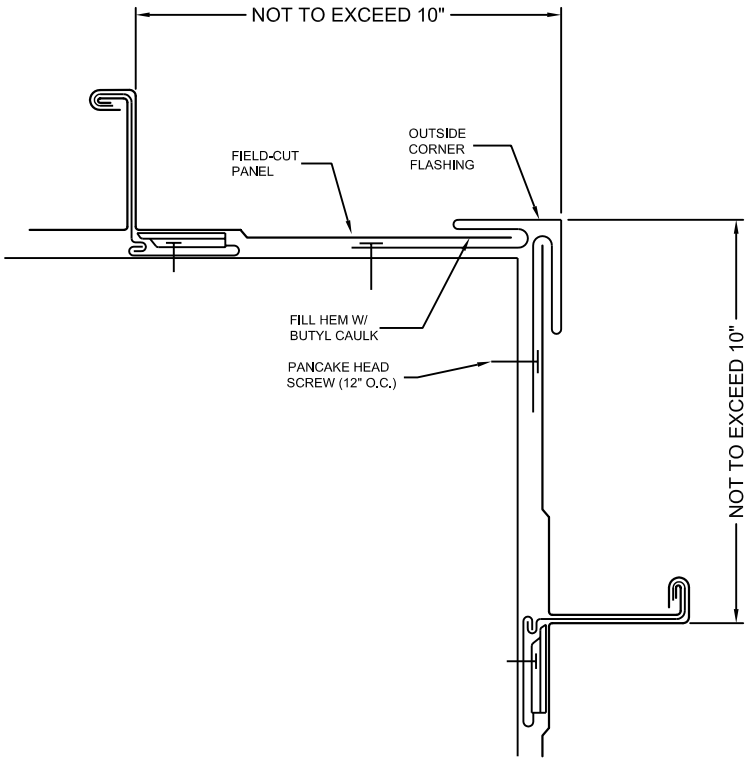
E = CALCULATED
THERMAL MOVEMENT

EXPANSION JOINT DETAIL



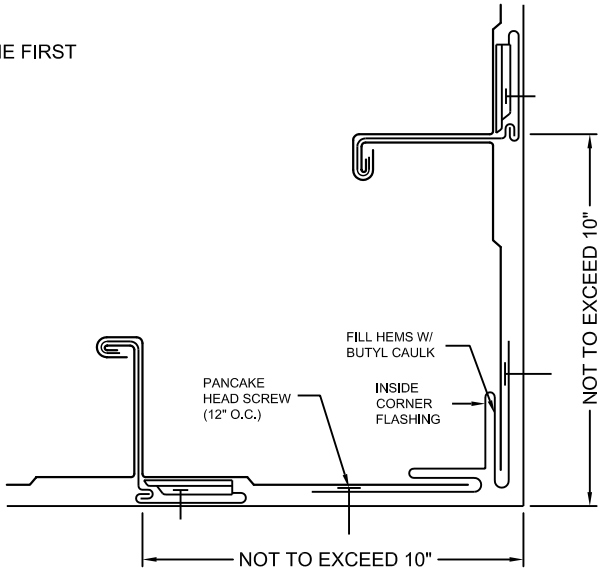
VENT PIPE FLASHING
(ALSO APPLIES TO LIGHT
EQUIPMENT CURBS)

FOR ATTACHING PIPE BOOTS TO PANELS ON PURLINS, DO NOT PENETRATE PURLINS WITH SCREWS AND KEEP SCREWS AND PIPE AT LEAST 1" FROM PURLINS.

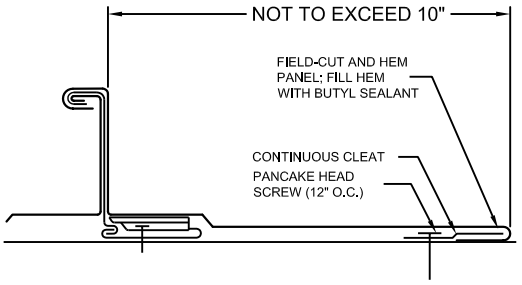


FASCIA OUTSIDE CORNER

FOR VERTICAL FASCIA PANELS LESS THAN 10' LONG, MAKING THE FIRST FOLD ONLY OF THE SEAM IS PERMISSIBLE.

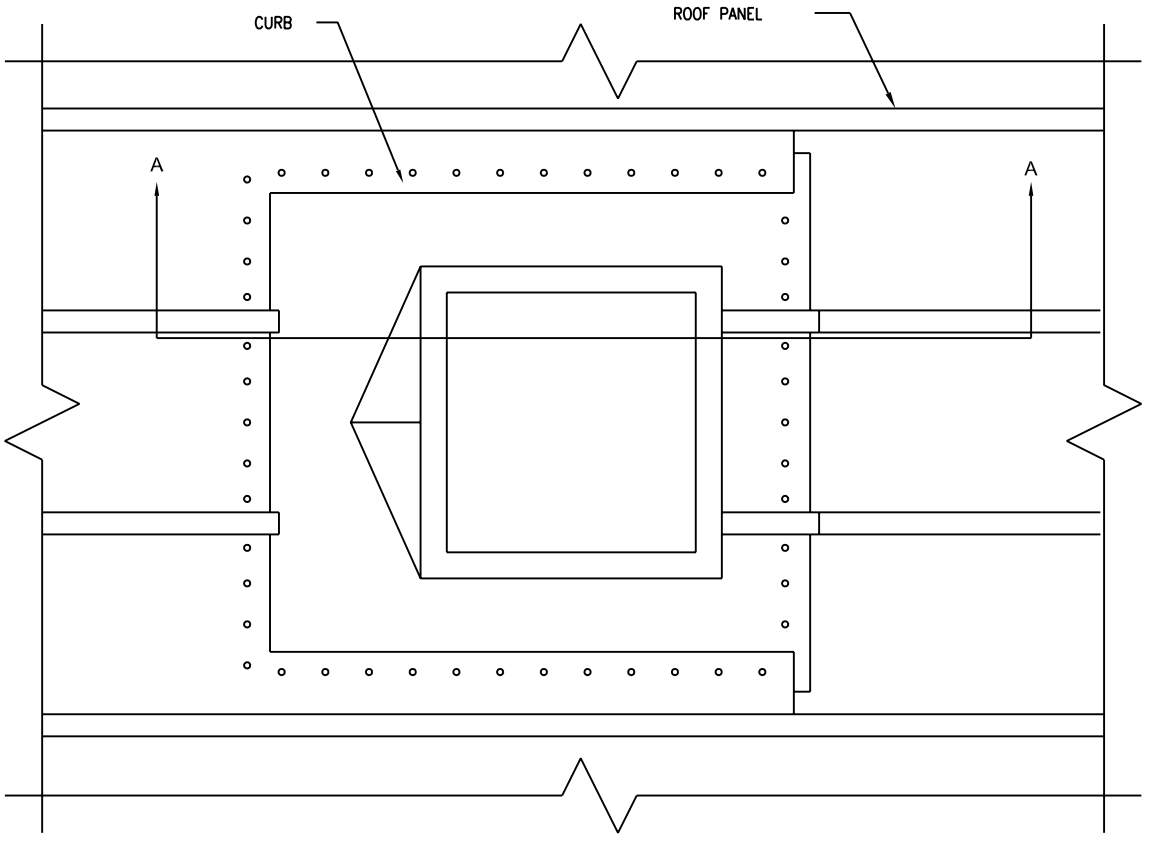


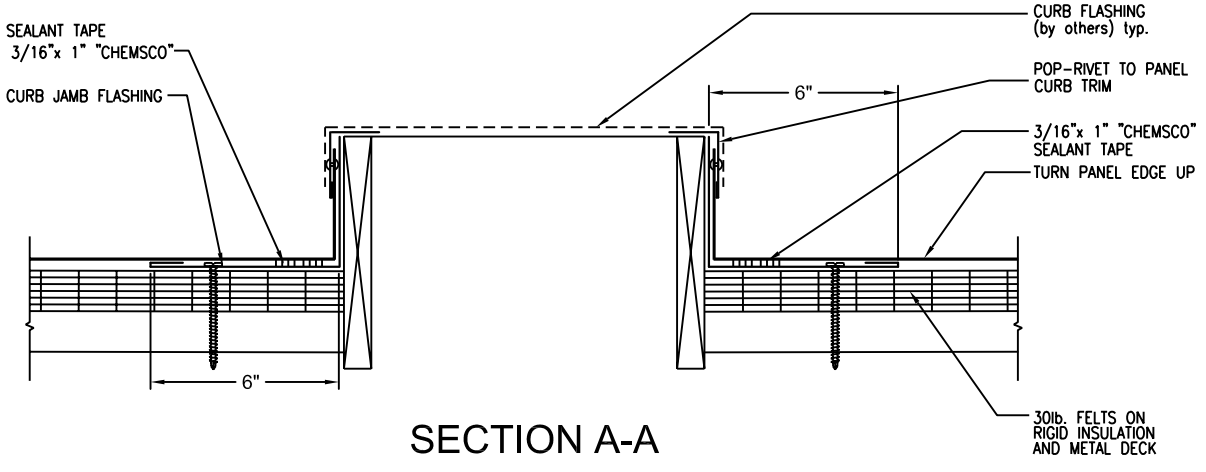
FASCIA INSIDE CORNER



FASCIA EDGE

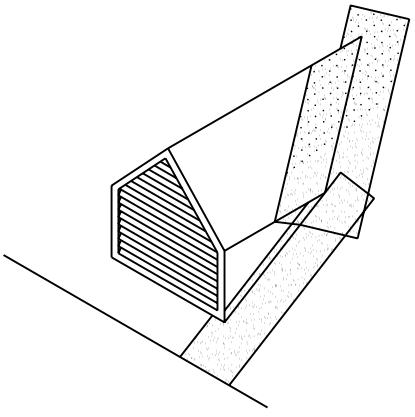
PRE-FAB ROOF CURB



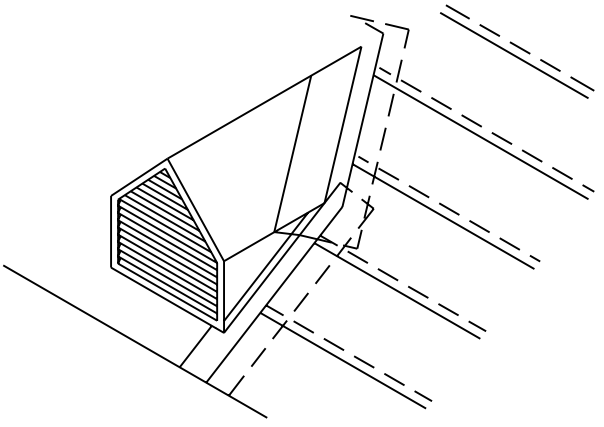


SECTION A-A

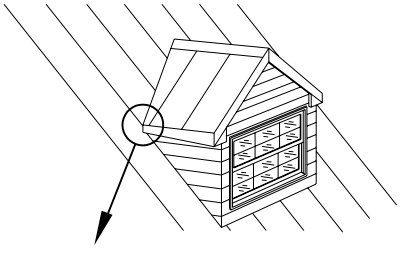
1 SET 36" WIDE ICE & WATER SHEILD

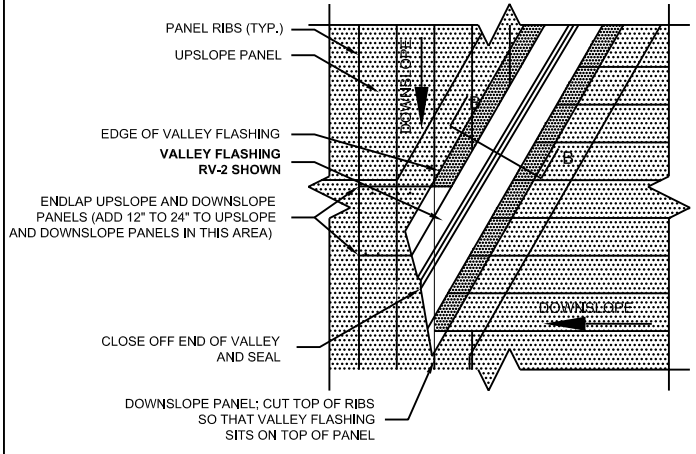


2 SET 30# FELTS, LAP 6", START AT EAVE

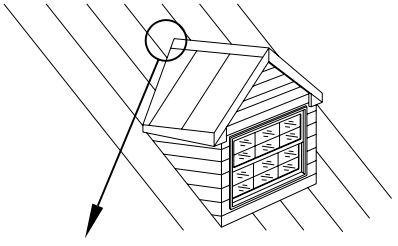


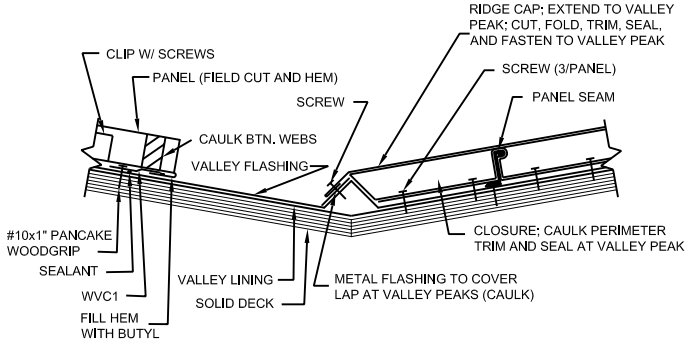
3 SET RAKEWALL TRIM WITH J-CLEAT



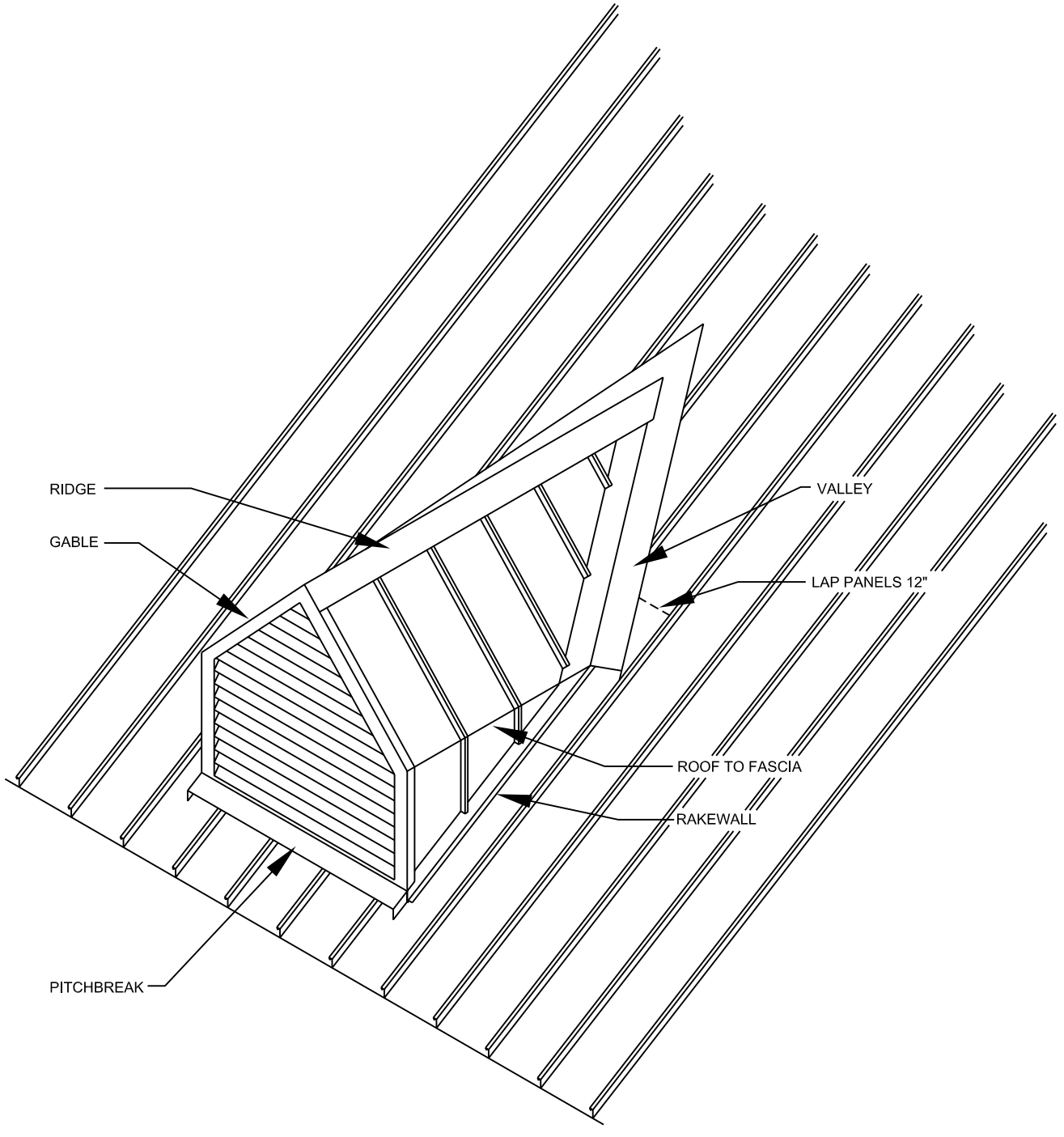


4 SET VALLEY TRIM WITH CLEATS





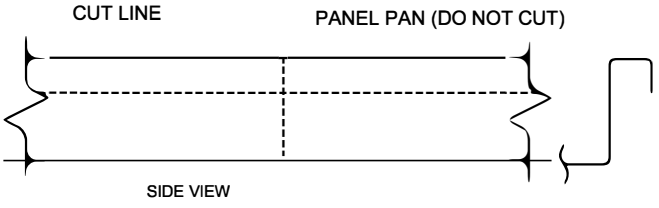
5 PANELS IN PLACE



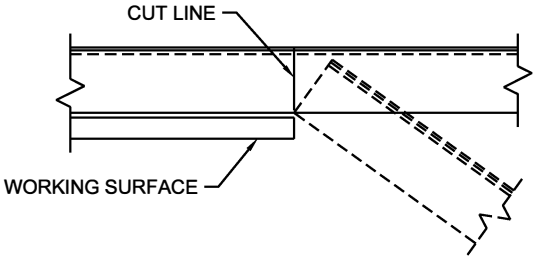
OUTSIDE BEND DETAILS

1. Measure and mark the distance from the end of the panel to the bend point.

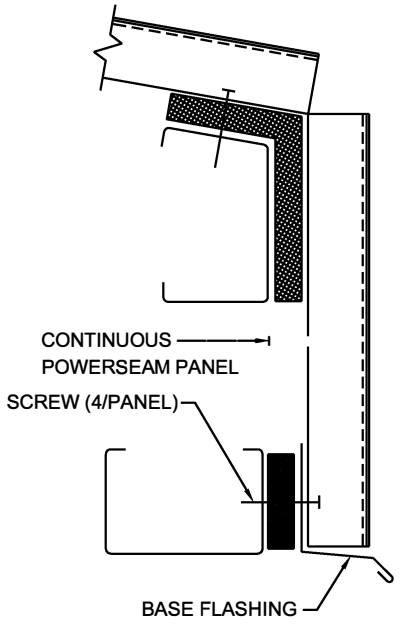
2. Cut the panel flanges and webs to the radius corner. It may be necessary to make V-notches at the flanges to cut the webs.



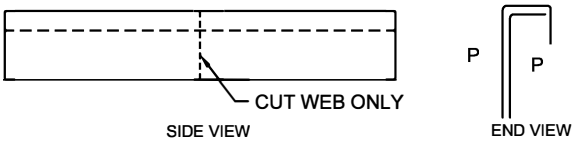
3. Set the panel on a firm, flat, working surface. Apply downward pressure at the bend line. Bend the panel beyond the desired angle. Then, return the panel bend to the desired angle to set the crease.



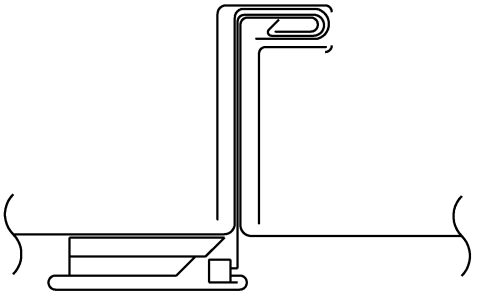
4. Even if the project is uninsulated, it is still necessary to place 4" thick insulation continuously over the eave and base structural members. Place the base flashing over the insulation to prevent water siphoning. Place the panel into position. Attach the panel to the girt with four screws per panel. Seal the ends of the webs at the base with caulk.



5. Cut two filler plates to a length of 8". Cut the filler plates' webs at their midpoints. Bend the filler plates to the desired angle with the webs of the upslope portion outside the webs of the downslope portion. Apply the filler plates between adjacent panels' webs. Caulk between the filler plates and panel webs. Apply caulk to the top of the filler plates' flanges.

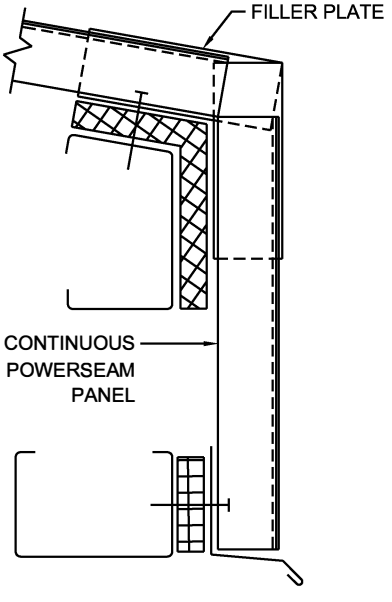


END VIEW



AFTER SEAM

6. Seal all cuts with clear caulk.



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