



Craftsman™

Technical/Installation Information

IMPORTANT NOTICE

READ THIS MANUAL COMPLETELY PRIOR TO BEGINNING THE INSTALLATION OF THE CRAFTSMAN SERIES PANELS.

IF THERE IS CONFLICT BETWEEN PROJECT ERECTION DRAWINGS PROVIDED OR APPROVED BY MBCI AND DETAILS IN THIS MANUAL, PROJECT ERECTION DRAWINGS WILL TAKE PRECEDENCE.

ALWAYS INSPECT EACH AND EVERY PANEL AND ALL ACCESSORIES BEFORE INSTALLATION. NEVER INSTALL ANY PRODUCT IF ITS QUALITY IS IN QUESTION. NOTIFY MBCI IMMEDIATELY IF ANY PRODUCT IS BELIEVED TO BE OUT OF TOLERANCE OR HAS BEEN DAMAGED DURING SHIPMENT.

The Engineering data contained herein is for the expressed use of customers and design professionals. Along with this data, it is recommended that the design professional have a copy of the most current version of the North American Specification for the Design of Cold-Formed Steel Structural Members published by the American Iron and Steel Institute to facilitate design. This Specification contains the design criteria for cold-formed steel components. Along with the Specification, the designer should reference the most current building code applicable to the project jobsite in order to determine environmental loads. If further information or guidance regarding cold-formed design practices is desired, please contact the manufacturer.

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. In a continuing effort to refine and improve products, MBCI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. **To ensure you have the latest information available, please inquire or visit our website at mbci.com.** Application details are for illustration purposes only and may not be appropriate for all environmental conditions, building designs or panel profiles. Projects should be designed to conform to applicable building codes, regulations and accepted industry practices. If there is a conflict between this manual and project erection drawings, the erection drawings will take precedence.

For complete performance specifications, product limitations, and disclaimers, please consult MBCI's Paint and Galvalume Plus® warranties. Upon receipt of payment in full, these warranties are available upon request for all painted or Galvalume Plus® prime products. Sample copies can be found at mbci.com or contact your local MBCI Sales Representative.

TABLE OF CONTENTS

PRODUCT INFORMATION

Architect/Engineer Information	CS-4
Installation Guidelines	CS-6

SPECIFICATIONS

Specifications	CS-6 - C-10
----------------------	-------------

SMALL BATTEN GENERAL INFORMATION

General Description	CS-11
UL 90 Requirements	CS-12
Product Checklist	CS-13 - CS-14

SMALL BATTEN DETAILS

Panel	CS-15
Endlap	CS-16
Ridge/Hip	CS-17
Peak Cap.	CS-18
Field Hemming Panel End	CS-19
Valley	CS-20
Rake	CS-21
Eave Trim	CS-22
Gutter	CS-23
Parapet Details	
High Eave	CS-24
Peak Cap.	CS-25
Rake	CS-26
Miscellaneous Details	
Roof Transition	CS-27
Slope Change	CS-28
Rigid Board Over Metal Deck	CS-29
Snow Gutter	CS-30

HIGH BATTEN GENERAL INFORMATION

General Description	CS-31
UL 90 Requirements	CS-32
Product Checklist	CS-33 - CS-34

HIGH BATTEN DETAILS

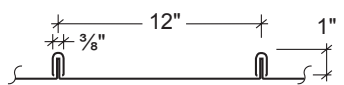
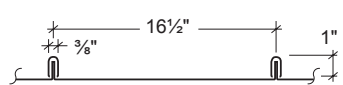
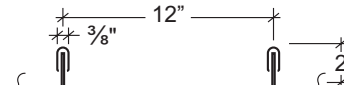
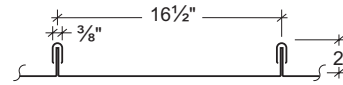
Panel	CS-35
Endlap	CS-36
Ridge/Hip	CS-37
Peak Cap.	CS-38
Field Hemming Panel End	CS-39
Valley	CS-40
Rake	CS-41
Eave Trim	CS-42
Gutter	CS-43
Parapet Details	
High Eave	CS-44
Peak Cap.	CS-45
Rake	CS-46
Miscellaneous Details	
Roof Transition	CS-47
Slope Change	CS-48
Rigid Board Over Metal Deck	CS-49
Snow Gutter	CS-50

PRODUCT INFORMATION

ARCHITECT/ENGINEER INFORMATION

1. Use a properly aligned and uniform substructure to avoid panel distortion. Typical substructures-plywood (5/8" minimum), light weight concrete, metal decking or OSB. All substructures must be properly engineered to meet specified design loads. For illustration purposes, details are shown over plywood decking. For other substructures, please inquire.
2. Craftsman™ panels are water shedding panels. Minimum roof slope is 3:12. The panels must be installed over a completely waterproofed substructure. If the waterproof membrane is mechanically attached with metal fasteners of any type, fasteners should be covered to protect the back side of the roof panels. Any mechanical attachment device that does not lay flat on the deck will telegraph through the panels.
3. Narrower widths, heavier gauges, and embossing minimize oil canning. Industry standard - 12" wide, 24 gauge. Oil canning is not a cause for rejection.
4. For continuous roof panels over 40', please inquire. Panels may be endlapped.
5. Craftsman™ panels can be used on roofs with transitions or slope changes.
6. All panels are subject to surface distortion due to improperly applied fasteners. Overdriven fasteners will cause stress and induce oil canning across the face of the panel at or near the point of attachment. Standard MBCI fasteners are recommended for attachment to metal and wood for all architectural panels, including Craftsman™ panels. Use maximum caution when fastening to a wood substructure.
7. All panels require sealant at eave or valley conditions.
8. Avoid restricting the thermal expansion and contraction of the Craftsman™ panels. (i.e. Do not attach panel to the substructure at both the eave and ridge.)

The Craftsman™ Series is a snap-on batten roof system, available in a small or high batten. The pan and batten are manufactured separately to maximize design flexibility and for ease of installation at difficult hip, valley and slope change conditions.

12" COVERAGE	16 1/2" COVERAGE	
 SB12	 SB16.5	Small Batten Information begins on page CS-11
 HB12	 HB16.5	High Batten Information begins on page CS-31
Specifications begin on page CS-6		

WARNING

As with all standing seam roof systems, sound attenuation should be considered to prevent "roof rumble noise" during windy conditions.

Applications over solid deck such as rigid insulation over a metal deck or a wood deck may require additional acoustical consideration to ensure that thermal vibration noises are isolated from the building interior. This is especially important if the bottom of the deck is left open to the interior, in cathedral ceiling applications or when the attic space is used as a return air plenum.

A vapor retarder may be necessary to protect roofing components when high humidity is a factor. The need for a vapor retarder, as well as the type, placement and location should be determined by an architect or engineer. The following are examples of conditions that may require a vapor retarder: (A) a project where outside winter temperatures below 40 degrees F. are anticipated and where average winter interior relative humidity of 45% or greater is expected. (B) building usages with high humidity interiors such as indoor swimming pools, textile manufacturing operations, food, paper or other wet-process industrial plants. (C) Construction elements that may release moisture after the roof is installed, such as interior concrete, masonry or plaster work and fuel burning heaters.

PRODUCT INFORMATION

INSTALLATION GUIDELINES

I. Pre-Order

- A. Prior to ordering panels, all dimensions should be confirmed by field measurement.

II. Jobsite Storage and Handling

- A. Check the shipment against the shipping list.
- B. Damaged material must be noted on bill of lading.
- C. Panel crates should be handled carefully. A spreader bar of appropriate length is recommended for hoisting.
- D. Check to see that moisture has not formed inside the bundles during shipment. If moisture is present, panels should be uncrated and wiped dry, then restacked and loosely covered so that air can circulate between the panels.

III. Application Checklist

- A. Check substructure for proper alignment and uniformity to avoid panel distortion.
- B. Waterproof membrane should be protected from damage until the roof panels are installed. However, if membrane is damaged, repair of the membrane is necessary prior to panel installation. Always install membrane in such a manner that will allow for water shedding.
- C. Prior to installation of panels, roof should be swept clean of any debris.
- D. Care should be taken to place clip snug against vertical leg of panel and flush on the substructure surface.
- E. Periodic check of panel alignment is crucial to proper panel installation.
- F. For proper appearance, ribs must line up at valleys and ridges/hips.
- G. Panels should be cut on the ground to minimize cut filings on adjacent panels. Keep panels clean during installation. **DO NOT STEP ON PANELS.**
- H. A low profile fastener, such as a pancake head screw, is required for panel installation.

SPECIFICATIONS

Specifier: Notation [#] means that text following is a specifier's note or sample.

PART 1 - GENERAL

1.01 DESCRIPTION

Specifier: Do not alter paragraph "A" except by adding section title in brackets.

A. General:

1. Furnish all labor, material, tools, equipment and services for all preformed [# choose one: roof, fascia, mansard, equipment screens] as indicated, in accord with provisions of Contract Documents.
2. Completely coordinate with work of all other trades.
3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
4. See Division 1 for General Requirements.

B. Related work specified elsewhere:

1. Structural steel: Section 05100.
2. Steel joists: Section 05200 or 05400.
3. Flashing and sheet metal: Section 07600.

Specifier: Delete references to sections not used and add any references which become pertinent.

1.02 QUALITY ASSURANCE

A. Applicable standards:

1. SMACNA: "Architectural Sheet Metal Manual", Sheet Metal and Air Conditioning Contractors National Association, Inc.
2. AISC: "Steel Construction Manual", American Institute of Steel Construction.
3. AISI: "Cold Form Steel Design Manual", American Iron and Steel Institute.
4. UL: "Tests for Uplift Resistance of Roof Assemblies", Underwriters Laboratories, Inc.
5. ASTM E 283-84: "Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen", American Society for Testing and Materials.
6. ASTM E 331-83: "Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference", American Society for Testing and Materials.
7. ASTM A 792-83-AZ50: "Specifications for steel sheet, aluminum-zinc alloy coated (galvanized) by the hot dip process, general requirements (Galvalume)", American Society for Testing and Materials.

B. Manufacturer's qualifications:

1. Manufacturer has a minimum of three years experience in manufacturing panels of this nature. Panels specified in this section shall be produced in

a factory environment (not job site) with fixed-base roll forming equipment to assure the highest level of quality control. A letter certifying compliance should accompany the product material submittals.

C. Installer's qualifications:

1. Installer of the system shall be an approved installer, certified by the manufacturer, specifically for MBCI's Craftsman™ Series roof system and meet the following minimum criteria:
 - a. Maintain a \$250,000 general liability coverage for each loss.
 - b. Maintain sufficient worker's compensation coverage as mandated by law.
 - c. Has no viable claims pending regarding negligent acts or defective workmanship on previously performed or current projects.
 - d. Has not filed for protection from creditors under any state or federal insolvency or debtor relief statutes or codes.
 - e. Project foreman is the person having received specific training in the proper installation of the specified system and will be present to supervise whenever material is being installed. Specific training program shall include the following:
 1. The instructor must have a minimum of 10 years' experience.
 2. A formal curriculum.
 3. Classroom instruction with review and thorough understanding of the specific product's technical manual.
 4. Hands-on mock-up instruction with a review and thorough understanding of the specific product's details.
 5. The installer must pass a written and oral exam.
 - f. Provide five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installer.
 - g. Provide certification letter that installer has a minimum of three years' of metal product installation experience immediately preceding the date upon which work is to commence.

D. Installation Quality Control:

1. The general contractor shall provide a third party independent metal roofing consultant, working for the general contractor and approved by the metal roofing system manufacturer, to approve the metal roof system installation drawings and inspect the installation of the Craftsman™ Series roof system at the following times of the roof installation:
 - a. At completion of the first assembly of secondary framing.
 - b. At the first assembly of substrates.
 - c. Prior to installing a typical roof curb.
 - d. Prior to installing a typical trim component.e.

SPECIFICATIONS

Prior to installing an unusual component or condition.

- f. At final completion of all roofing work.
2. The third party independent roofing consultant shall provide written and photographic reports to be submitted to the architect (owner), roofing manufacturer, roofing installer and general contractor appraising the installation of the roofing system at each of the above project progress stages. The installer shall make all necessary corrections, additions or remedial actions to resolve any issues raised in the reports.
3. The third party independent roofing consultant shall have the authority to have any and all roofing work corrected, as required, to insure the proper installation and weathertightness of the roofing system.

1.03 SYSTEM PERFORMANCE REQUIREMENTS

A. Performance Testing:

1. Metal roof system must be tested in accordance with Underwriters Laboratories, Inc. (UL) Test Method 580 "Tests for Uplift Resistance of Roof Assemblies".
2. Metal roof system must be installed in accordance with UL Construction Method [# choose one: 280 or 310 (Small Batten) or 282 or 309 (High Batten)]. See the current UL Roofing Materials and Systems Directory for requirements of each Construction Method.
3. Panel clip spacing will not exceed spacings specified in the UL Construction Method and must be designed to meet requirements of specified building codes and design loads.
4. Resist the roof design pressures calculated in accordance with [# choose one: SBCCI, UBC, BOCA, ASCE or an applicable national or local building code]. Determine panel bending and clip-to-panel strength by testing in accordance with UL Test Method 580. Capacity for gauge, span or loading other than those tested may be determined by interpolating test results. Use a minimum factor of safety of 1.5 for wind uplift design in accordance with Chapter F of AISI 1986.
5. [# Small Batten or High Batten only] Metal roof system must be tested in accordance with ASTM E 283-84 "Standard Test Method for Air Infiltration" with a uniform static air pressure differential of 4 psf. The resulting air infiltration leakage rate will be a minimum of [# choose one: 0.048 cfm/sq ft (Small Batten-12" or High Batten-12") or 0.035 cfm/sq ft (Small Batten-16 1/2" or High Batten-16 1/2")].
6. [# Small Batten or High Batten only] Metal roof system must be tested in accordance with ASTM E 331-83 "Standard Test Method for Water Penetration" with a uniform static air pressure

differential of 4 psf. The resulting water penetration rate will be no uncontrollable water leakage when five gallons of water per hour is sprayed per square foot of roof area (five gallons per hour equates to 8 inches of rainfall per hour).

1.04 SUBMITTALS

A. Shop drawings:

1. Submit complete shop drawings and erection details, approved by the general contractor's third party metal roof consultant, to the architect (owner) for review. Do not proceed with manufacture prior to review of shop drawings. Do not use drawings prepared by the architect (owner) for shop or erection drawings.
2. Shop drawings show methods of erection, elevations and plans of roof and wall panels, sections and details, anticipated loads, flashings, roof curbs, vents, sealants, interfaces with all materials not supplied and proposed identification of component parts and their finishes.

B. Performance Tests:

1. Submit certified test results by a recognized testing laboratory or agency stating the metal roof system has been tested in accordance with the specified test methods listed in "1.03 System Performance Requirements" for each metal roof system specified in this section.

C. Calculations:

1. Submit engineering calculations defining the metal roof system design loads for all roof areas based on specified building codes, allowable clip loads and required type and number of fasteners per clip to secure the panel clips to the specified roof substructure.
2. Compute uplift loads on clip fasteners with full recognition of prying forces and eccentric clip loading. Calculate holding strength of fasteners in accordance with submitted test data provided by the fastener manufacturer based on length of embedment and properties of materials.

D. Samples:

1. Submit samples and color chips for all proposed finishes.
 - a. Submit one 8 inch long sample of panel, including clips and battens.
 - b. Submit two 3 inch x 5 inch color chip samples in color selected by the architect (owner).

E. Warranty(s):

1. Metal roof system manufacturer, upon final acceptance for project, furnish a warranty covering bare metal against rupture, structural failure and perforation due to normal atmospheric corrosion exposure for a period of 20 years.
2. Covering paint finish against cracking, checking, blistering, peeling, flaking, chipping, chalking and

SPECIFICATIONS

fading for a period of [# choose one: twenty (20) years for roof panels (premium thermoset silicone polyester) or twenty (20) years for wall panels and twenty (20) years for roof panels (premium fluorcarbon coating produced with Kynar 500 or Hylar 5000 resin)].

F. Metal roof system fabrication certification:

1. Submit a letter from the metal roof system manufacturer certifying the Craftsman™ Series panels have been produced in a factory environment (not job site roll formed) with fixed-base roll forming equipment.

G. Third party metal roof consultant approval:

1. Submit a letter from the metal roof system manufacturer indicating acceptance of the general contractor's third party metal roof consultant for use on this specific project.

H. Installation contractor's qualifications:

1. Submit certificate from manufacturer certifying that installer of the metal roof system has met all of the criteria outlined in "1.02 C. Installer's qualifications" and is an authorized installer certified by the manufacturer within one year of the beginning of installation of the metal roof system.
2. Submit the formal syllabus for the classroom and hands-on training.
3. Submit five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installation contractor.

I. Metal roof system installation inspection reports:

1. Submit written and photographic metal roof system installation inspection reports from the general contractor's third party metal roof consultant appraising the installation of the metal roof system. The written and photographic inspection reports are to be submitted to the architect (owner), metal roof system manufacturer, metal roof system installation contractor and general contractor.
2. A separate report is to be submitted for each of the following stages of the metal roof system installation:
 - a. At completion of the first assembly of secondary framing.
 - b. At the first assembly of substrates.
 - c. At completion of the first assembly of panels.
 - d. Prior to installing a typical roof curb.
 - e. Prior to installing a typical trim/flashing component.
 - f. Prior to installing an unusual component or condition.
 - g. At final completion of all metal roof system work.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver metal roof system to job site properly packaged to provide protection against transportation damage.

B. Handling:

1. Exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.

C. Storage:

1. Store all material and accessories above ground on well skidded platforms. Store under waterproof covering. Provide proper ventilation of metal roof system to prevent condensation build-up between each panel or trim/flashing component. Do not store panels in contact with other materials that might cause staining, denting or other surface damage.

PART 2 - PRODUCTS

[# CRAFTSMAN™ SERIES, for roof, fascia, mansards, equipment screens; minimum slope of 3:12]

2.01 MATERIALS

A. Metal roof system profile: [# choose one]

1. 1 inch high x 3/8 inch wide battens (Small Batten-SB) x [# choose one: 12 inch, 16 1/2 inch] wide panels.
2. 2 inch high x 3/8 inch wide battens (High Batten-HB) x [# choose one: 12 inch, 16 1/2 inch] wide panels.

B. Metal roof system style:

1. Snap on batten with factory applied mastic. (# Small Batten or High Batten only)
2. Concealed fastener.

C. Gauge: [# choose one]

1. 22 gauge.
2. 24 gauge.
3. 26 gauge. (# not for 16 1/2 inch wide panels)

D. Substrate:

1. Galvalume sheet steel, 0.5 ounces/square foot, minimum yield 50,000 PSI.

E. Clip: [# choose one]

1. One piece clip with factory applied mastic, 1 inch high by 1 inch wide by 2 inches long with one guide hole in the bottom to accommodate a clip fastener (Small Batten).
2. One piece clip with factory applied mastic, 2 inches high by 1 inch wide by 2 inches long with a guide hole in the bottom to accommodate a clip fastener (High Batten).

SPECIFICATIONS

F. Texture: [# choose one]

1. Smooth.
2. Embossed (minimizes oil canning effect).Body

G. Finish: [# choose one]

1. Premium thermoset silicone polyester (20 year warranty).
2. Premium fluorocarbon coating produced with Kynar 500 or Hylar 5000 resin (20 year warranty).
3. Bare Galvalume (20 year warranty).
4. Color Bond (for field painting - available in 24gauge only).

H. Color:

1. Selected from metal roof system manufacturer's standard offering.

I. Acceptable manufacturer:

1. MBCI - Houston, TX - (281) 445-8555.

J. Other manufacturers desiring approval, comply with Section 01630.

K. Acceptable Curb and Equipment Support units:

1. LM Curbs - Longview, TX.
2. Kentuckiana Curbs - Louisville, KY.

L. Prefabricated Roof Jacks:

1. Construction Fasteners - Wyomissing, PA.
2. ITW Buildex - Itasca, IL.

M. Rooftop Walkways:

1. Unistrut Corporation - Wayne, MI.

2.02 Miscellaneous Materials

A. Fasteners:

1. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be designed to withstand specified design loads.
 - a. Use Construction Fasteners, Inc. long life ZAC fasteners or equal for all interior and exterior metal roof system applications.
 - b. Provide fasteners with a factory applied coating in a color to match metal roof system application.
 - c. Provide neoprene washers under heads of exposed fasteners.
 - d. Locate and space all exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.

B. Accessories:

1. Provide all components required per the metal roof system manufacturer's approved shop drawings for a complete metal roof system to include panels, panel clips, battens, trim/flashing, fascias, ridge, closures, sealants, fillers and any other required items.
 - a. All outside closures will be fabricated from Galvalume sheet steel of the same gauge, finish and color as the panels.

b. All tape seal is to be a pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with a release paper backing. Provide permanently elastic, non-sagging, non-toxic, non-staining tape seal approved by the metal roof system manufacturer.

c. All joint sealant is to be a one-part elastomeric polyurethane sealant approved by the metal roof system manufacturer.

2.03 FABRICATION

- A. Material shall be in-line tension leveled prior to roll forming finished panel profile.
- B. Where possible, roll form panels in continuous lengths, full length of detailed runs.
- C. Standard panel length shall be no more than 45 feet long (for longer length availability, contact manufacturer).
- D. Fabricate trim/flashing and accessories to detailed profiles.
- E. Fabricate trim/flashing from same material as panel.
- F. Snap-on battens shall have a factory applied hotmelt mastic. (# Small Batten and High Batten only)
- G. Panel clips shall have a factory applied hot-melt mastic. (# Small Batten and High Batten only)

2.04 PREFABRICATED CURBS AND EQUIPMENT SUPPORTS

- A. Comply with loading and strength requirements as indicated where units support work of other trades. Coordinate dimensions of curbs and supports with equipment supplier/manufacturer.
- B. Fabricate curbs of structural quality aluminum or Galvalume sheet, with mitered and welded corner joints, factory primed and prepared for painting. Provide integral base plates and water diverters/crickets. Front base plate must be a minimum of 15 inches from beginning of diverter/cricket to the end of the base plate. Curbs shall be designed to install under metal roof system on the high side and over metal roof system on the low side.
- C. Minimum height of prefabricated curb will be 8 inches above the finished metal roof system.
- D. Curbs shall be constructed to match the slope of the roof and provide a level top surface for mounting equipment.
- E. Curb flanges must be constructed to match the configuration of the metal roof panels.
- F. Coordinate the size of the curbs with the mechanical contractor prior to fabrication.
- G. Submit roof curb manufacturer's shop drawings to metal roof system manufacturer for review prior to fabrication (refer to metal roof system manufacturer's standard installation details). Metal roof system manufacturer will review roof curb manufacturer's shop drawings for compatibility with metal roof system.

SPECIFICATIONS

2.05 PREFABRICATED ROOF JACKS

- A. Through-the-roof pipe flashings shall be "MASTER FLASH", manufactured by Construction Fasteners, Inc. Pipe flashings shall be a one piece [# choose one: EPDM (ethylene propylene diene monomer - for standard applications), neoprene (for exposure to petrochemicals) or silicone (for high temperature applications)] molded rubber boot having a serviceable temperature range of [# choose one: -65°F to 250°F (EPDM), -45°F to 250°F (neoprene) or -100°F to 450°F (silicone)] and shall be resistant to ozone and ultraviolet rays. Units shall have an aluminum flanged base ring that can be bent to conform to the roof panel contour. Do not install through-the-roof pipes or pipe flashings through any panel seams - install ONLY in the flat portion of the panel.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. **Examination:**
1. Inspect installed work of other trades and verify that such work is complete to a point where this work may continue.
 2. Verify that installation may be made in accordance with approved shop drawings and manufacturer's instructions. This specifically includes verifying that secondary structural members and decking (where applicable) are installed to meet UL and building code requirements. Coordinate with the metal roof system manufacturer to insure that reduced clip spacings at eaves, rakes, ridges and corner areas are accommodated.
- B. **Discrepancies:**
1. In event of discrepancy, notify the architect (owner).
 2. Do not proceed with installation until discrepancies have been resolved.

3.02 INSTALLATION

- A. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
- B. Install metal roof system in accordance with manufacturer's instructions and shop drawings.

- C. Provide concealed anchors at all panel attachment locations.
- D. Install panels plumb, level and straight with seams parallel, conforming to design as indicated.

3.03 ROOF CURB INSTALLATION

- A. Comply with metal roof system manufacturer's shop drawings, instructions and recommendations for installation of roof curbs. Refer to metal roof system manufacturer's standard installation details. Anchor curbs securely in place with provisions for thermal and structural movement.

3.04 CLEANING, PROTECTION

- A. Dispose of excess materials and remove debris from site.
- B. Clean work in accordance with manufacturer's recommendations.
- C. Protect work against damage until final acceptance. Replace or repair to the satisfaction of the architect (owner), any work that becomes damaged prior to final acceptance.
- D. Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer.

END OF SECTION

DISCLAIMER: MBCI makes no warranty, express or implied, as to the merchantability or fitness for any particular purpose of any product not manufactured by MBCI. If you choose to use a product not manufactured by MBCI, as defined herein, you take the product as is and at your own risk.

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. MBCI reserves the right to discontinue products at any time or change specifications and/or designs without notice and without incurring obligation.

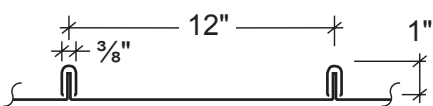
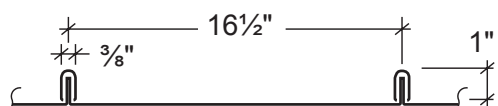
To ensure you have the latest information available, please inquire or visit our website at mbci.com.

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. In a continuing effort to refine and improve products, MBCI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. **To ensure you have the latest information available, please inquire or visit our website at mbci.com.** Application details are for illustration purposes only and may not be appropriate for all environmental conditions, building designs, or panel profiles. Projects should be engineered to conform to applicable building codes, regulations, and accepted industry practices. Insulation is not shown in these details for clarity. **If there is a conflict between this manual and the erection drawings, the erection drawings will take precedence.**

SB GENERAL INFORMATION

GENERAL DESCRIPTION

CRAFTSMAN™ SMALL BATTEN PROFILES

12" COVERAGE	16½" COVERAGE
 SB12	 SB16.5

Coverage Widths - 12" and 16½"

Minimum Slope - 3:12

Panel Attachment - SB Clip (concealed fastening system)

Panel Substrate - Galvalume® (standard)

Gauge - Standard: 24

Optional: 22 and 26 gauge

Coatings - Signature® 200, Signature® 300 and Signature® 300 Metallic

PRODUCT SELECTION CHART

PRODUCT	Signature® 300 Metallic			Signature® 300			Signature® 200			Galvalume Plus®		
	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.
Craftsman™												
12" Wide	■	●	■	■	●	■	●	●	■	●	●	■
16½" Wide		●	■		●	■		●	■		●	■

■ — Available in any quantity.

● — Minimum quantity may be required.

Other colors, finishes, gauges and materials available; please inquire.

Signature is a registered trademark of NCI Group, Inc. Galvalume and Galvalume Plus are registered and protected trademarks of BIEC International, Inc.



SB GENERAL INFORMATION

UL 90 REQUIREMENTS

Construction #280 SB Over Plywood Deck

1. Metal Panels - 24 gauge or heavier - 12" or 16½" wide, continuous over two or more spans.
2. Panel Clips - SB clip - spaced 2'-0" o.c. max.
3. Fasteners - #10 x 1" pancake head. 1 per clip.

Construction #310 SB Over Metal Deck

1. Metal Panels - 24 gauge or heavier - 12" or 16½" wide, continuous over two or more spans.
2. Panel Clips - SB clip - spaced 2'-0" o.c. max.
3. Fasteners - 1 per clip.

FIRE RESISTANCE RATING

MBCI, HOUSTON TX 77238

R8116 (R)

1. Mechanically Attached Metal Roof Panels - Type Craftsman™ SB 12" or 16½" (24 MSG). Secured by steel anchor clips. Anchor clips are attached to a hat-shaped member * (Minimum depth 1") or a bearing plate**.

For use in Design Nos. P225, P227, P230, P237, P265, P268, P508, P510, P512, P701, P711, P720, P722, P726, P731, P734, P801, P815, P819.

*Hat-shaped member to be a minimum of 16 gauge. The member will be fastened through the roof insulation to the steel roof deck with No. 14 self-drilling and/or self-tapping fasteners. Spacing to be determined by the structural loading requirements. In addition, any compressible UL Classified glass fiber blanket insulation with or without a vapor-retarder facing may be used between the specified roof insulation and the metal roof panels.

**Bearing plate to be a minimum of 16 gauge. Member will be fastened through the roof insulation to the steel deck with No. 14 self-drilling and/or self-tapping fasteners.

See UL Fire Resistance Directory for details of illustrations and fire resistance hourly ratings.

CAUTION

For UL 90 Rated Roofs, the above requirements must be followed. See UL Roofing Materials and Systems Directory for additional requirements. If you have any questions, call MBCI before proceeding.

SB GENERAL INFORMATION

PRODUCT CHECK LIST

SB Panel SB-12 ☐ SB -16.5 ☐	SB Batten With Mastic FL-566 ☐	SB Clip With Mastic HW-4500 ☐
Fasteners Pancake Head - Type A Fastener #13A ☐ #14 Dekfast ☐ Pop Rivet Fastener #14 ☐	Perforated Vent Drip FL-254 ☐	Panel Hemming Tool HW-602 ☐
Cleats Offset Cleat T-5131 ☐ Continuous Cleat T-5121 ☐	Batten Cap Coupler FL-560 ☐ Bearing Plate HW-7500 ☐	Urethane Sealant HW-540 - (White) ☐ HW-541 - (Gray) ☐ HW-542 - (Bronze) ☐ HW-544 - (Almond) ☐ Double Bead Tape Sealer HW-504 ☐
Ridge/Hip Flash DIM "A" Part No. 4Zx1 T-5071 ☐ 5Zx1 T-5073 ☐	Ridge Flash for Vent T-5089 ☐	Peak Cap T-5079 ☐

NOTE: All trim to be 24 gauge material unless noted.
SUBJECT TO CHANGE WITHOUT NOTICE

SEE mbci.com FOR CURRENT INFORMATION

REV 00.04

CS-13

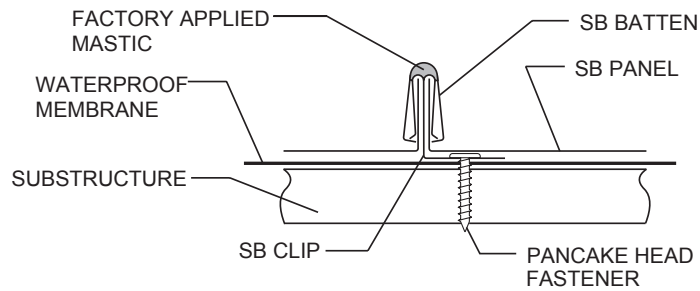
SB GENERAL INFORMATION

PRODUCT CHECKLIST

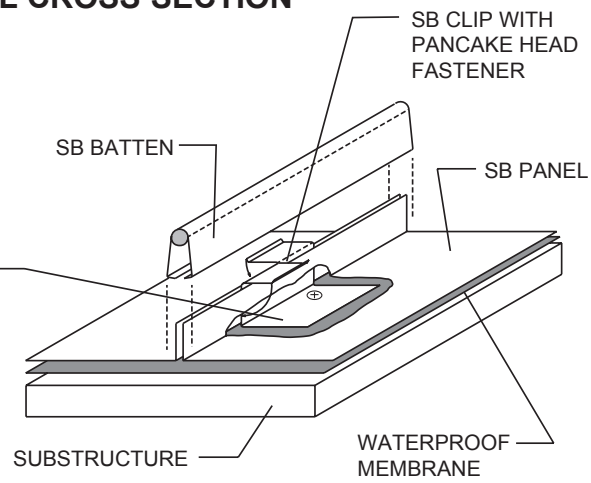
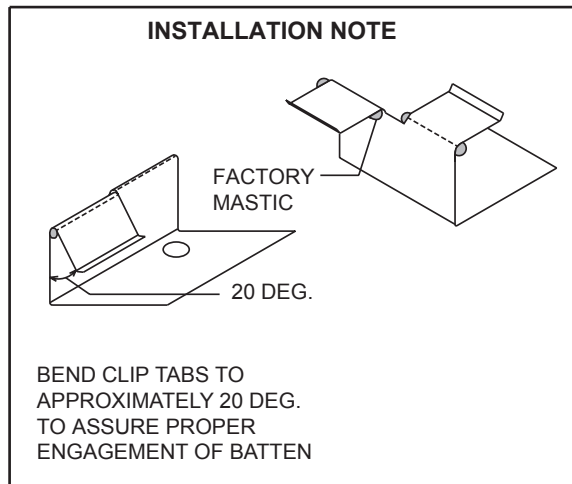
Rake Trim T-5233 ☐	Zee Closure T-5011 ☐ Cee Closure T-5031 ☐	Valley Trim Standard (Valleys 30' or less) T-5091 ☐ Extended (Valleys over 30') T-5095 ☐
Eave Trim T-5143 ☐	Gutter T-5261 ☐ Gutter Strap T-5281 ☐	Counterflashing T-5225 ☐
Eave with Extended Drip Edge T-5151 ☐	Gutter with Drip Edge T-5271 ☐	Alternate Counterflashing T-5221 ☐
Parapet High Side Eave Flash T-5213 ☐	Parapet Rake Trim T-5217 ☐	Angle Trim T-5055 ☐

SB DETAIL

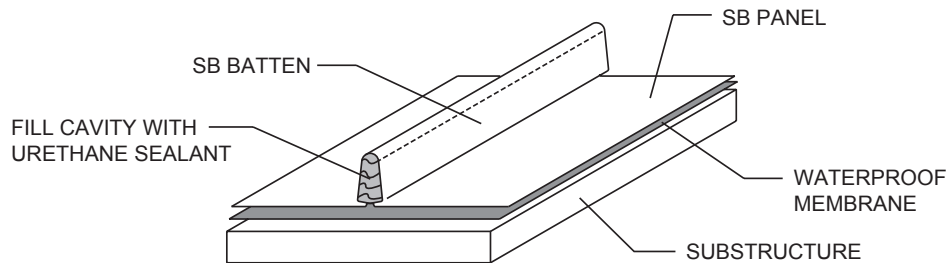
TYPICAL DETAILS PANEL



INSTALLED PANEL CROSS SECTION



BATTEN END SEALANT DETAIL



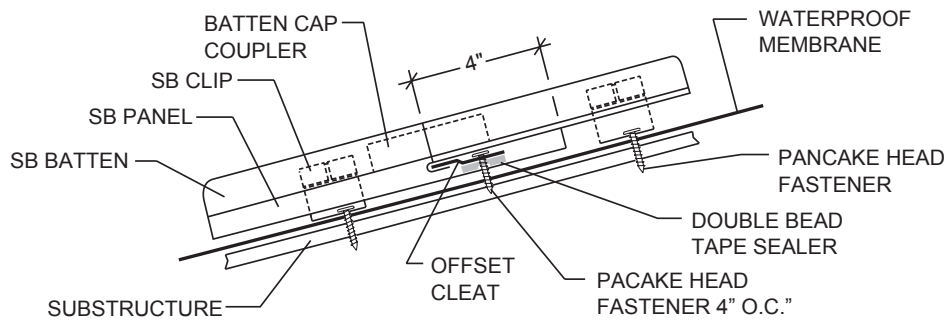
BATTEN END SEALANT DETAIL

NOTES:

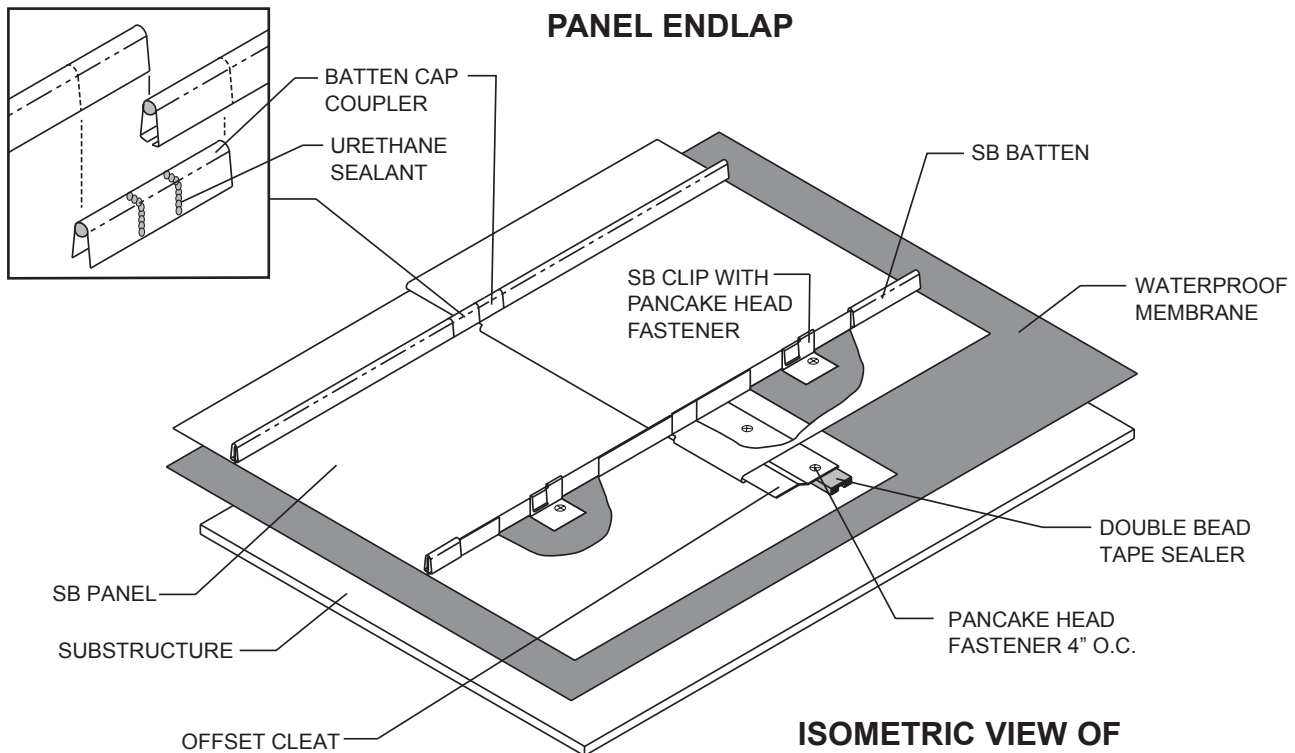
1. Factory applied mastic in battens is mandatory.
2. If it is necessary to raise the tabs of a clip up after they have been bent down into place, the clip must be replaced to prevent clip failure.
3. Clips to be installed on 2'-0" o.c. unless otherwise instructed on roof plans.
4. Ends of panels should be sealed with urethane sealant at all eave and valley conditions.

SB DETAIL

TYPICAL DETAILS ENDLAP



CROSS SECTION OF PANEL ENDLAP



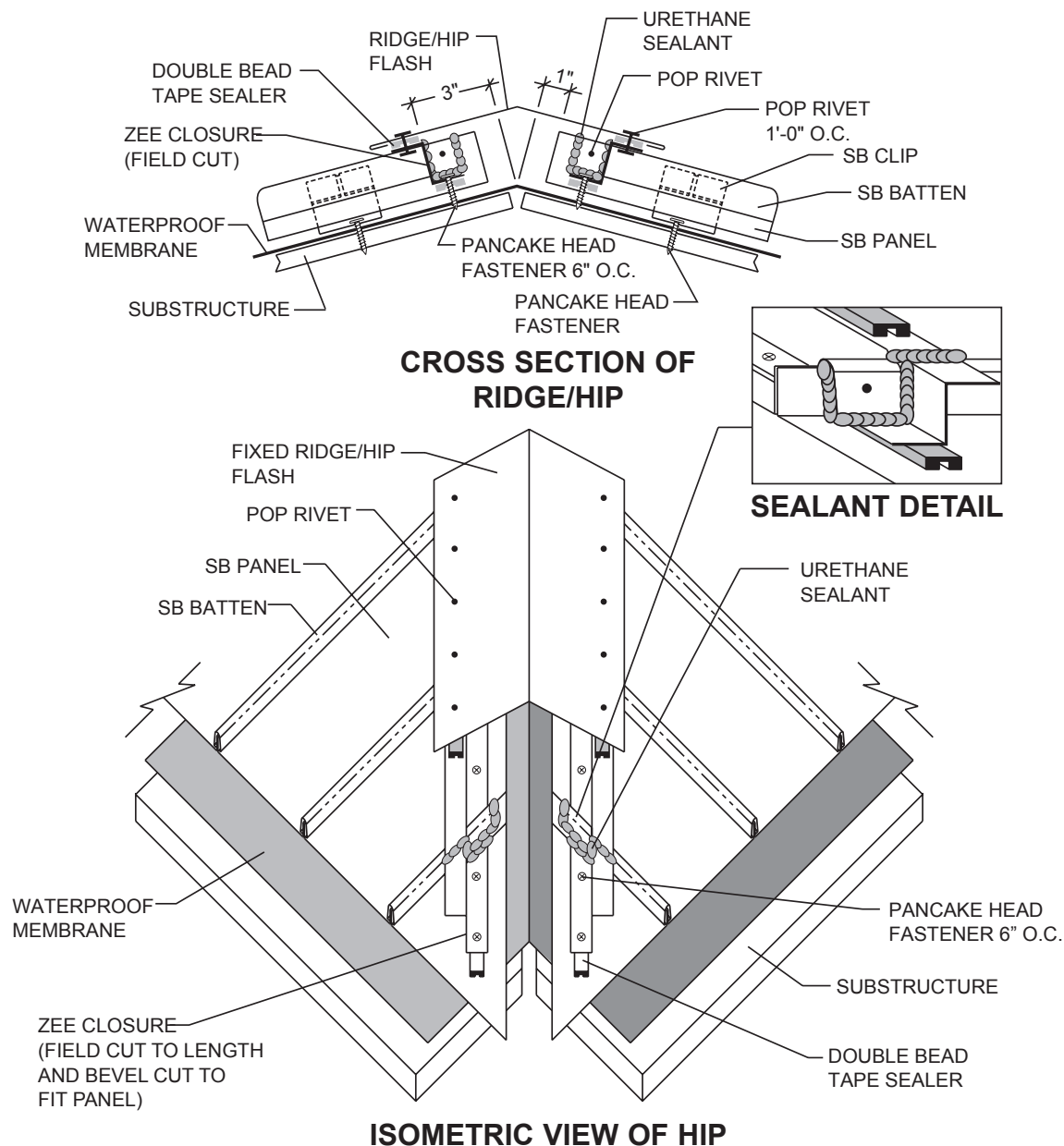
ISOMETRIC VIEW OF PANEL ENDLAP

NOTES:

1. Panels are lapped 4".
2. Install double bead tape sealer across width of bottom panel. Center of tape sealer should be 2" from upslope end of panel.
3. Attach offset cleat to bottom panel with pancake head fasteners. Use four fasteners per panel for 12" wide panels and five fasteners per panel for 16½" wide panels. Fasteners must go through tape sealer. Apply urethane sealant up vertical legs of panels in line with tape sealer.
4. Field hem top panel (see page CS-13) and engage onto offset cleat.
5. To connect two battens, snap first batten to panels except for last two feet. Field cut a 4" long batten cap coupler from 10' stock. Apply a bead of urethane sealant across coupler approximately 1" from one end. Slide this end into the end of the first batten. Apply a bead of urethane sealant across coupler approximately 1" from other end and slide the second batten onto the coupler until it butts the first batten. Holding the two battens together, snap the last 2' of the first batten down and continue by snapping the second batten completely down.

SB DETAIL

TYPICAL DETAILS RIDGE/HIP

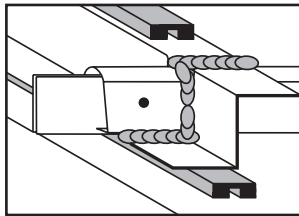
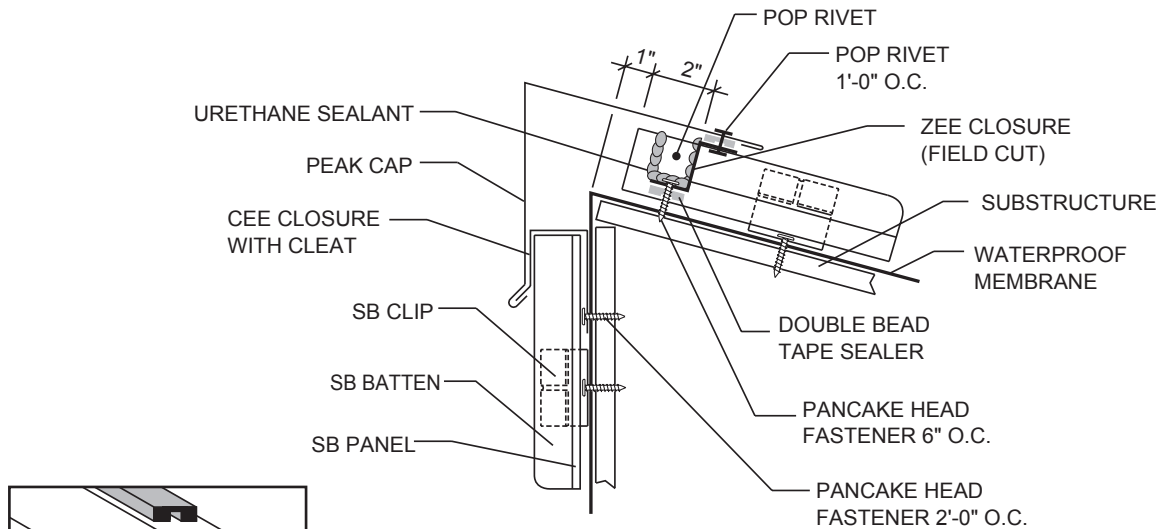


NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. At ridge, use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. At hips, install fasteners 6" o.c. maximum. Install zee closures so that ridge/hip flash will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach ridge/hip flash to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

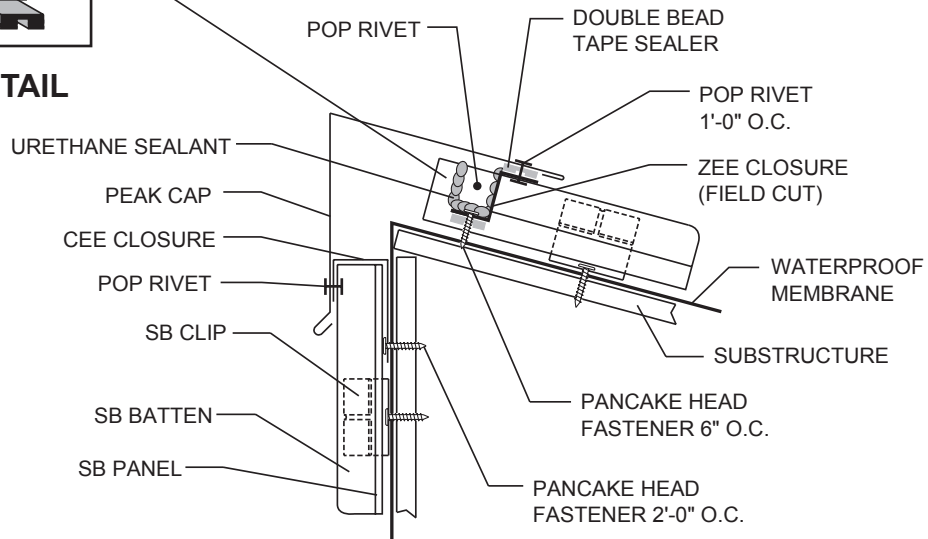
SB DETAIL

TYPICAL DETAILS PEAK CAP



SEALANT DETAIL

PEAK CAP WITH cee CLOSURE CLEAT



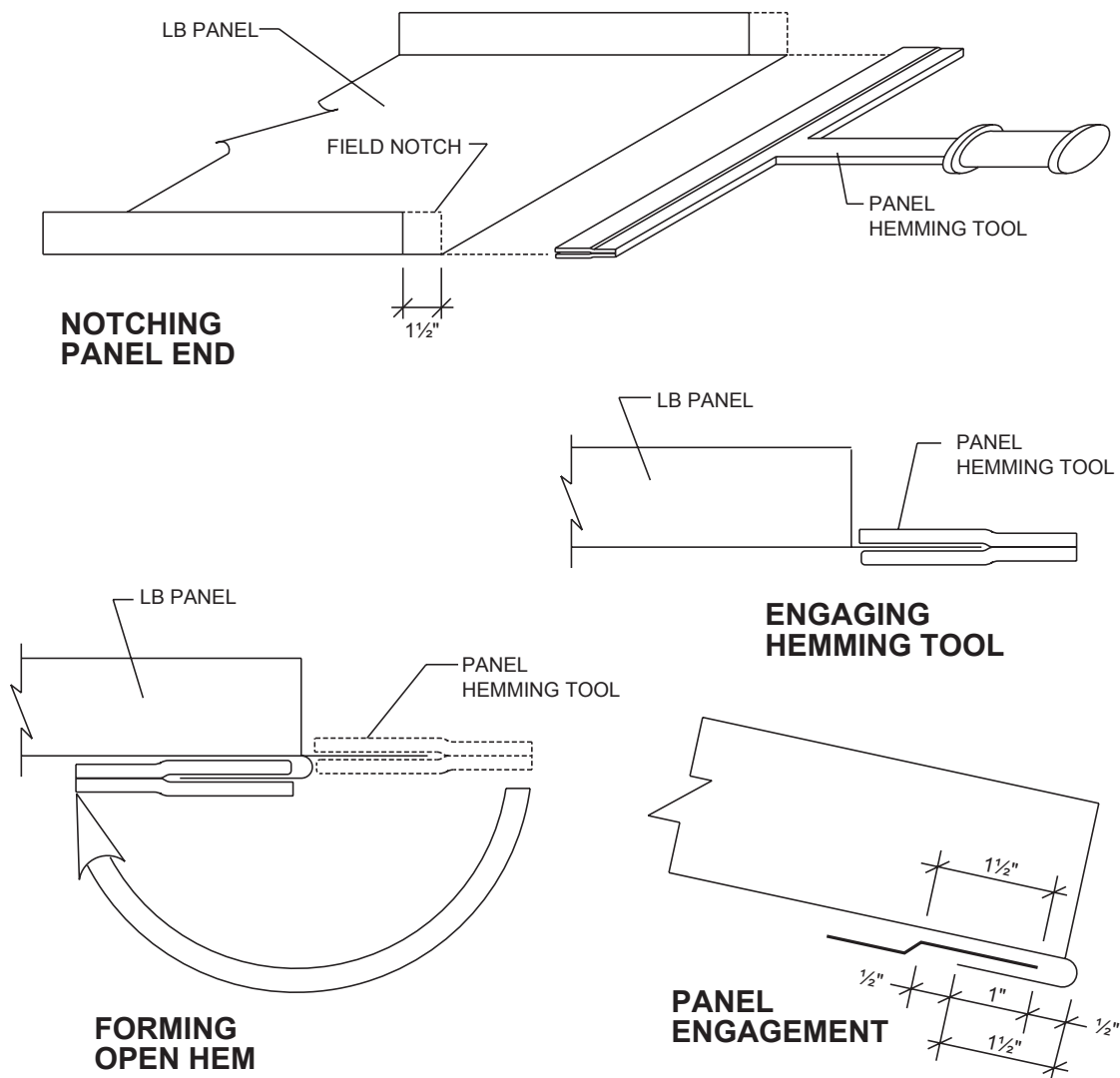
PEAK CAP WITH cee CLOSURE

NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. Install zee closures so that peak cap will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach peak cap to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**
6. When using cee closure with cleat, order peak cap with open hem at the bottom.

SB DETAIL

TYPICAL DETAILS FIELD HEMMING PANEL END

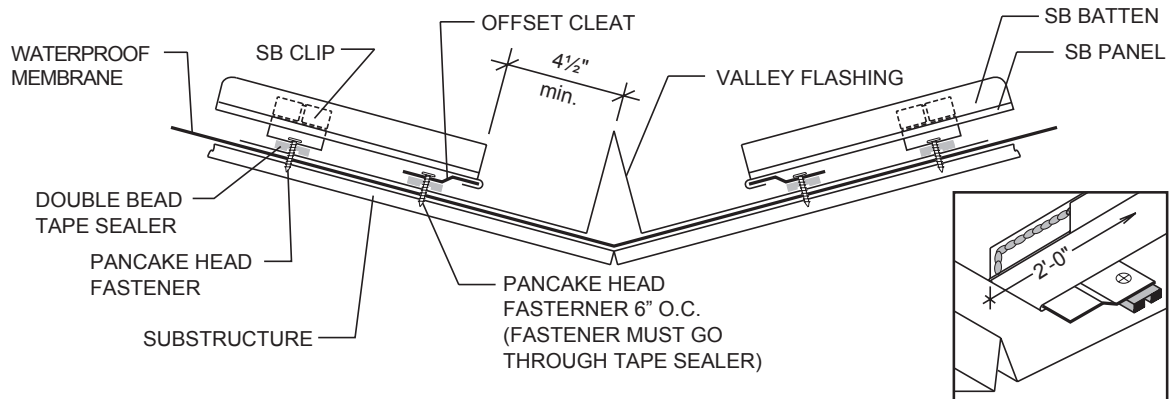


NOTES:

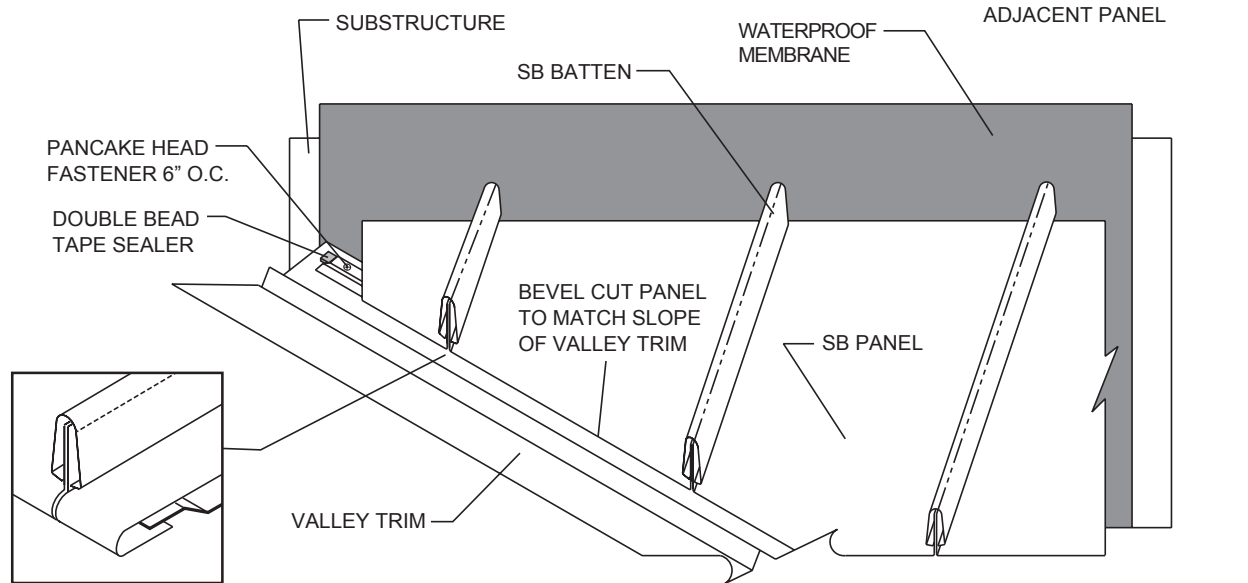
1. Field notch vertical legs of panel 1½".
2. Engage panel hemming tool onto protruding pan of panel.
3. Bend pan of panel down to form an open hem.
4. Hem may be tightened with a pair of vise grip "duckbills".
5. **Panel engagement shown above is for panel runs up to 100' long. For panel runs over 100' long, call MBCI.**

SB DETAIL

TYPICAL DETAILS VALLEY



CROSS SECTION OF VALLEY



PANEL END DETAIL

SEE PAGE CS-13 FOR
PANEL ENGAGEMENT

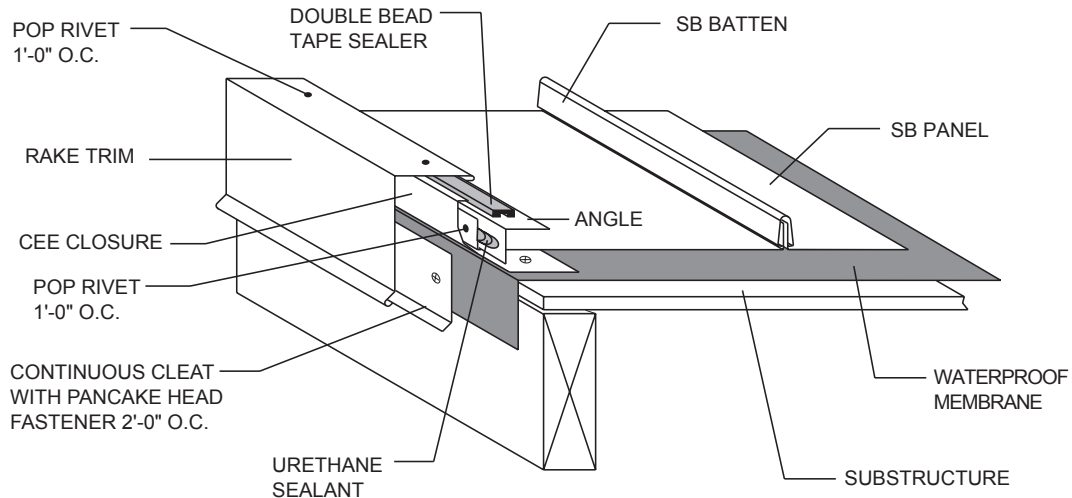
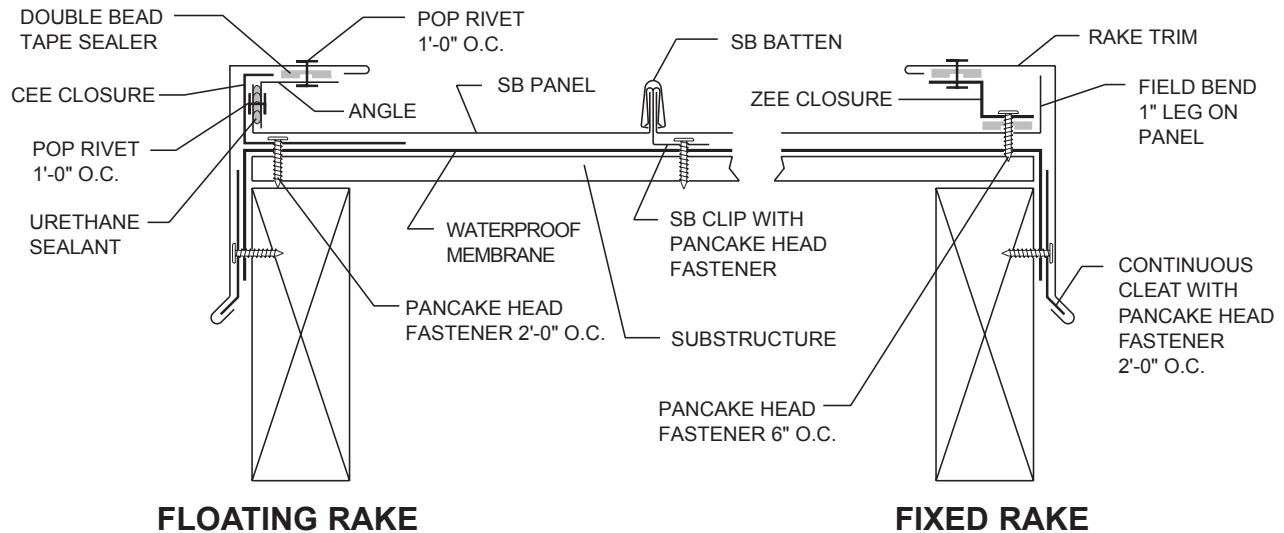
ISOMETRIC VIEW OF VALLEY

NOTES:

1. For valleys longer than 30', use extended valley trim - see page CS-8.
2. End of panel should be a minimum of 4 1/2" from center of valley.
3. Panel and batten ends must be sealed. To seal batten ends, see page CS-9.
4. To field hem panel ends, see page CS-13.

SB DETAIL

TYPICAL DETAILS RAKE



ISOMETRIC VIEW OF FLOATING RAKE

NOTES:

FLOATING RAKE

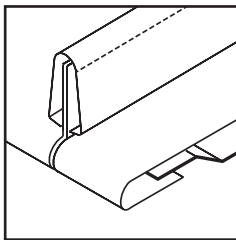
1. Attach cee closure to substructure with pancake head fasteners 2'-0" o.c.
2. Apply a bead of urethane sealant to vertical leg of panel and rivet angle trim to panel 1'-0" o.c.
3. Slide panel into cee closure and install clips.
4. Install double bead tape sealer to top leg of angle trim and rivet rake trim to angle trim 1'-0" o.c. **Do not fasten rake trim to cee closure.**
5. If roof finishes off module, field bend a vertical leg on panel and install as outlined in steps 1-4 above.

FIXED RAKE

1. Install double bead tape sealer to pan of panel. Attach zee closure to substructure with pancake head fasteners 6" o.c.
2. Install double bead tape sealer to top leg of zee closure. Attach rake trim to zee closure with rivets 1'-0" o.c.
3. If roof finishes off module, field bend a vertical leg on panel and install as outlined in steps 1-2 above.

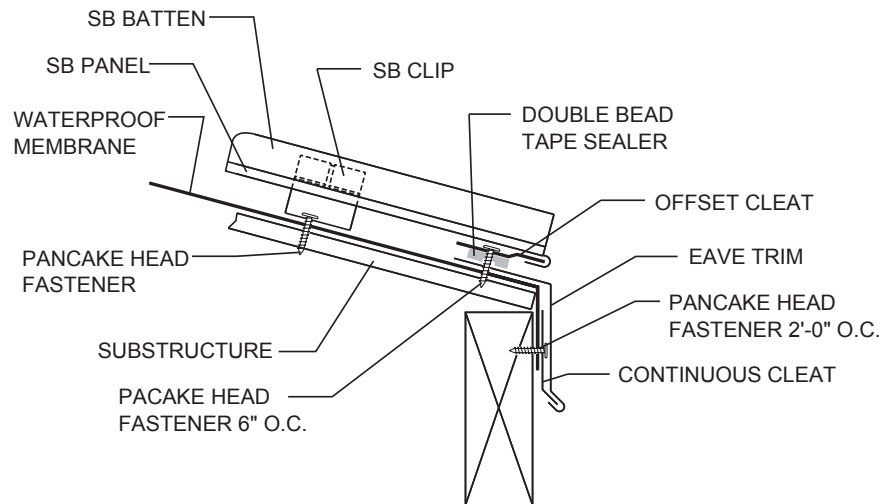
SB DETAIL

TYPICAL DETAILS EAVE TRIM

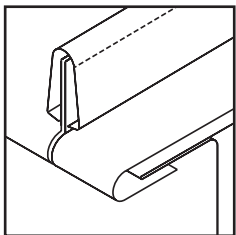


PANEL END DETAIL

SEE PAGE CS-13 FOR
PANEL ENGAGEMENT

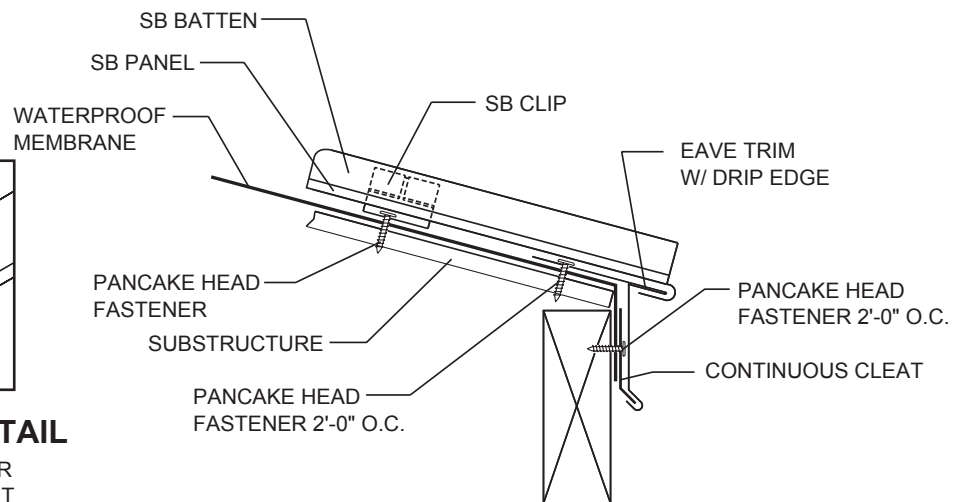


EAVE OFFSET CLEAT



PANEL END DETAIL

SEE PAGE CS-13 FOR
PANEL ENGAGEMENT



EAVE WITH DRIP EDGE

NOTES:

OFFSET CLEAT

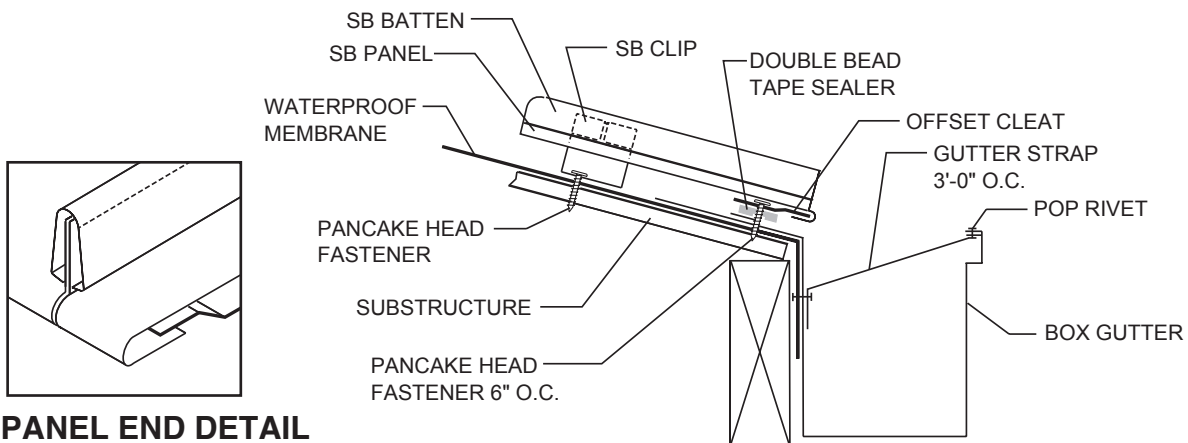
1. Install eave trim to substructure with two pancake head fasteners per 10'-0" piece.
2. Attach offset cleat with pancake head fasteners 6" o.c. Fasteners must go through double bead tape sealer.
3. To field hem panels, see page CS-13.
4. To seal batten ends, see page CS-9.

EAVE WITH EXTENDED DRIP EDGE

1. Install eave trim to substructure with pancake head fasteners 2'-0" o.c.
2. To field hem panels, see page CS-13.
3. To seal batten ends, see page CS-9.
4. This detail may be used on roofs with slopes up to 4:12. For slopes greater than 4:12, please call MBCI.

SB DETAIL

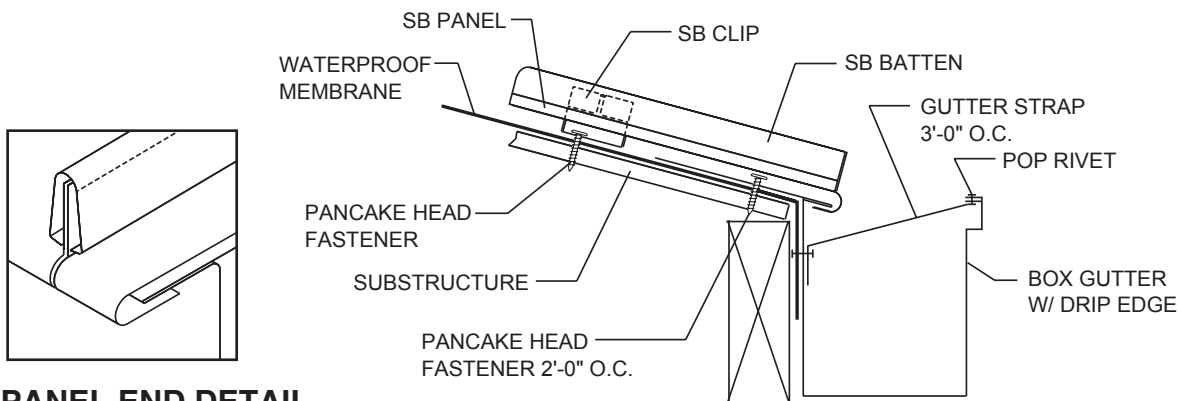
TYPICAL DETAILS GUTTER



PANEL END DETAIL

SEE PAGE CS-13 FOR
PANEL ENGAGEMENT

GUTTER WITH OFFSET CLEAT



PANEL END DETAIL

SEE PAGE CS-13 FOR
PANEL ENGAGEMENT

GUTTER WITH DRIP EDGE

NOTES:

OFFSET CLEAT

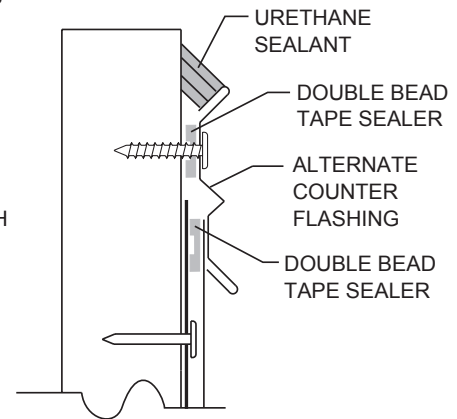
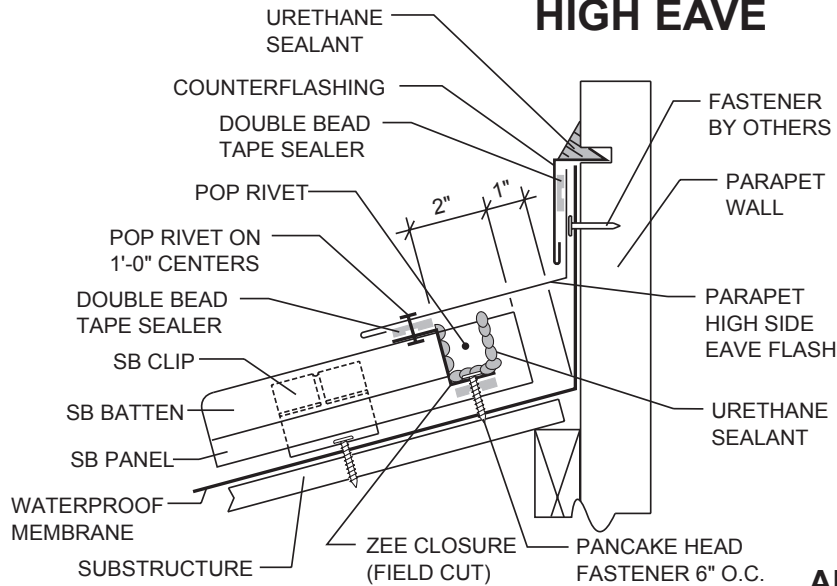
1. Install gutter to substructure with two pancake head fasteners per 10'-0".
2. Rivet gutter straps to gutter 3'-0" o.c.
3. Attach offset cleat with pancake head fasteners 6" o.c. Fasteners must go through double bead tape sealer.
4. To field hem panels, see page CS-13.
5. To seal batten ends, see page CS-9.
6. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher. See page CS-24 for the gutter detail for these areas.

GUTTER WITH DRIP EDGE

1. Install gutter to substructure with pancake head fasteners 2'-0".
2. Rivet gutter straps to gutter 3'-0".
3. To field hem panel, see page CS-13.
4. To seal batten ends, see page CS-9.
5. This detail may be used on roofs with slopes 3:12 or greater. For slopes less than 3:12, please call MBCI.
6. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher. See page CS-24 for the gutter detail for these areas.

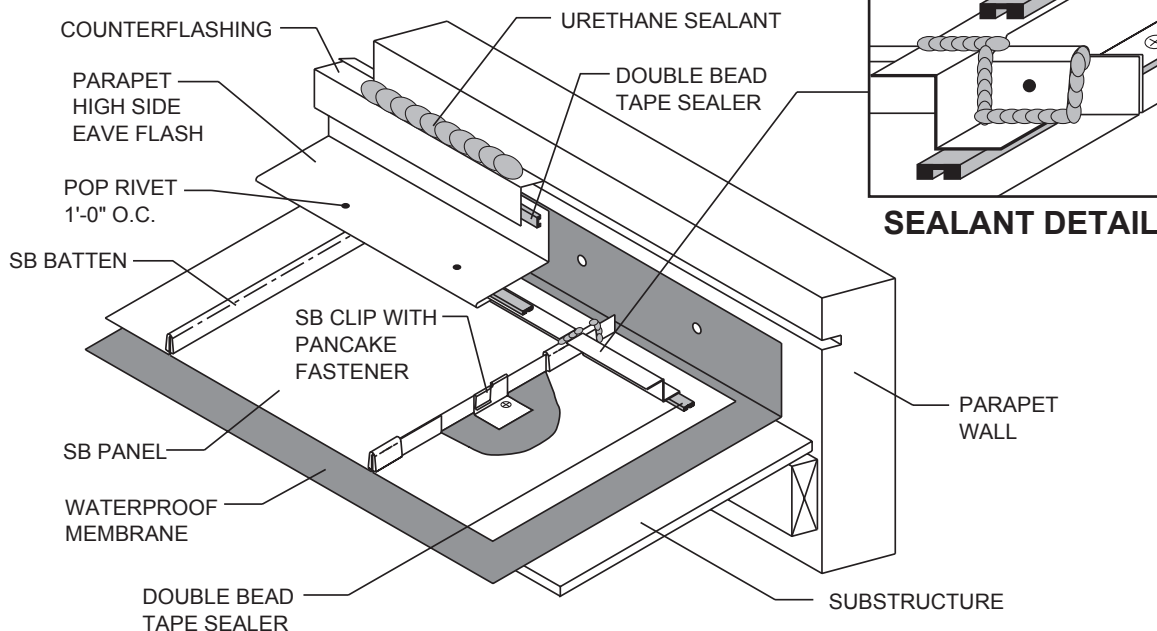
SB DETAIL

PARAPET DETAILS HIGH EAVE



ALTERNATE DETAIL

CROSS SECTION OF HIGH EAVE



SEALANT DETAIL

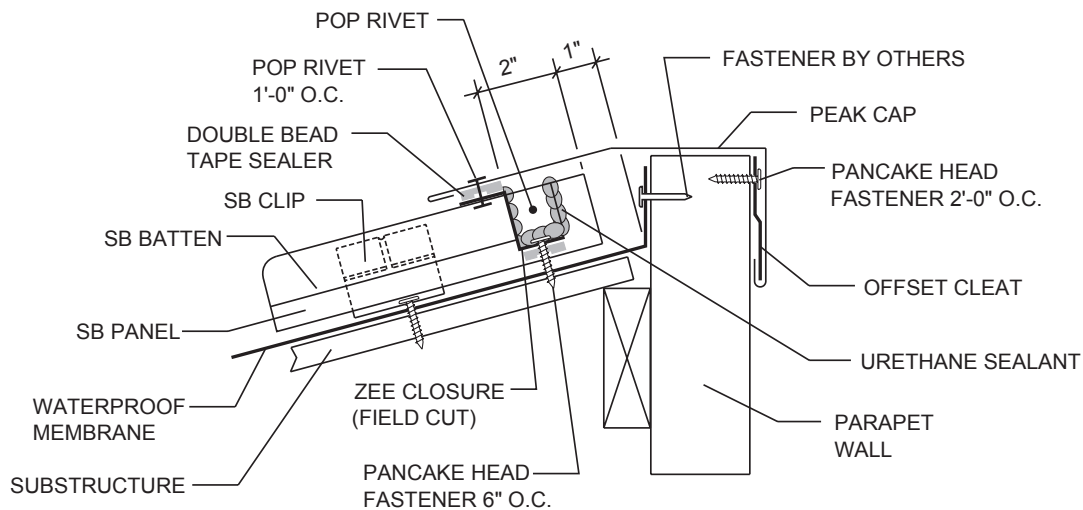
ISOMETRIC VIEW OF HIGH EAVE

NOTES:

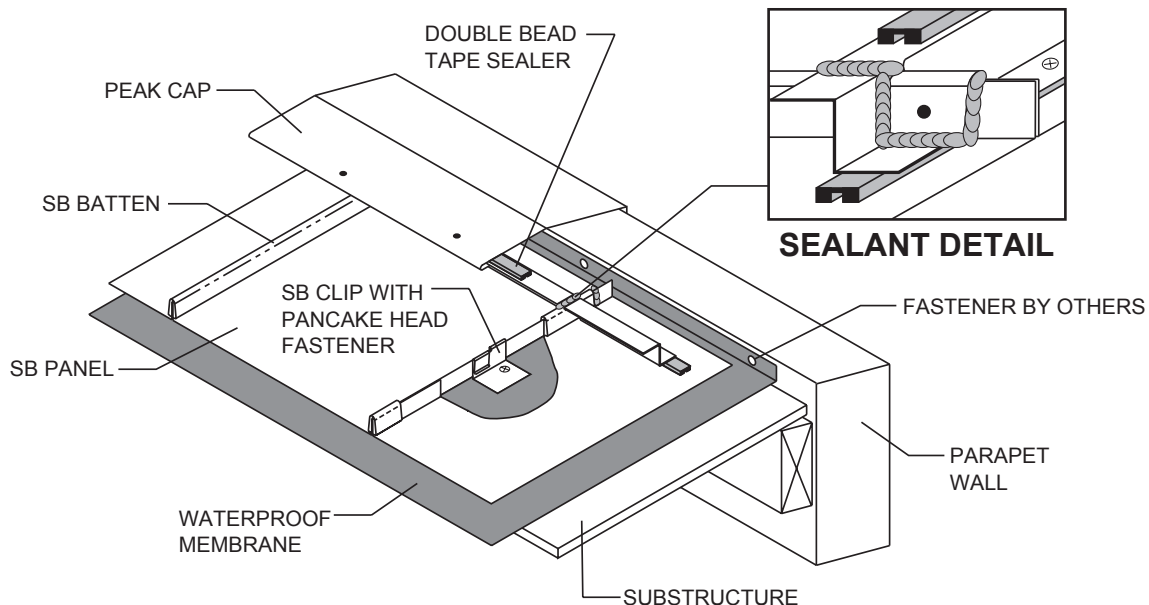
1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. Install zee closures so that parapet high side eave flash will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach parapet high side eave flash to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

SB DETAIL

PARAPET DETAILS PEAK CAP



CROSS SECTION OF PEAK CAP



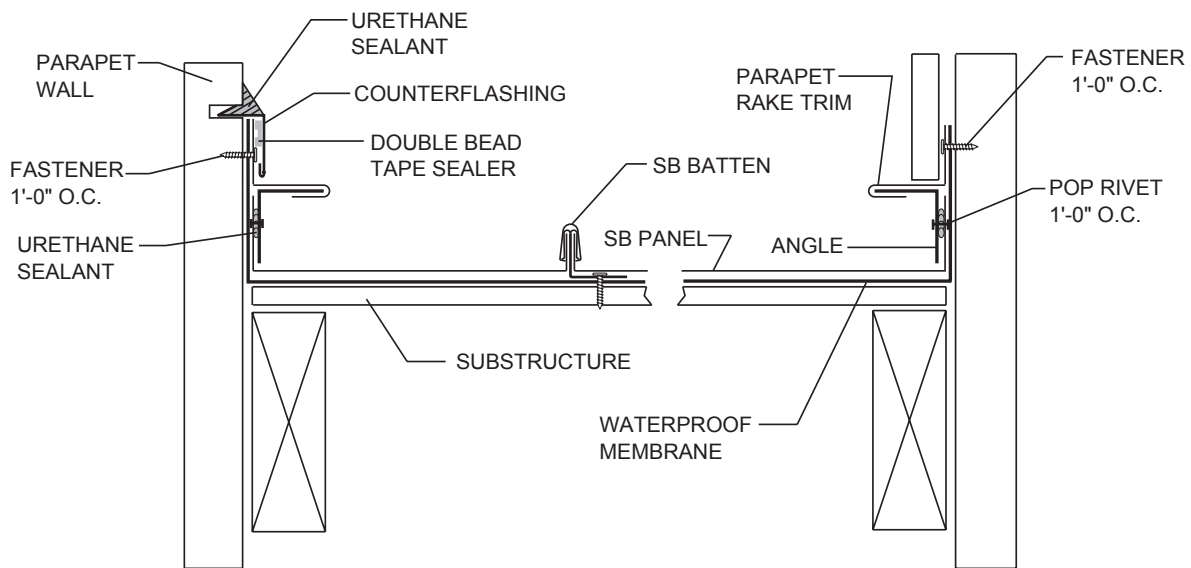
ISOMETRIC VIEW OF PEAK CAP

NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16 1/2" wide panels. Install zee closures so that peak cap will overhang top leg of zee closure 1/2".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach peak cap to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

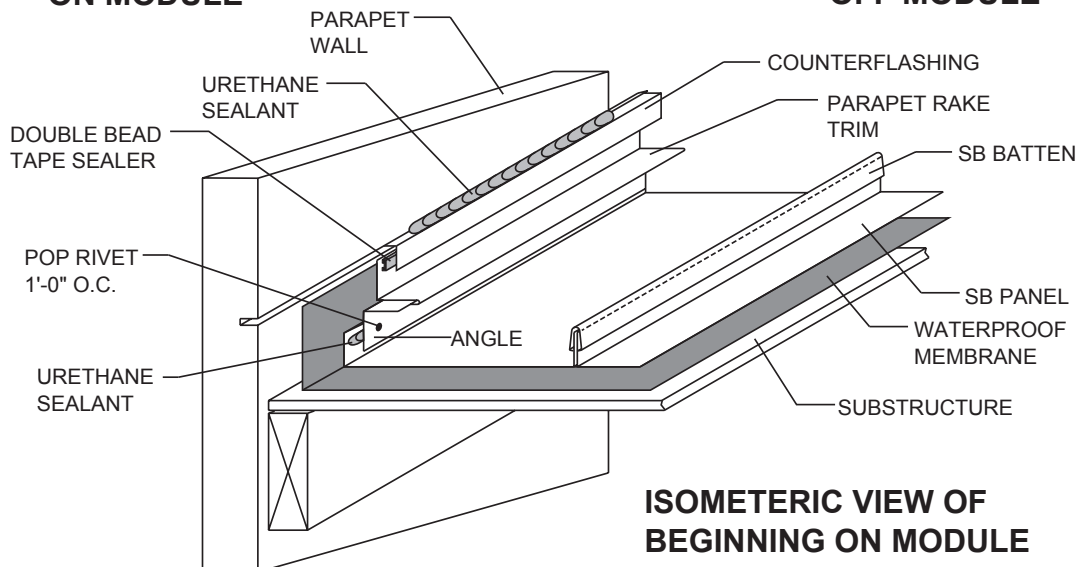
SB DETAIL

PARAPET DETAILS PARAPET RAKE TRIM



**BEGINNING
ON MODULE**

**FINISHING
OFF MODULE**



**ISOMETRIC VIEW OF
BEGINNING ON MODULE**

NOTES:

BEGINNING ON MODULE

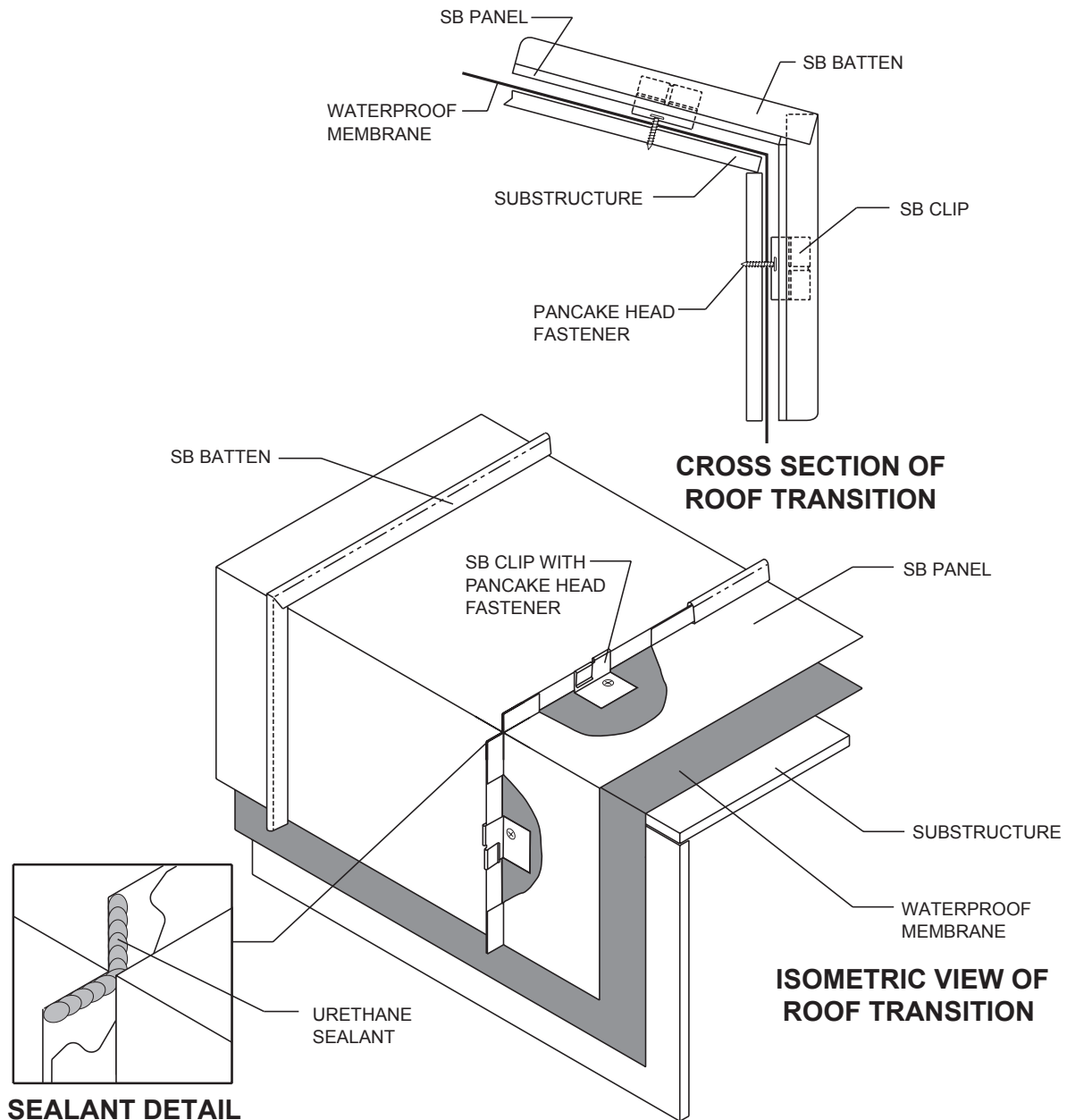
1. Apply a bead of urethane sealant to vertical leg of panel and rivet angle trim to panel 1'-0" o.c.
2. Hook open hem of parapet rake trim onto angle trim and fasten vertical leg of rake trim to parapet wall.

FINISHING OFF MODULE

3. 1. Field bend a vertical leg and install as outlined above.

SB DETAIL

MISCELLANEOUS DETAILS ROOF TRANSITION

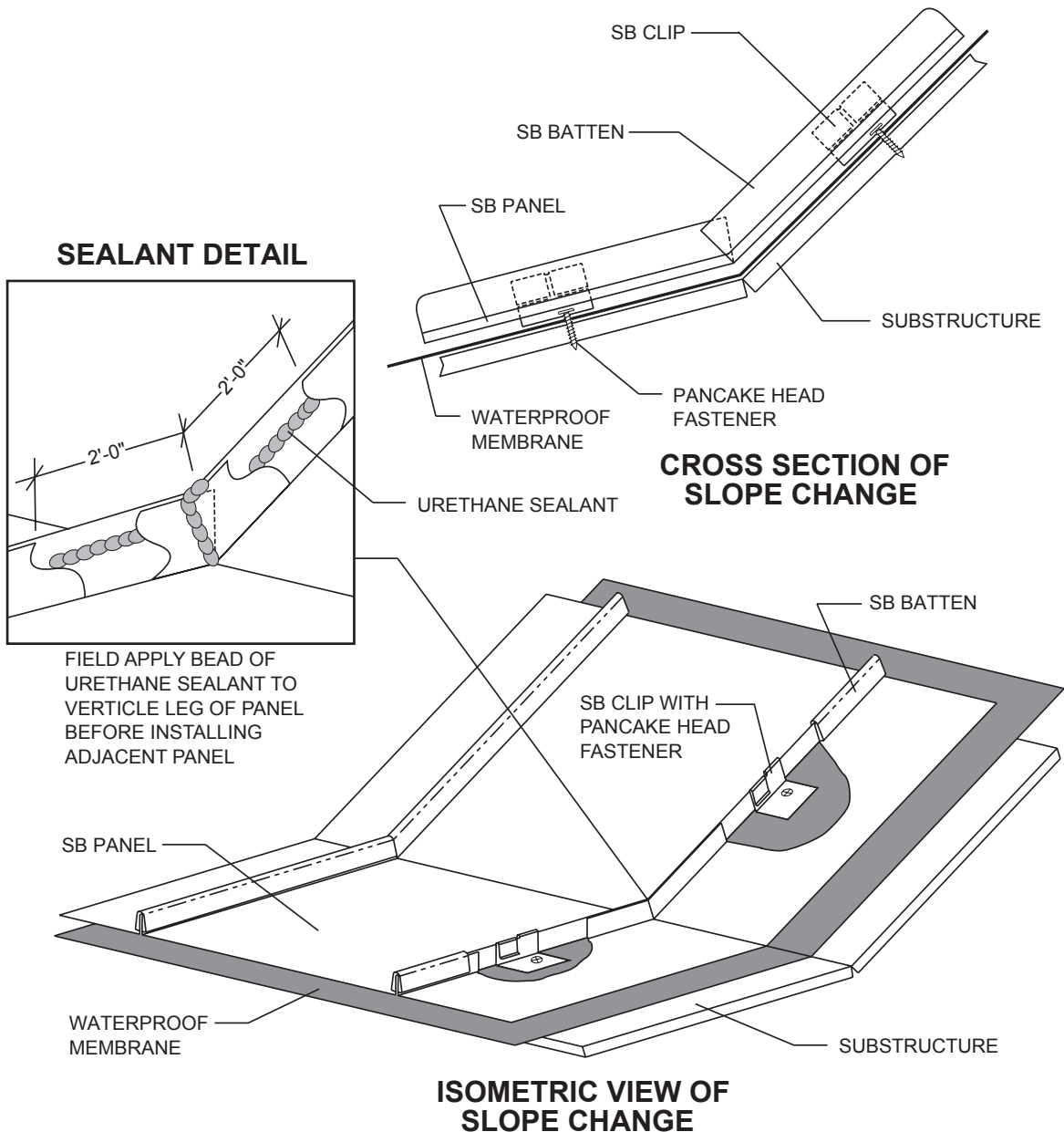


NOTES:

1. Field cut vertical legs of panel and bend pan to required angle.
2. Before installing panel, apply a bead of urethane sealant to the ends of the panel seams of the previous panel.
3. Field notch batten, bend to required angle and install.
4. **Do not use this detail inside the building envelope.**

SB DETAIL

MISCELLANEOUS DETAILS SLOPE CHANGE

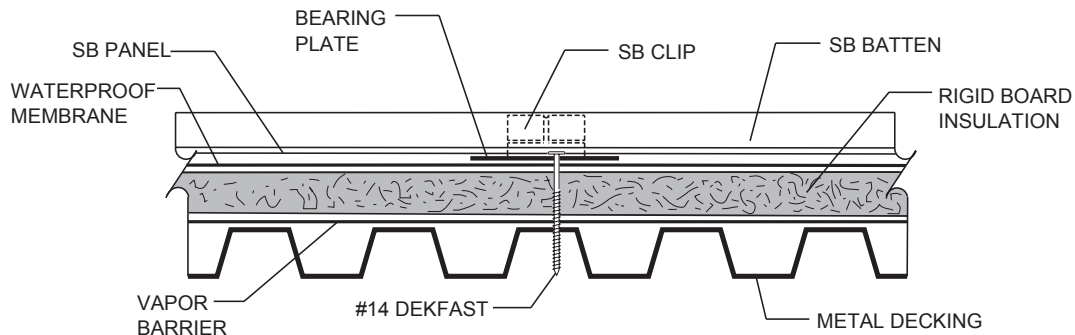


NOTES:

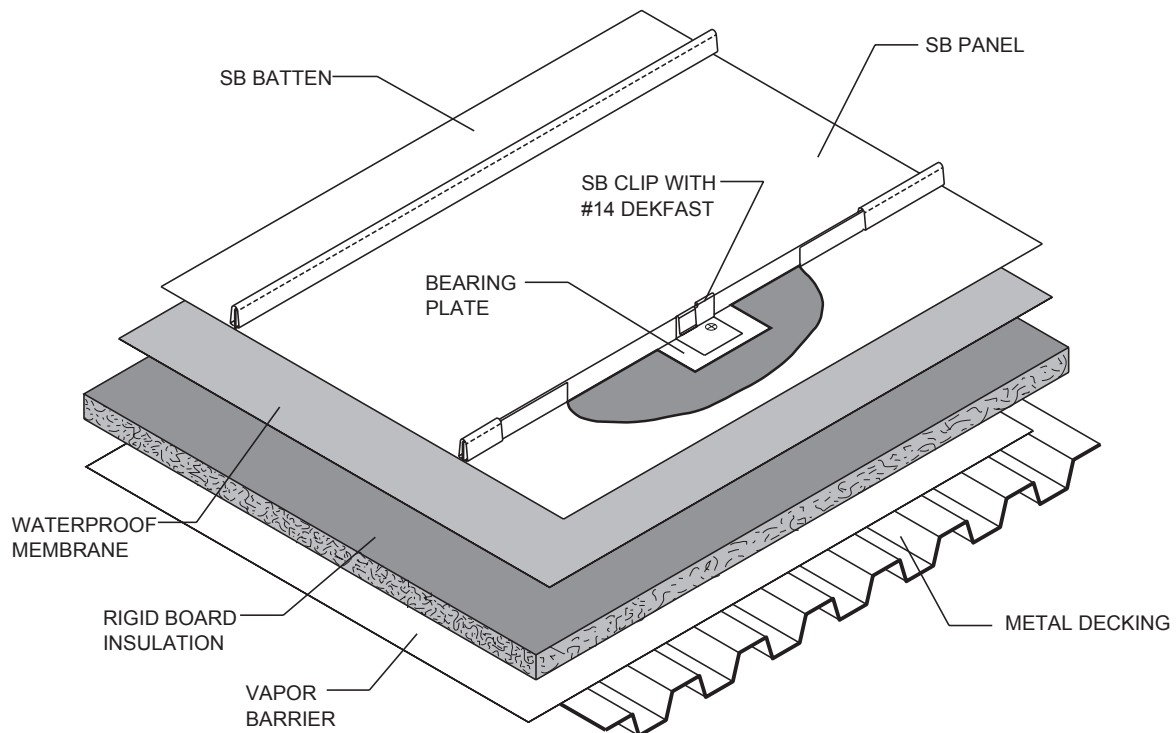
1. Field cut vertical legs of panel and bend pan to required angle.
2. Seal panel seams with urethane sealant.
3. Field cut batten and install.

SB DETAIL

MISCELLANEOUS DETAILS RIGID BOARD OVER METAL DECK



CROSS SECTION OF RIGID BOARD INSULATION OVER METAL DECK



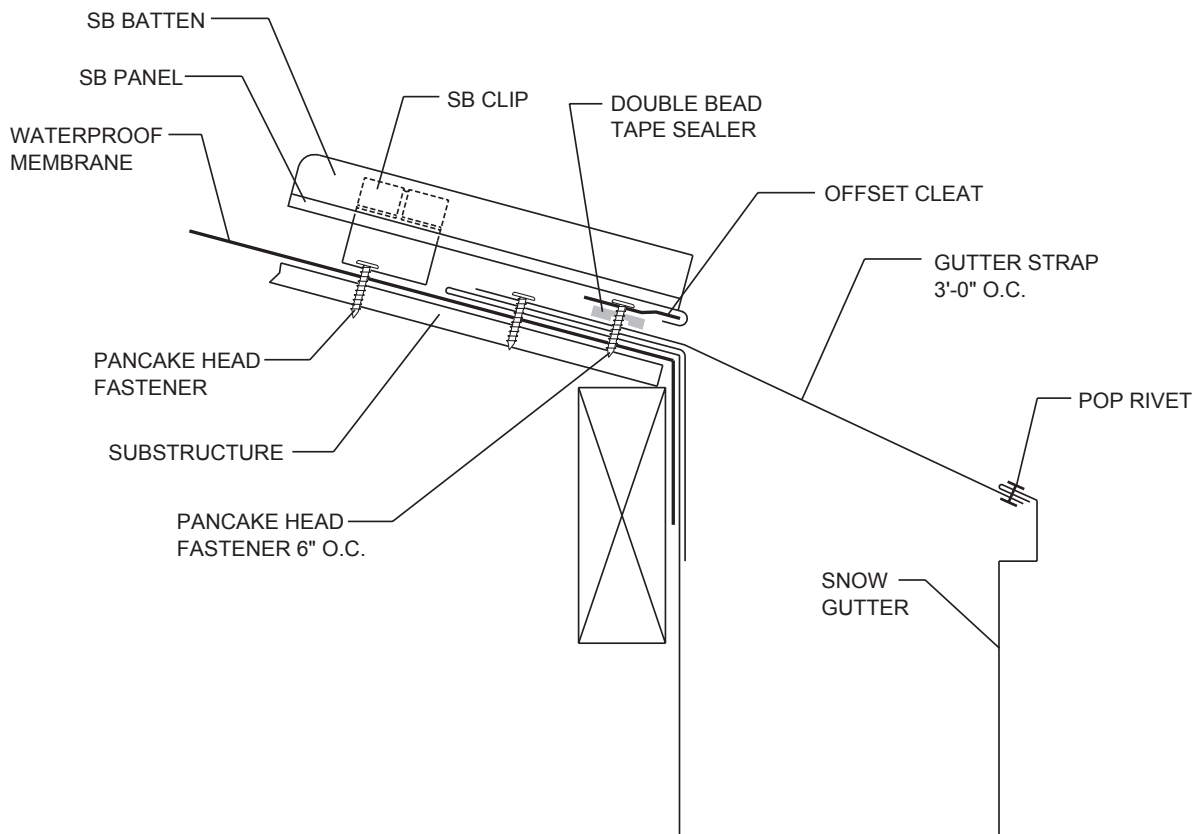
ISOMETRIC VIEW OF RIGID BOARD INSULATION OVER METAL DECK

NOTES:

1. Metal deck to be 1½" deep, 22 gauge.
2. Clips and bearing plates to be installed simultaneously with one #14 Dekfast fastener. Length of fastener to be ½" longer than combined thickness of metal deck and rigid board insulation.
3. Rigid board insulation must have a minimum density of 2 PCF.

SB DETAIL

MISCELLANEOUS DETAILS SNOW GUTTER



NOTES:

1. Install gutter to substructure with two pancake head fasteners per 10'-0".
2. Rivet gutter straps to gutter 3'-0" o.c.
3. Attach offset cleat with pancake head fasteners 1'-0" o.c. Fasteners must go through double bead tape sealer.
4. To field hem panels, see page CS-13.
5. To seal batten ends, see page CS-9.

HB GENERAL INFORMATION

GENERAL DESCRIPTION

CRAFTSMAN™ HIGH BATTEN PROFILES

12" COVERAGE	16½" COVERAGE
HB12	HB16.5

Coverage Widths - 12" and 16½"

Minimum Slope - 3:12

Panel Attachment - HB Clip (concealed fastening system)

Panel Substrate - Galvalume® (standard)

Gauge - Standard: 24

Optional: 22 and 26 gauge

Coatings - Signature® 200, Signature® 300 and Signature® 300 Metallic

PRODUCT SELECTION CHART

PRODUCT	Signature® 300 Metallic			Signature® 300			Signature® 200			Galvalume Plus®		
	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.
Craftsman™												
12" Wide	■	●	■	■	●	■	●	●	■	●	●	■
16½" Wide		●	■		●	■		●	■		●	■

■ — Available in any quantity.

● — Minimum quantity may be required.

Other colors, finishes, gauges and materials available; please inquire.

Signature is a registered trademark of NCI Group, Inc. Galvalume and Galvalume Plus are registered and protected trademarks of BIEC International, Inc.



HB GENERAL INFORMATION

UL 90 REQUIREMENTS

Construction #282 HB Over Plywood Deck

1. Metal Panels - 24 gauge or heavier - 12" or 16½" wide, continuous over two or more spans.
2. Panel Clips - HB clip - spaced 2'-0" o.c. max.
3. Fasteners - #10 x 1" pancake head. 1 per clip.

Construction #309 HB Over Metal Deck

1. Metal Panels - 24 gauge or heavier - 12" or 16½" wide, continuous over two or more spans.
2. Panel Clips - HB clip - spaced 2'-0" o.c. max.
3. Fasteners - 1 per clip.

FIRE RESISTANCE RATING

MBCI, HOUSTON TX 77238

R8116 (R)

1. Mechanically Attached Metal Roof Panels - Type Craftsman™ HB 12" or 16½" (24 MSG). Secured by steel anchor clips. Anchor clips are attached to a hat-shaped member * (Minimum depth 1") or a bearing plate**.

For use in Design Nos. P225, P227, P230, P237, P265, P268, P508, P510, P512, P701, P711, P720, P722, P726, P731, P734, P801, P815, P819.

*Hat-shaped member to be a minimum of 16 gauge. The member will be fastened through the roof insulation to the steel roof deck with No. 14 self-drilling and/or self-tapping fasteners. Spacing to be determined by the structural loading requirements. In addition, any compressible UL Classified glass fiber blanket insulation with or without a vapor-retarder facing may be used between the specified roof insulation and the metal roof panels.

**Bearing plate to be a minimum of 16 gauge. Member will be fastened through the roof insulation to the steel deck with No. 14 self-drilling and/or self-tapping fasteners.

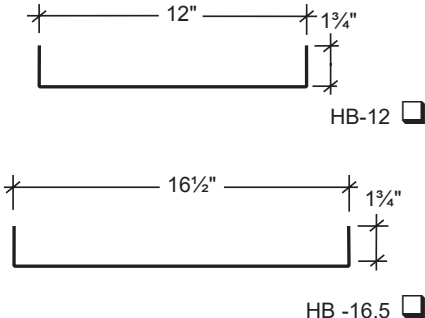
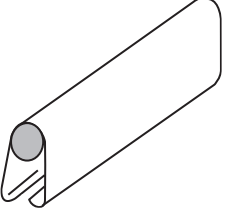
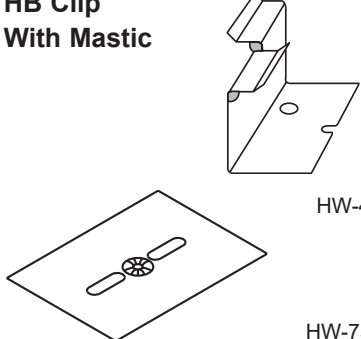
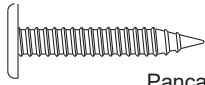
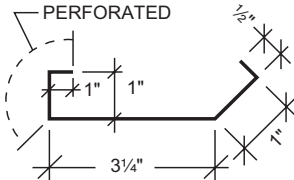
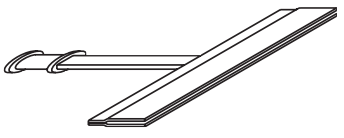
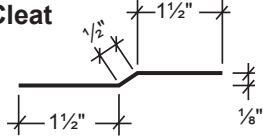
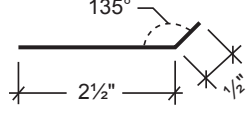
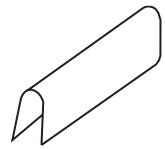
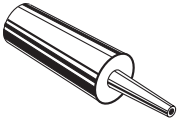
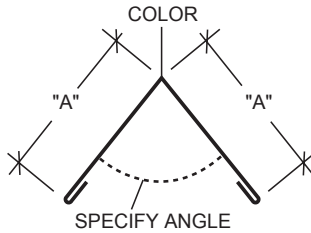
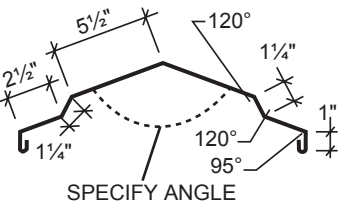
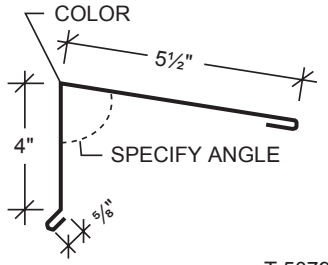
See UL Fire Resistance Directory for details of illustrations and fire resistance hourly ratings.

CAUTION

For UL 90 Rated Roofs, the above requirements must be followed. See UL Roofing Materials and Systems Directory for additional requirements. If you have any questions, call MBCI before proceeding.

HB GENERAL INFORMATION

PRODUCT CHECK LIST

HB Panel  HB-12 ☐ HB -16.5 ☐	HB Batten With Mastic  FL-566 ☐	HB Clip With Mastic  HW-4800 ☐ HW-7500 ☐
Fasteners  Pancake Head - Type A Fastener #13A ☐  #14 Dekfast ☐  Pop Rivet Fastener #14 ☐	Perforated Vent Drip  FL-254 ☐	Panel Hemming Tool  HW-602 ☐
Cleat  Offset Cleat T-5131 ☐  Continuous Cleat T-5121 ☐	Batten Cap Coupler  FL-560 ☐ HB Transition Filler  FL-562 ☐	Urethane Sealant  HW-540 - (White) ☐ HW-541 - (Gray) ☐ HW-542 - (Bronze) ☐ HW-544 - (Almond) ☐ Tri-Bead Tape Sealer  HW-504 ☐
Ridge/Hip Flash  DIM "A" Part No. 4Z1x" T-5071 5Z1x" T-5073	Ridge Flash for Vent  SPECIFY ANGLE T-5089 ☐	Peak Cap  SPECIFY ANGLE T-5079 ☐

NOTE: All trim to be 24 gauge material unless noted.
SUBJECT TO CHANGE WITHOUT NOTICE

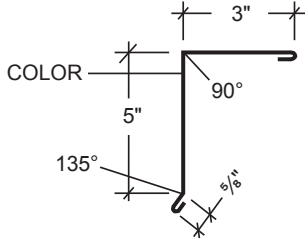
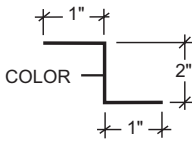
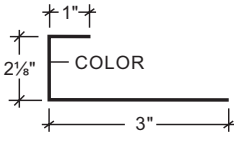
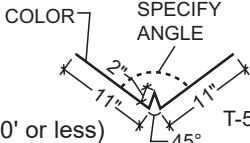
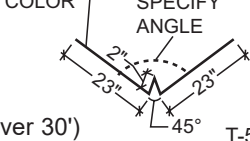
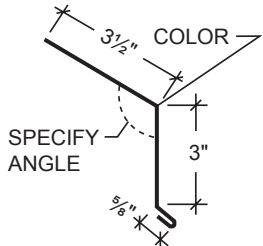
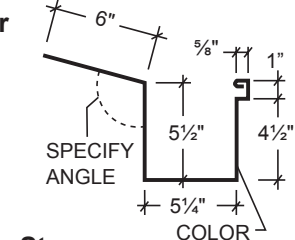
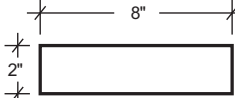
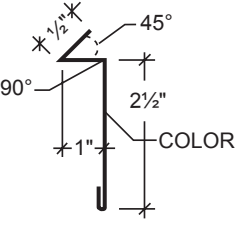
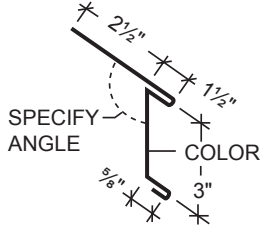
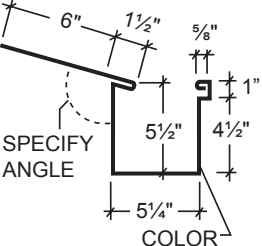
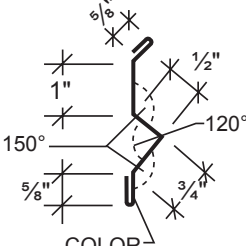
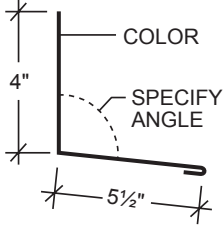
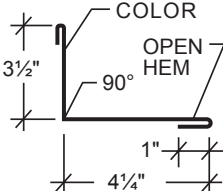
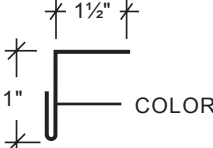
SEE mbci.com FOR CURRENT INFORMATION

REV 00.04

CS-33

HB GENERAL INFORMATION

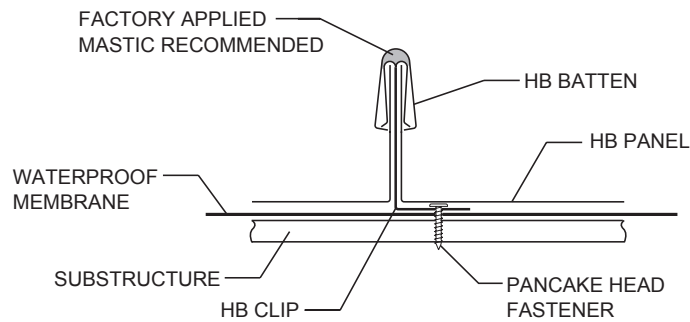
PRODUCT CHECKLIST

Rake Trim  T-5233 ☐	ZEE Closure  T-5015 ☐ CEE Closure  T-5034 ☐	Valley Trim  Standard (Valleys 30' or less) T-5093 ☐  Extended (Valleys over 30') T-5097 ☐
Eave Trim  T-5143 ☐	Gutter  T-5261 ☐ Gutter Strap  T-5281 ☐	Counterflashing  T-5225 ☐
Eave with Extended Drip Edge  T-5151 ☐	Gutter with Drip Edge  T-5271 ☐	Alternate Counterflashing  T-5221 ☐
Parapet High Side Eave Flash  T-5213 ☐	Parapet Rake Trim  T-5217 ☐	Angle Trim  T-5055 ☐

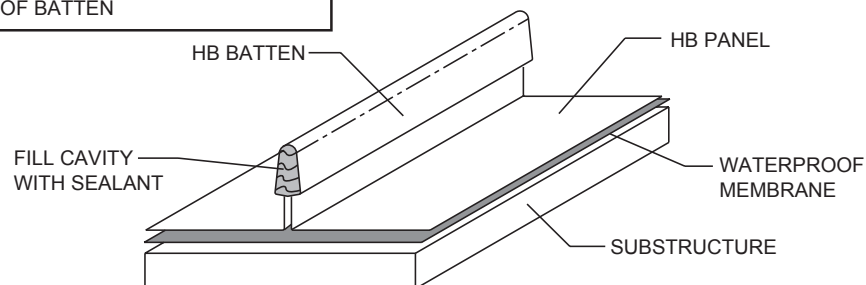
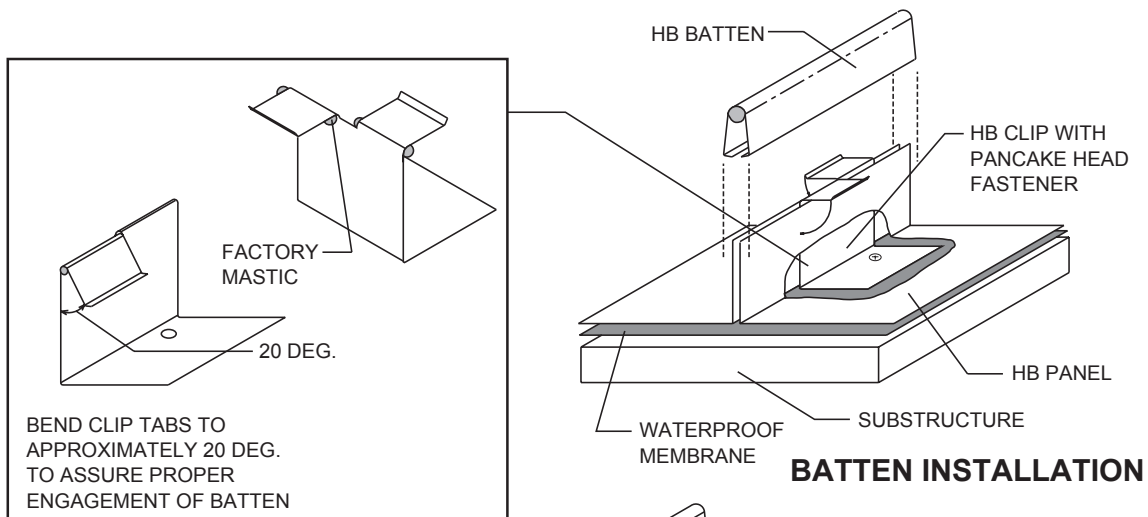
NOTE: All trim to be 24 gauge material unless noted.

HB DETAIL

TYPICAL DETAILS PANEL



INSTALLED PANEL CROSS SECTION



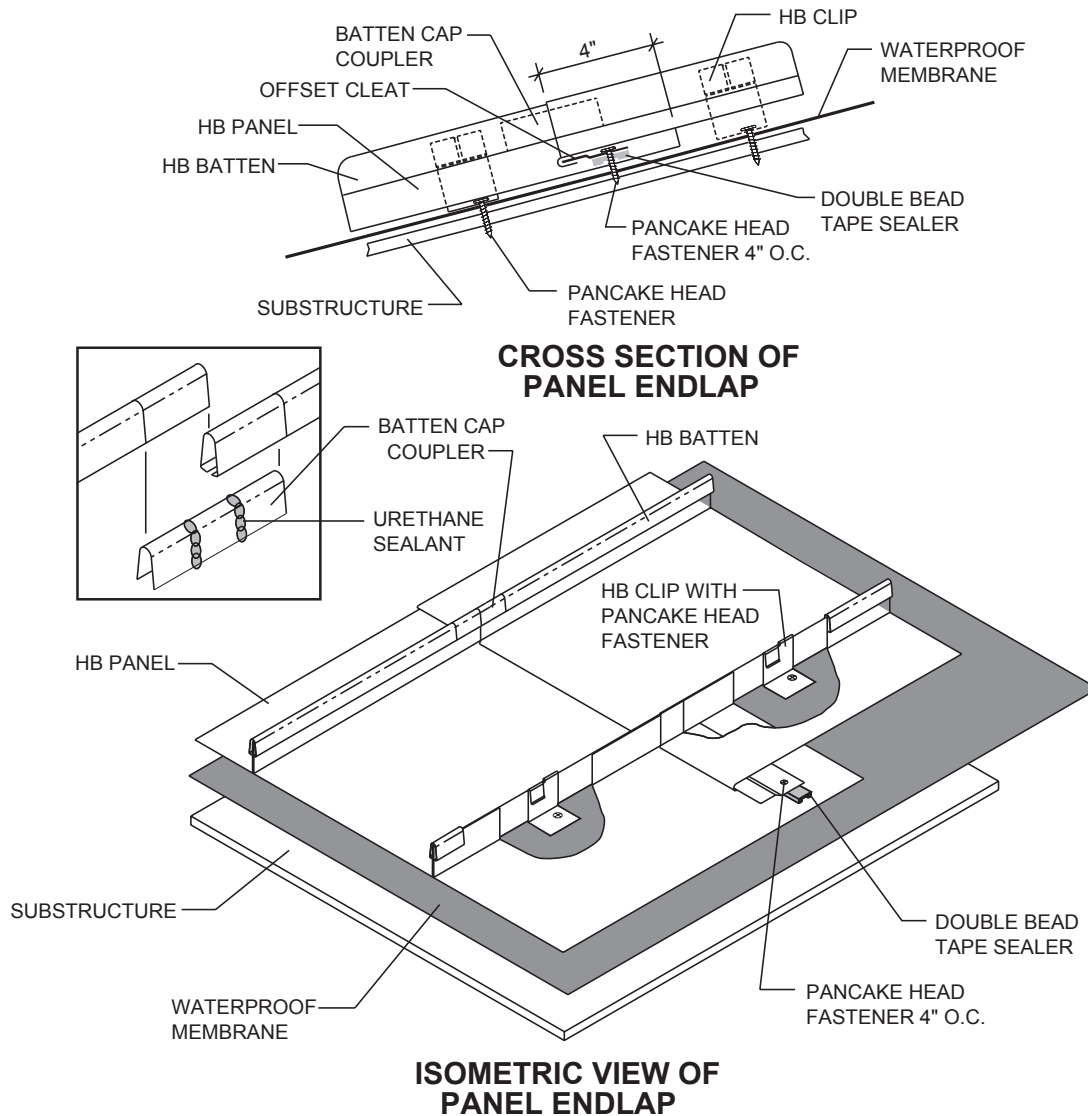
BATTEN END SEALANT DETAIL

NOTES:

1. Factory applied mastic in battens is recommended.
2. If it is necessary to raise the tabs of a clip up after they have been bent down into place, the clip must be replaced to prevent clip failure.
3. Clips to be installed 2'-0" o.c. unless otherwise instructed on roof plans.
4. Ends of panels should be sealed with urethane sealant at all eave and valley conditions.

HB DETAIL

TYPICAL DETAILS ENDLAP

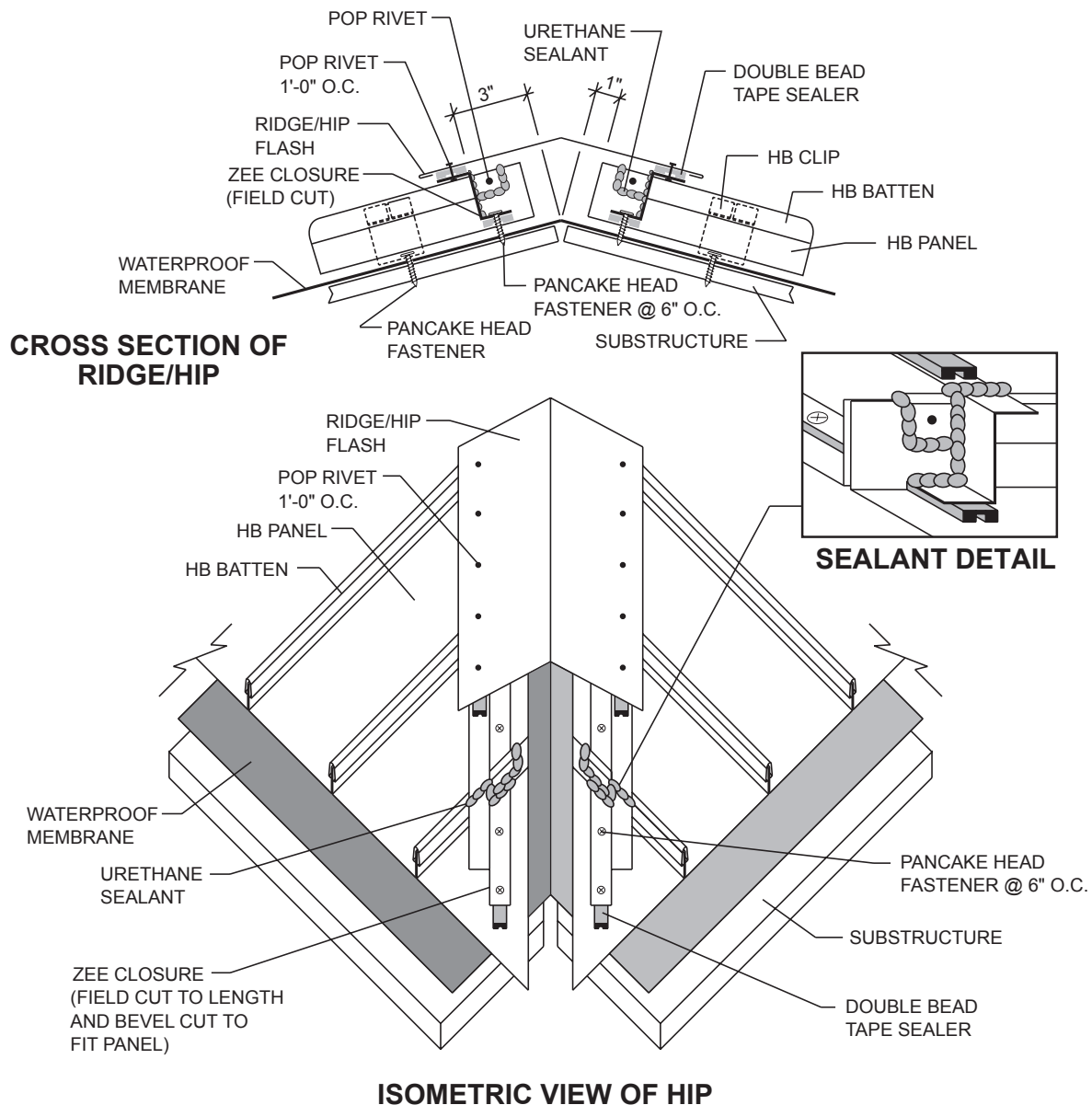


NOTES:

1. Panels are lapped 4".
2. Install double bead tape sealer across width of bottom panel. Center of tape sealer should be 2" from upslope end of panel.
3. Attach offset cleat to bottom panel with pancake head fasteners. Use four fasteners per panel for 12" wide panels and five fasteners per panel for 16½" wide panels. Fasteners must go through tape sealer. Apply urethane sealant up vertical legs of panels in line with tape sealer.
4. Field hem top panel (see page CS-57) and engage onto offset cleat.
5. To connect two battens, snap first batten to panels except for last two feet. Field cut a 4" long batten cap coupler from 10' stock. Apply a bead of urethane sealant across coupler approximately 1" from one end. Slide this end into the end of the first batten. Apply a bead of urethane sealant across coupler approximately 1" from other end and slide the second batten onto the coupler until it butts the first batten. Holding the two battens together, snap the last 2' of the first batten down and continue by snapping the second batten completely down.

HB DETAIL

TYPICAL DETAILS RIDGE/HIP

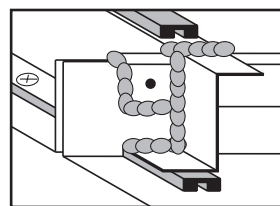
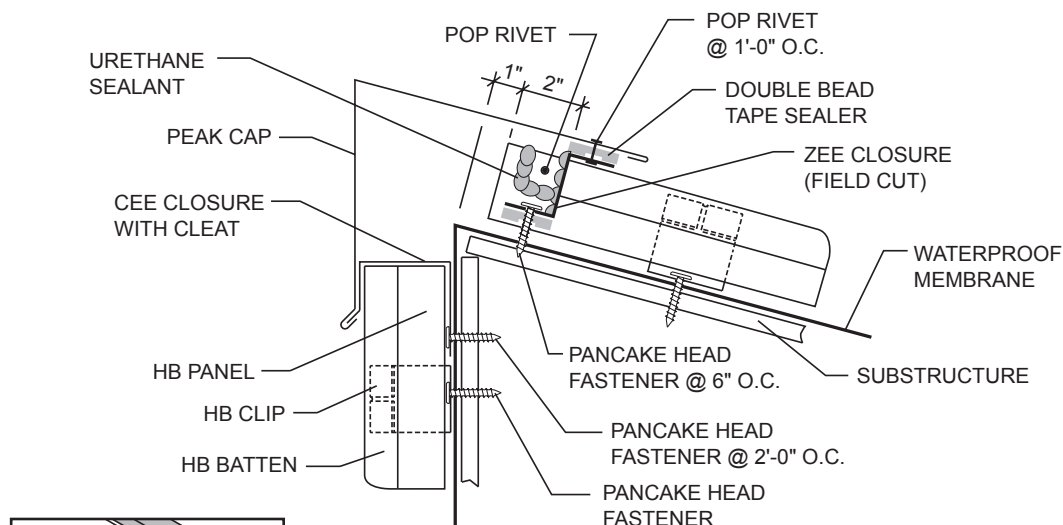


NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. At ridge, use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. At hips, install fasteners 6" o.c. maximum. Install zee closures so that ridge/hip flash will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach ridge/hip flash to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

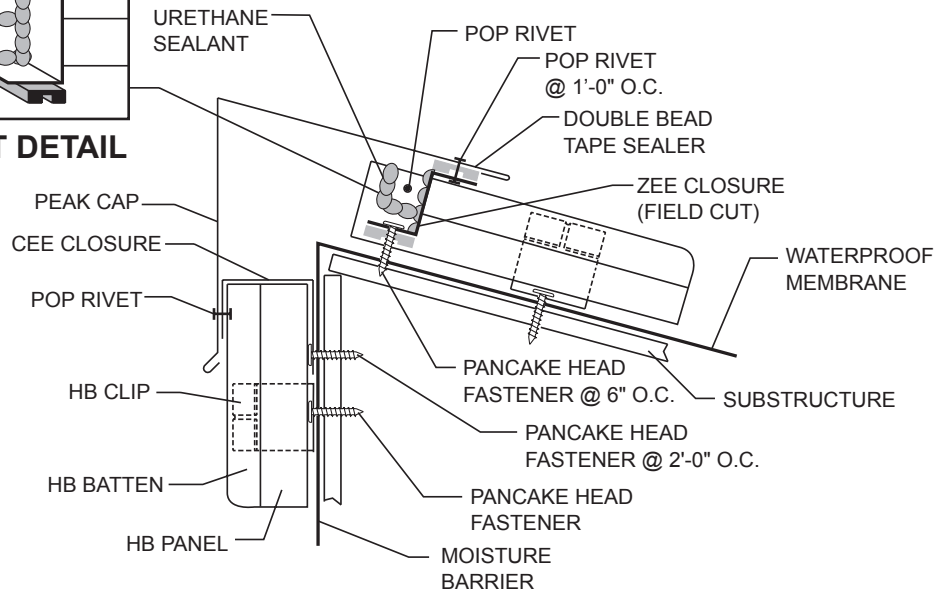
HB DETAIL

TYPICAL DETAILS PEAK CAP



SEALANT DETAIL

PEAK CAP WITH CEE CLOSURE CLEAT



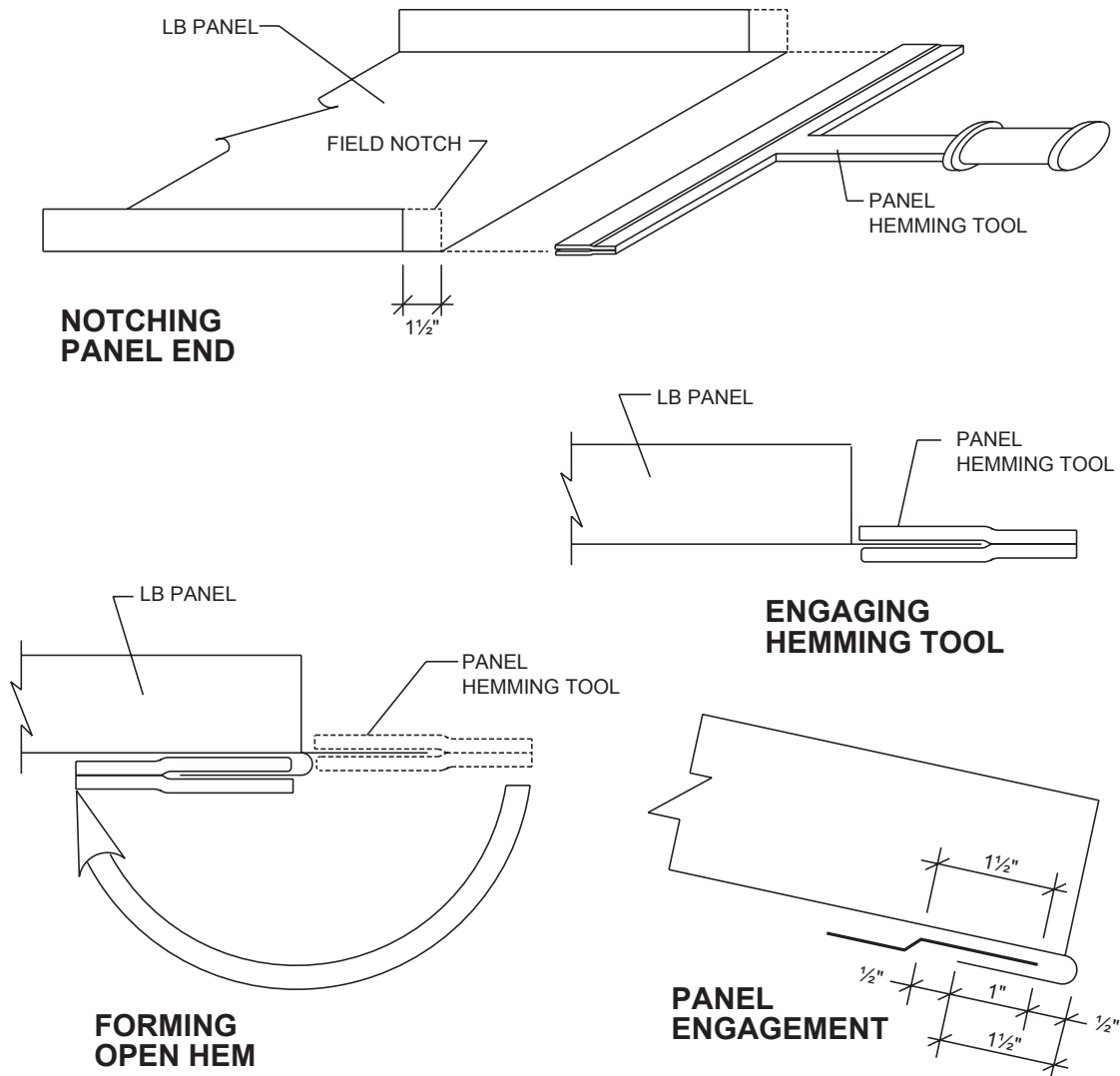
PEAK CAP WITH CEE CLOSURE

NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. Install zee closures so that peak cap will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach peak cap to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**
6. When using cee closure with cleat, order peak cap with open hem at the bottom.

HB DETAIL

TYPICAL DETAILS FIELD HEMMING PANEL END

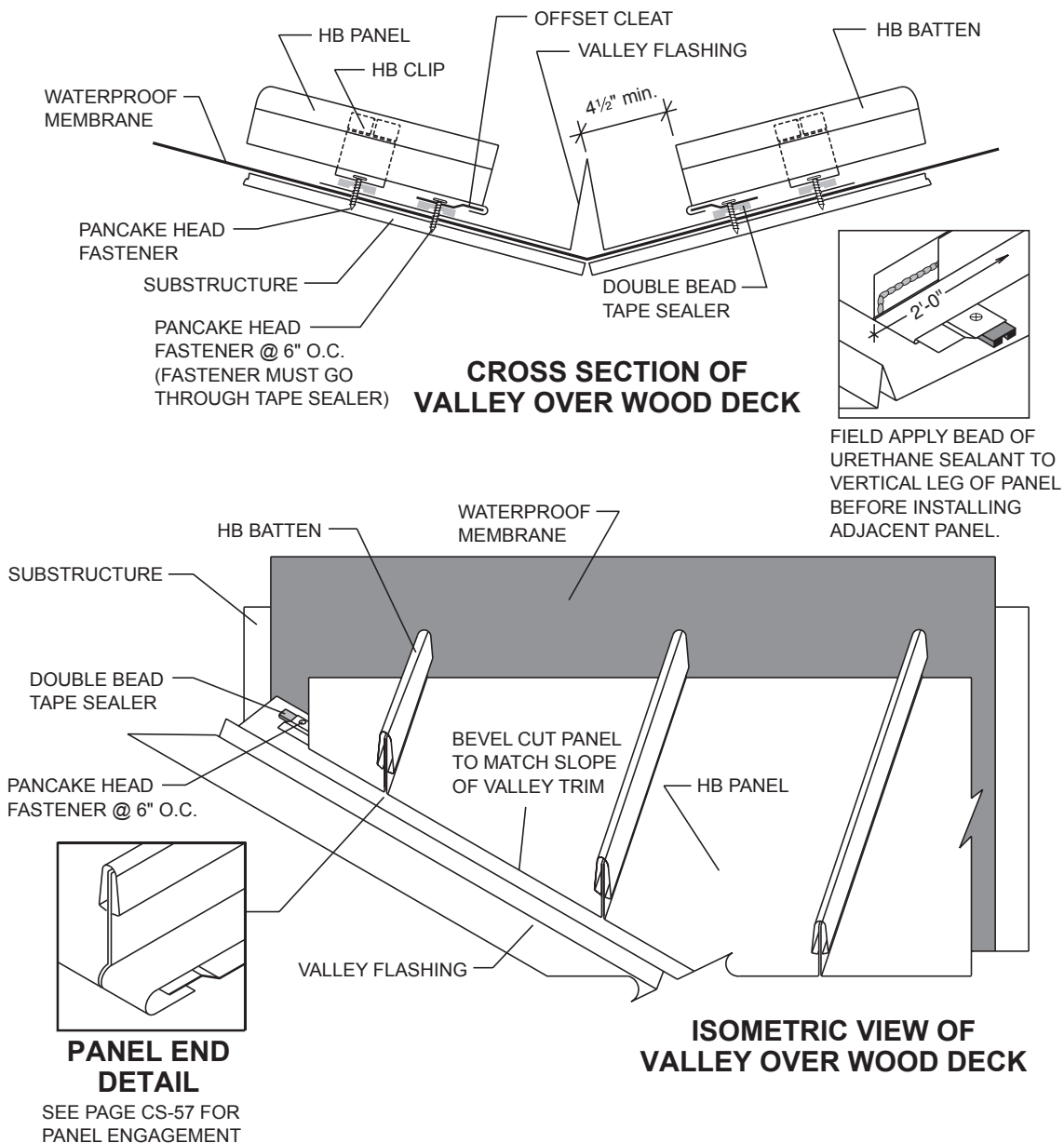


NOTES:

1. Field notch vertical legs of panel $1\frac{1}{2}"$.
2. Engage panel hemming tool onto protruding pan of panel.
3. Bend pan of panel down to form an open hem.
4. Hem may be tightened with a pair of vise grip "duckbills".
5. **Panel engagement shown above is for panel runs up to 100' long. For panel runs over 100' long, call MBCI.**

HB DETAIL

TYPICAL DETAILS VALLEY

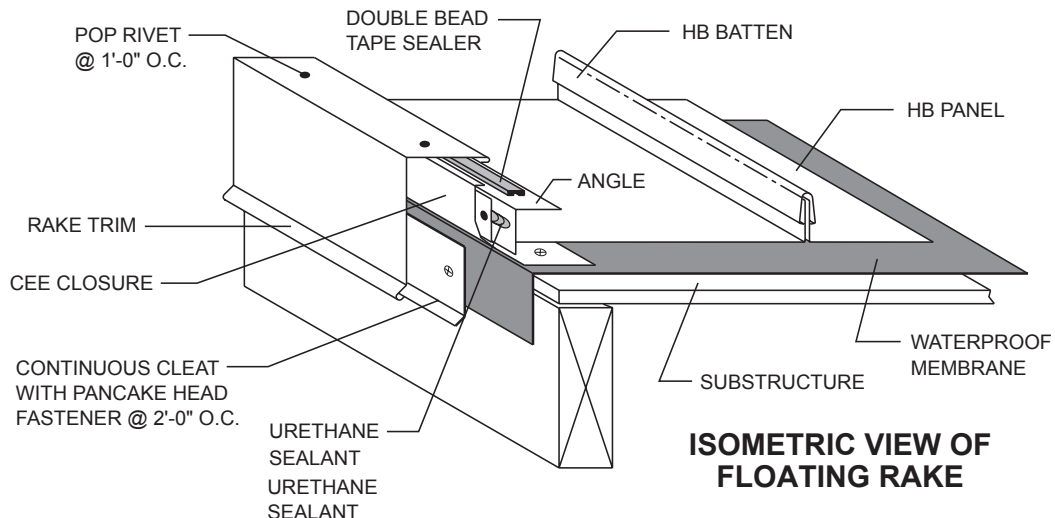
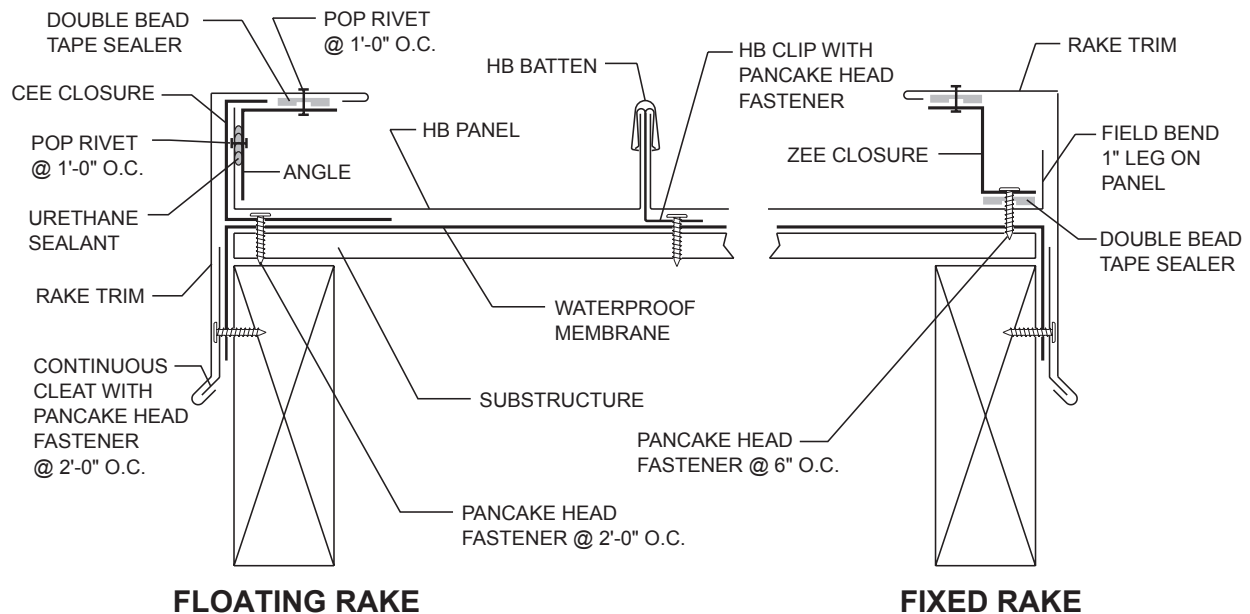


NOTES:

1. For valleys longer than 30', use extended valley trim - see page CS-52.
2. End of panel should be a minimum of 4 1/2" from center of valley.
3. Panel and batten ends must be sealed. To seal batten ends, see page CS-53.
4. To field hem panel ends, see page CS-57.

HB DETAIL

TYPICAL DETAILS RAKE



ISOMETRIC VIEW OF
FLOATING RAKE

NOTES:

Floating Rake

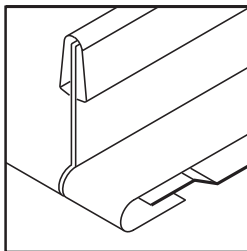
1. Attach cee closure to substructure with pancake head fasteners 2'-0" o.c.
2. Apply a bead of urethane sealant to vertical leg of panel and rivet angle trim to panel 1'-0" o.c.
3. Slide panel into cee closure and install clips.
4. Install double bead tape sealer to top leg of angle trim and rivet rake trim to angle trim 1'0" o.c. **Do not fasten rake trim to cee closure.**
5. If roof finishes off module, field bend a vertical leg on panel and install as outlined in steps 1-4 above.

Fixed Rake

1. Install double bead tape sealer to pane of panel. Attach zee closure to substructure with pancake head fasteners 6" o.c.
2. Install double bead tape sealer to top leg of zee closure. Attach rake trim to zee closure with rivets 1'-0" o.c.
3. If roof finishes off module, field bend a vertical leg on panel and install as outlined in steps 1-2 above.

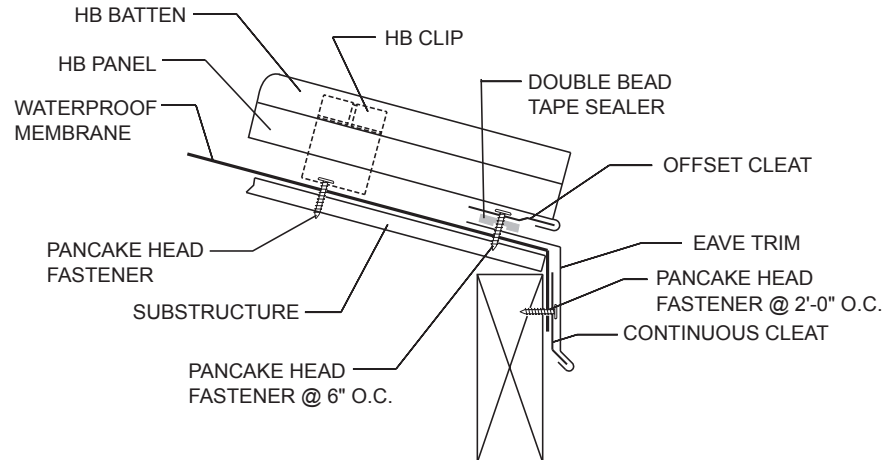
HB DETAIL

TYPICAL DETAILS EAVE TRIM

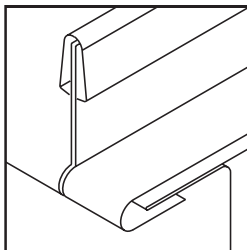


PANEL END DETAIL

SEE PAGE CS-57 FOR
PANEL ENGAGEMENT

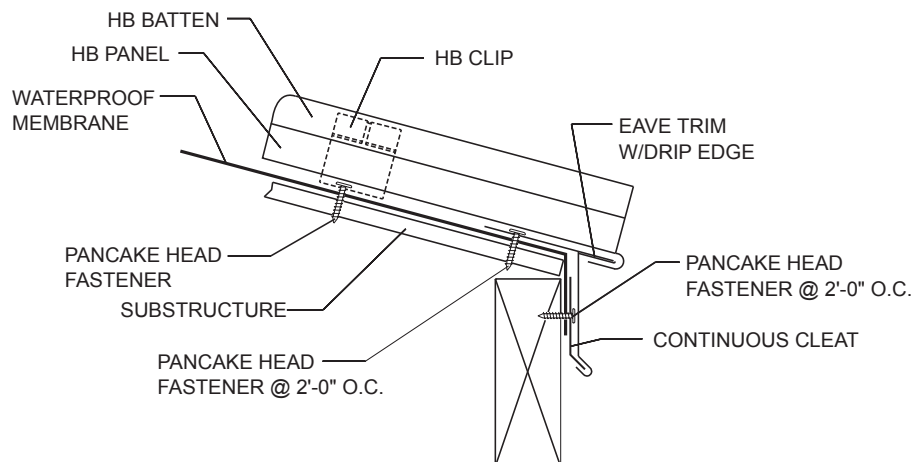


EAVE WITH OFFSET CLEAT



PANEL END DETAIL

SEE PAGE CS-57 FOR
PANEL ENGAGEMENT



EAVE WITH DRIP EDGE

NOTES:

OFFSET CLEAT

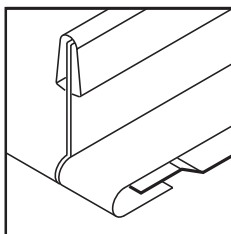
1. Install eave trim to substructure with two pancake head fasteners per 10'-0" piece.
2. Attach offset cleat with pancake head fasteners 6" o.c. Fasteners must go through double bead tape sealer.
3. To field hem, see page CS-57.
4. To seal batten ends, see page CS-53.

EAVE WITH EXTENDED DRIP EDGE

1. Install eave trim to substructure with pancake head fasteners 2'-0" o.c.
2. To field hem panels, see page CS-57.
3. To seal batten ends, see page CS-53.
4. This detail may be used on roofs with slopes up to 4:12. For slopes greater than 4:12, please call MBCI.

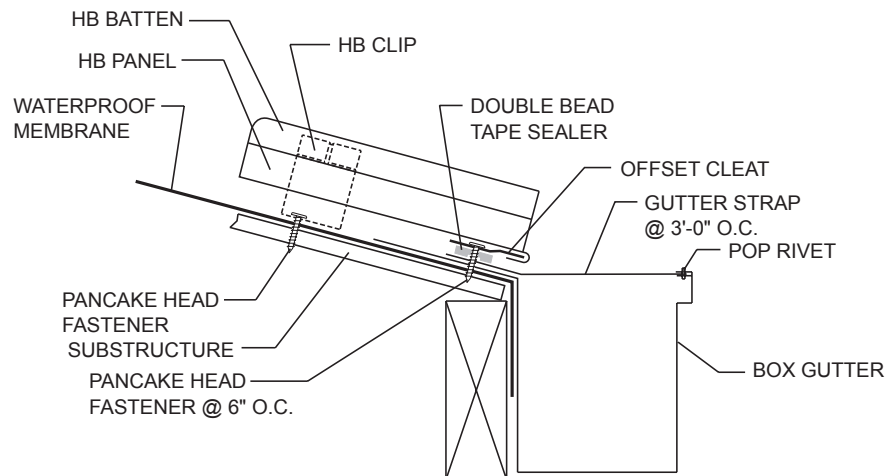
HB DETAIL

TYPICAL DETAILS GUTTER

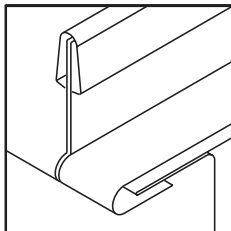


PANEL END DETAIL

SEE PAGE CS-57 FOR
PANEL ENGAGEMENT

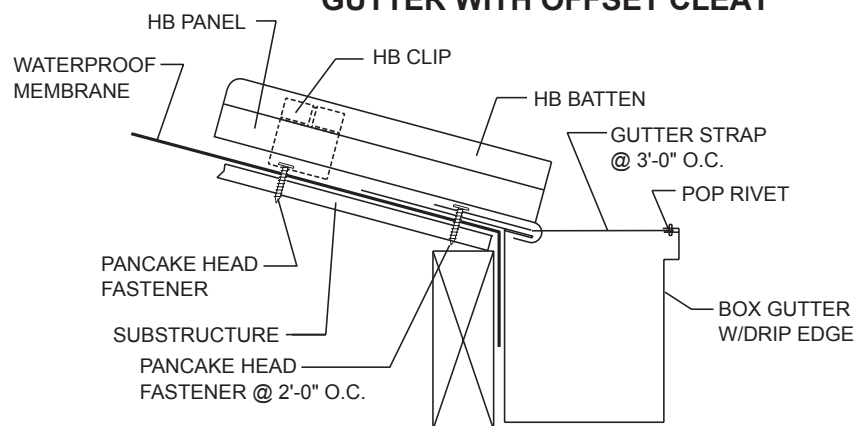


GUTTER WITH OFFSET CLEAT



PANEL END DETAIL

SEE PAGE CS-57 FOR
PANEL ENGAGEMENT



GUTTER WITH DRIP EDGE

NOTES:

OFFSET CLEAT

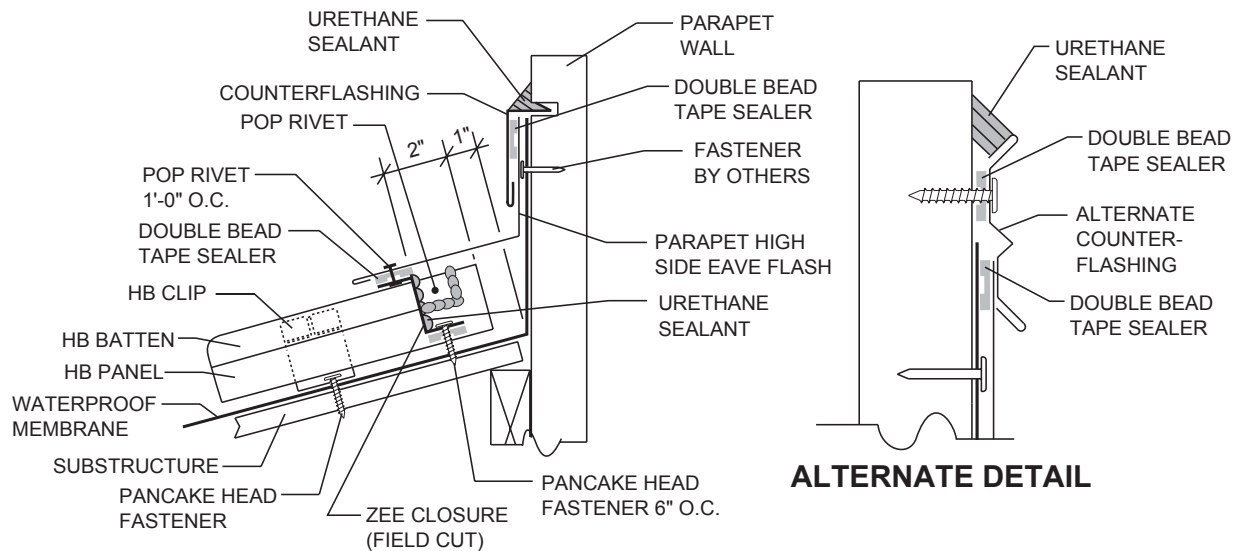
1. Install gutter to substructure with two pancake head fasteners per 10'-0".
2. Rivet gutter straps to gutter 3'-0" o.c.
3. Attach offset cleat with pancake head fasteners 6" o.c. Fasteners must go through double bead tape sealer.
4. To field hem panels, see page CS-57.
5. To seal batten ends, see page CS-53.
6. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher. See page CS-68 for the gutter detail for these areas.

GUTTER WITH DRIP EDGE

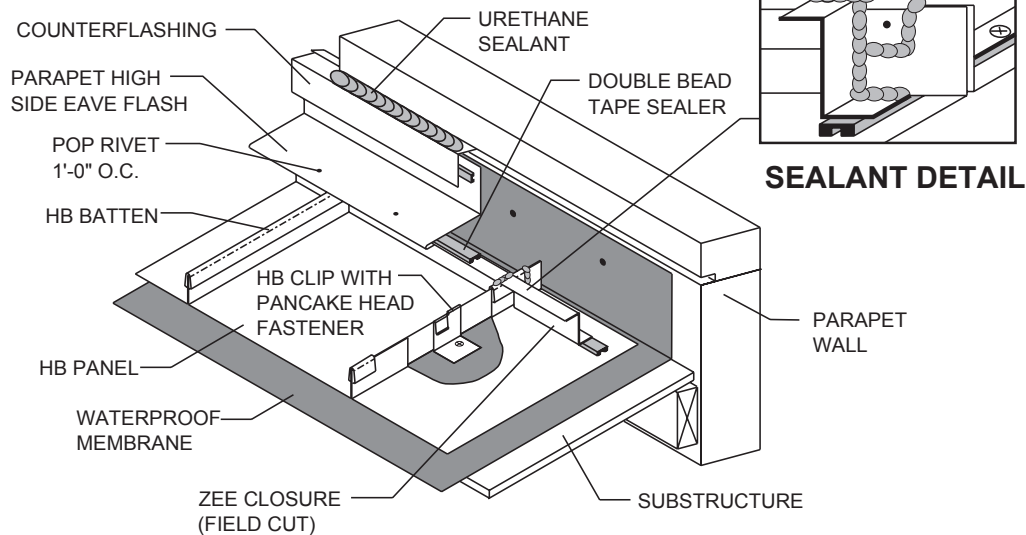
1. Install gutter to substructure with pancake head fasteners 2'-0".
2. Rivet gutter straps to gutter 3'-0".
3. To field hem panel, see page CS-57.
4. To seal batten ends, see page CS-53.
5. This detail may be used on roofs with slopes up to 4:12. For slopes greater than 4:12, please call MBCI.
6. The above gutter should not be used in areas that experience snow loads of 10 PSF or higher. See page CS-68 for the gutter detail for these areas.

HB DETAIL

PARAPET DETAILS HIGH EAVE



CROSS SECTION OF HIGH EAVE



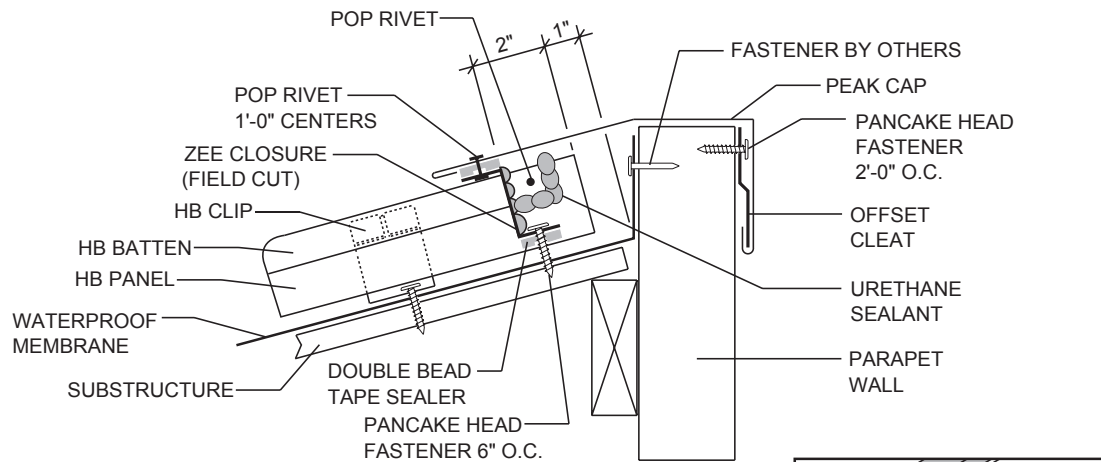
ISOMETRIC VIEW OF HIGH EAVE

NOTES:

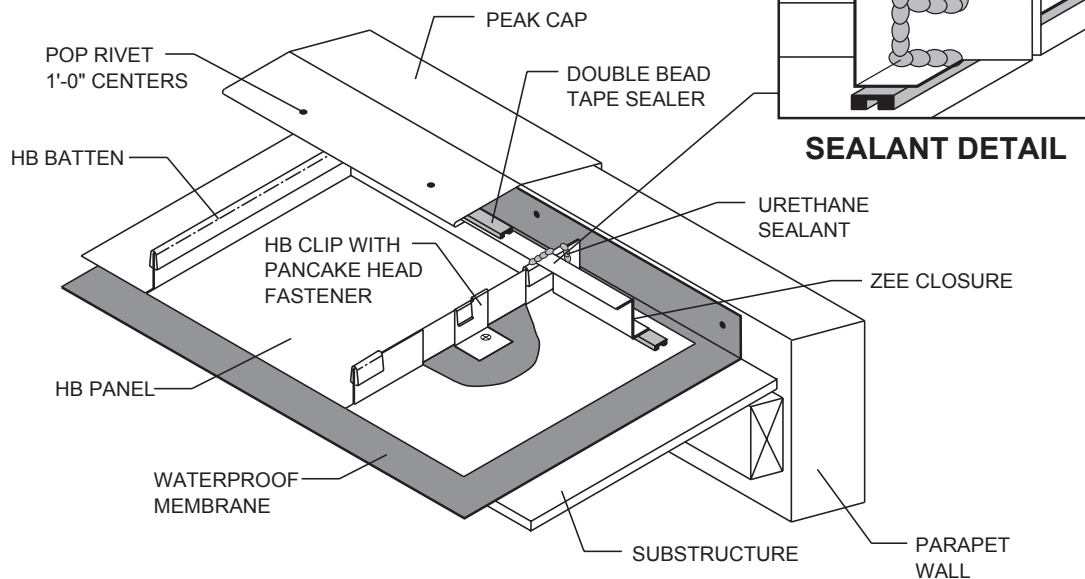
1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. Install zee closures so that parapet high side eave flash will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach parapet high side eave flash to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

HB DETAIL

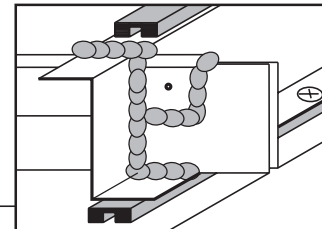
PARAPET DETAILS PEAK CAP



CROSS SECTION OF PEAK CAP



ISOMETRIC VIEW OF PEAK CAP



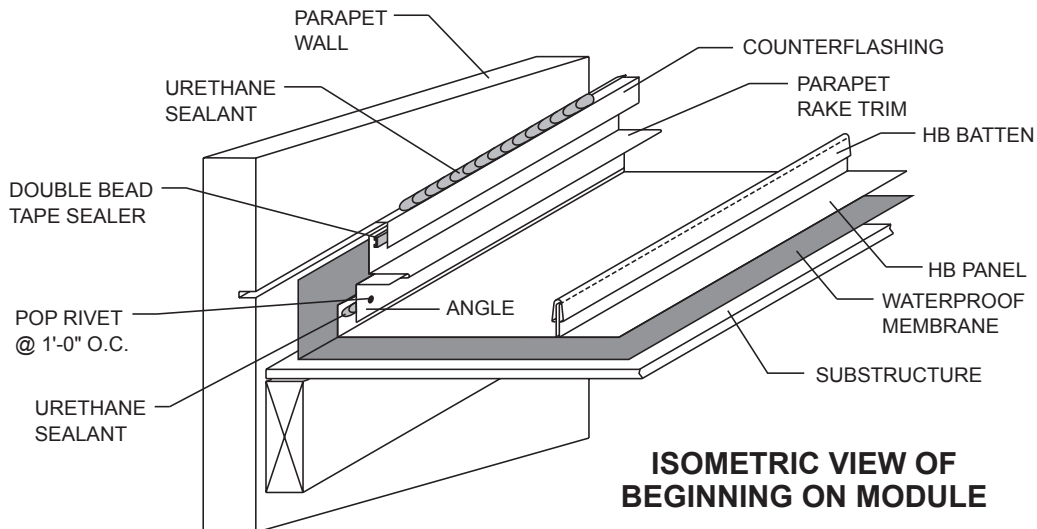
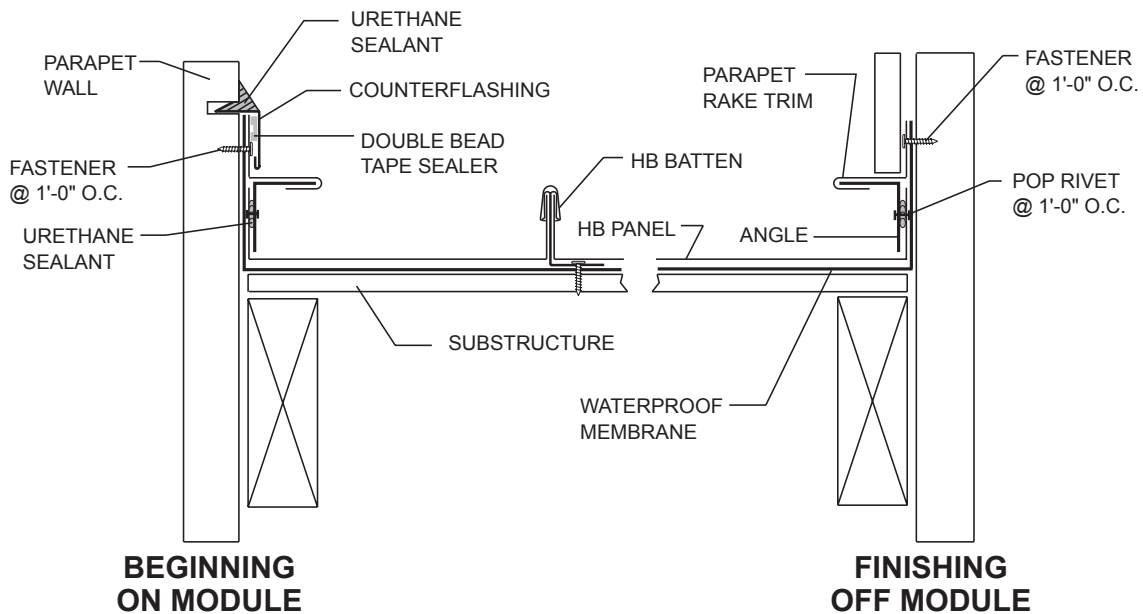
SEALANT DETAIL

NOTES:

1. Field cut zee closures from 10' stock lengths to fit panel width.
2. Install zee closures to roof panel with pancake head fasteners. Use three fasteners for 12" wide panels or four fasteners for 16½" wide panels. Install zee closures so that peak cap will overhang top leg of zee closure ½".
3. Batten should stop 1" from upslope end of panel. This will allow the end of the batten to be sealed with urethane sealant and prevent water from being forced into the voids on each side of the batten by a strong wind.
4. Rivet batten to vertical leg of panel to prevent its sliding downslope. This must be done upslope from the zee closure.
5. Attach peak cap to top leg of zee closure with rivets 1'-0" o.c. **Do not rivet through top of batten.**

HB DETAIL

PARAPET DETAILS PARAPET RAKE TRIM



NOTES:

BEGINNING ON MODULE

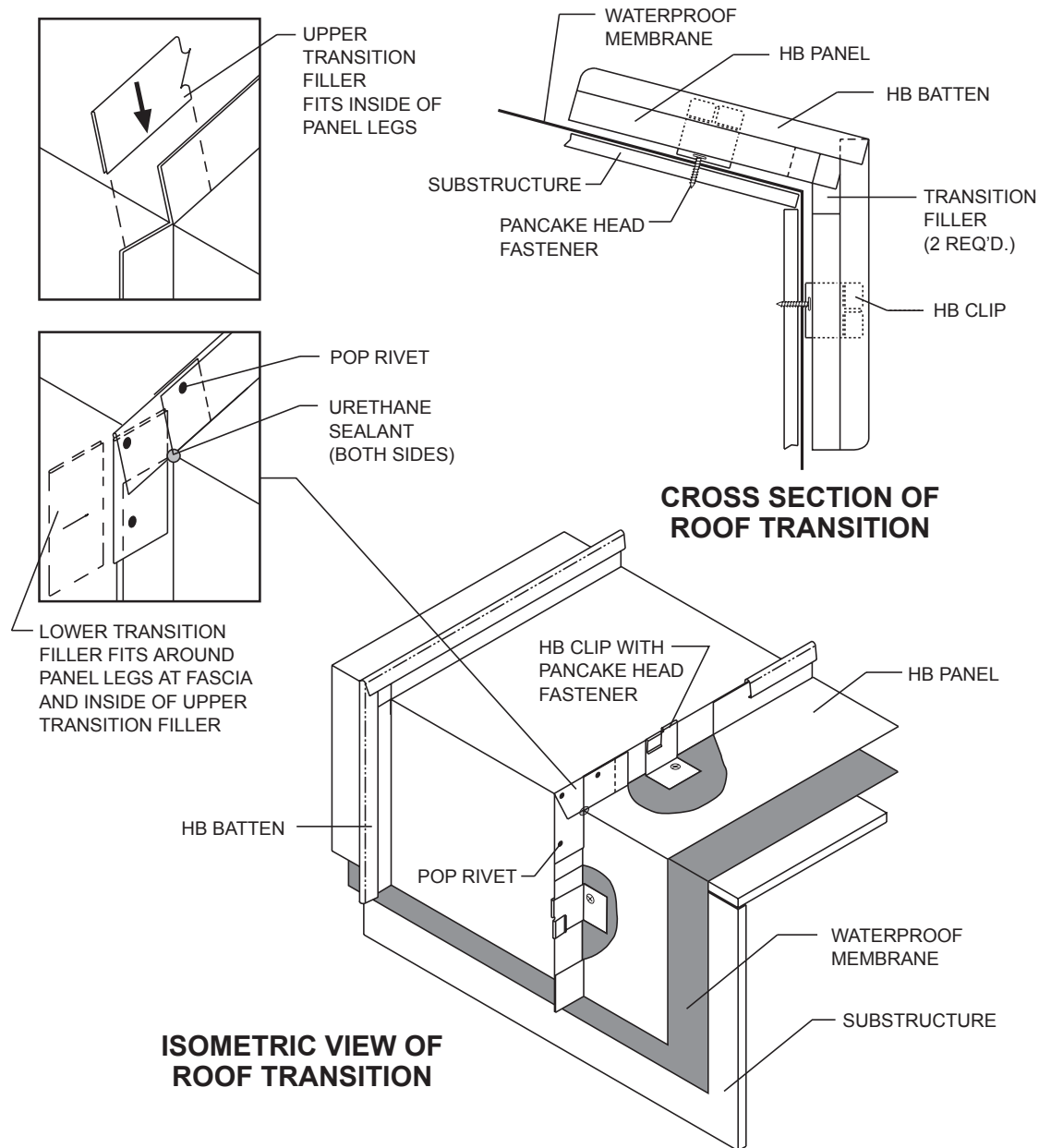
1. Apply a bead of urethane sealant to vertical leg of panel and rivet angle trim to panel 1'-0" o.c.
2. Hook open hem of parapet rake trim onto angle trim and fasten vertical leg of rake trim to parapet wall.

FINISHING OFF MODULE

1. Field bend a vertical leg and install as outlined above.

HB DETAIL

MISCELLANEOUS DETAILS ROOF TRANSITION

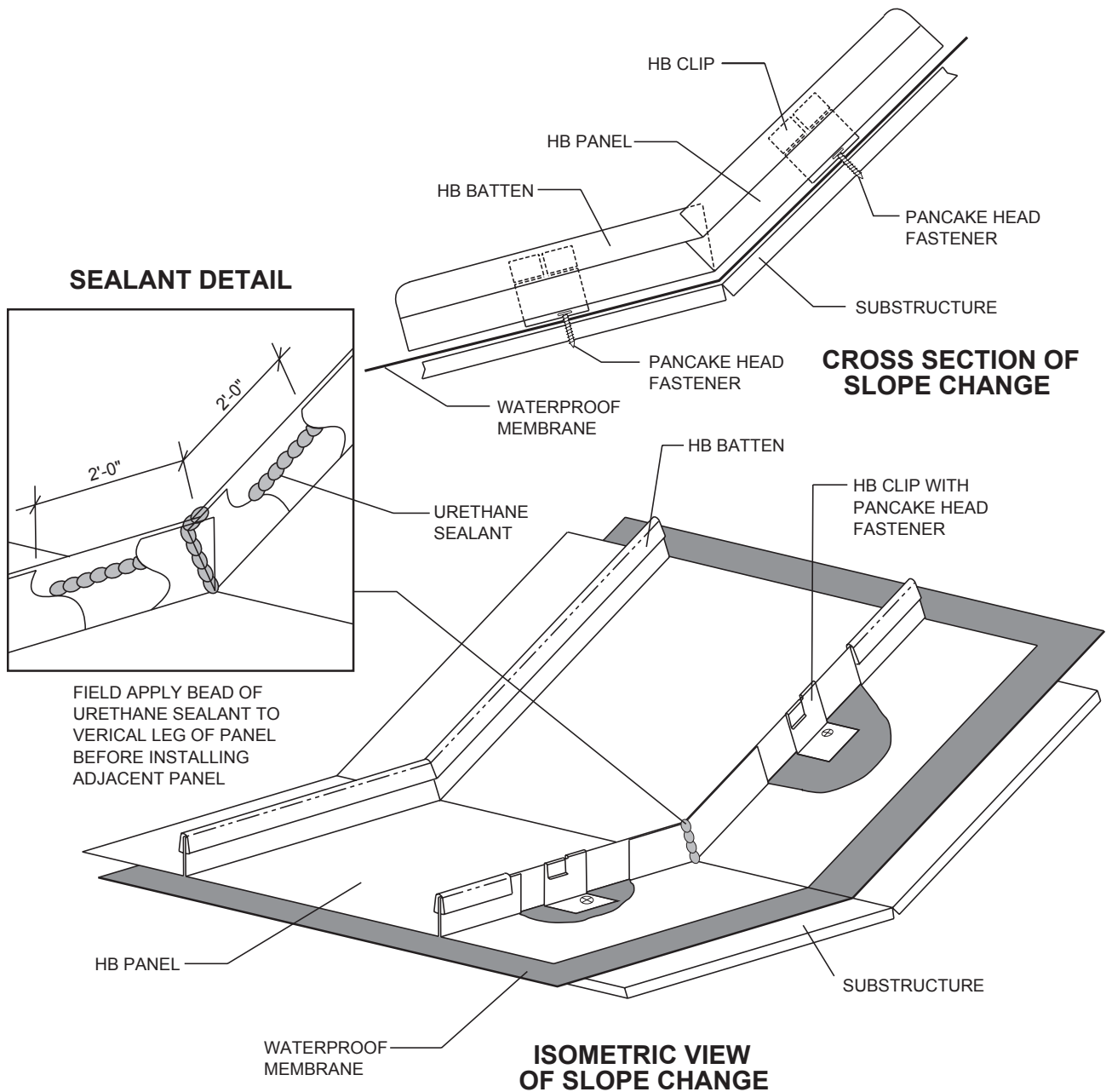


NOTES:

1. Field cut vertical legs of panel and bend pan to required angle.
2. Cut two 4" long pieces of HB transition filler from 10'-0" stock.
3. Install upper piece of transition filler between roof panel legs. Install lower piece of transition filler over fascia panel legs and inside of upper transition filler.
4. Field notch batten, bend to required angle and install.
5. **Do not use this detail inside the building envelope.**

HB DETAIL

MISCELLANEOUS DETAILS SLOPE CHANGE

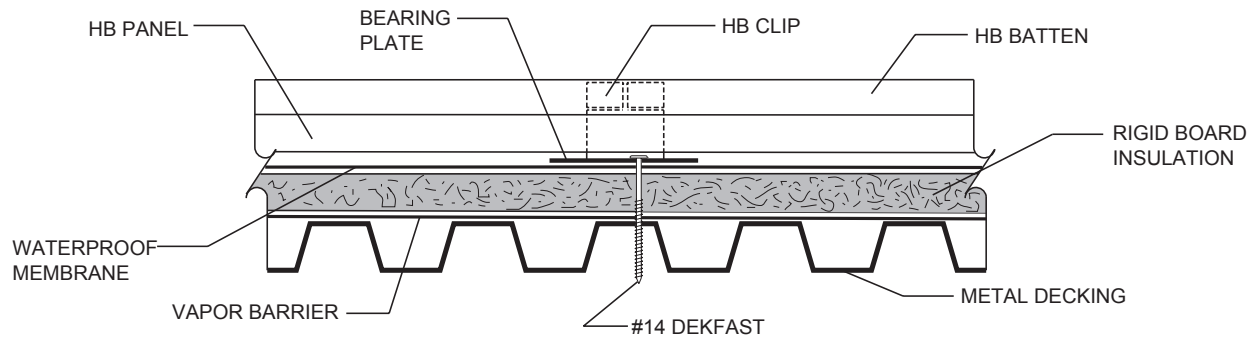


NOTES:

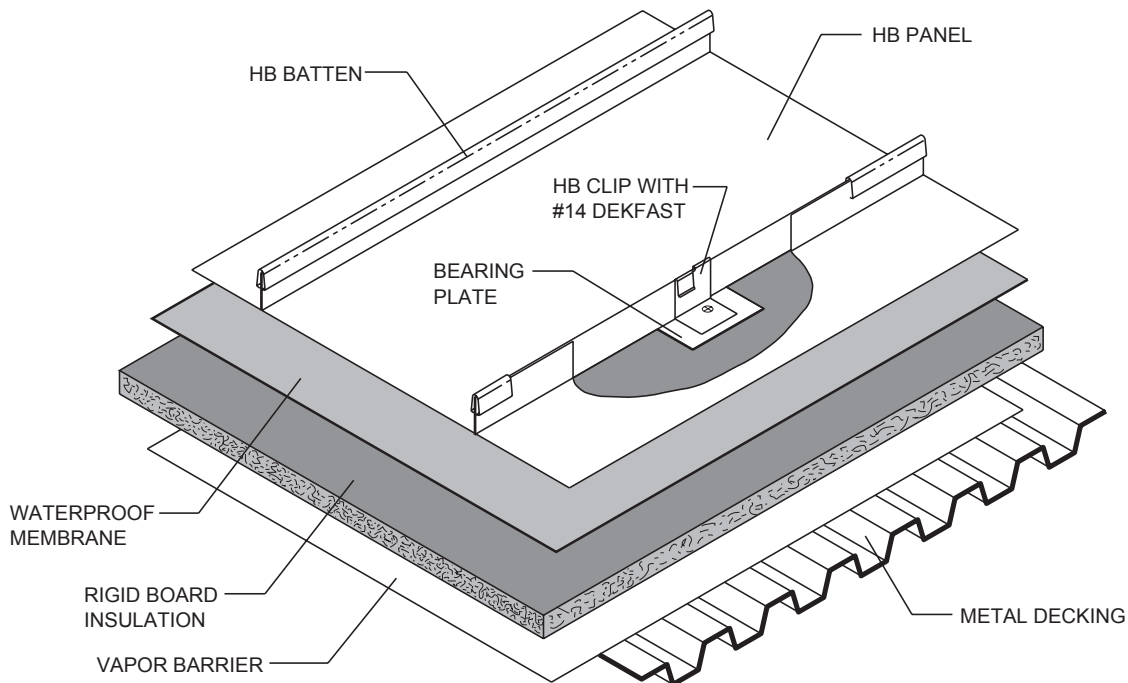
1. Field cut vertical legs of panel and bend pan to required angle.
2. Seal panel seams with urethane sealant.
3. Field cut batten and install.

HB DETAIL

MISCELLANEOUS DETAILS RIGID BOARD OVER METAL DECK



CROSS SECTION OF RIGID BOARD INSULATION OVER METAL DECK



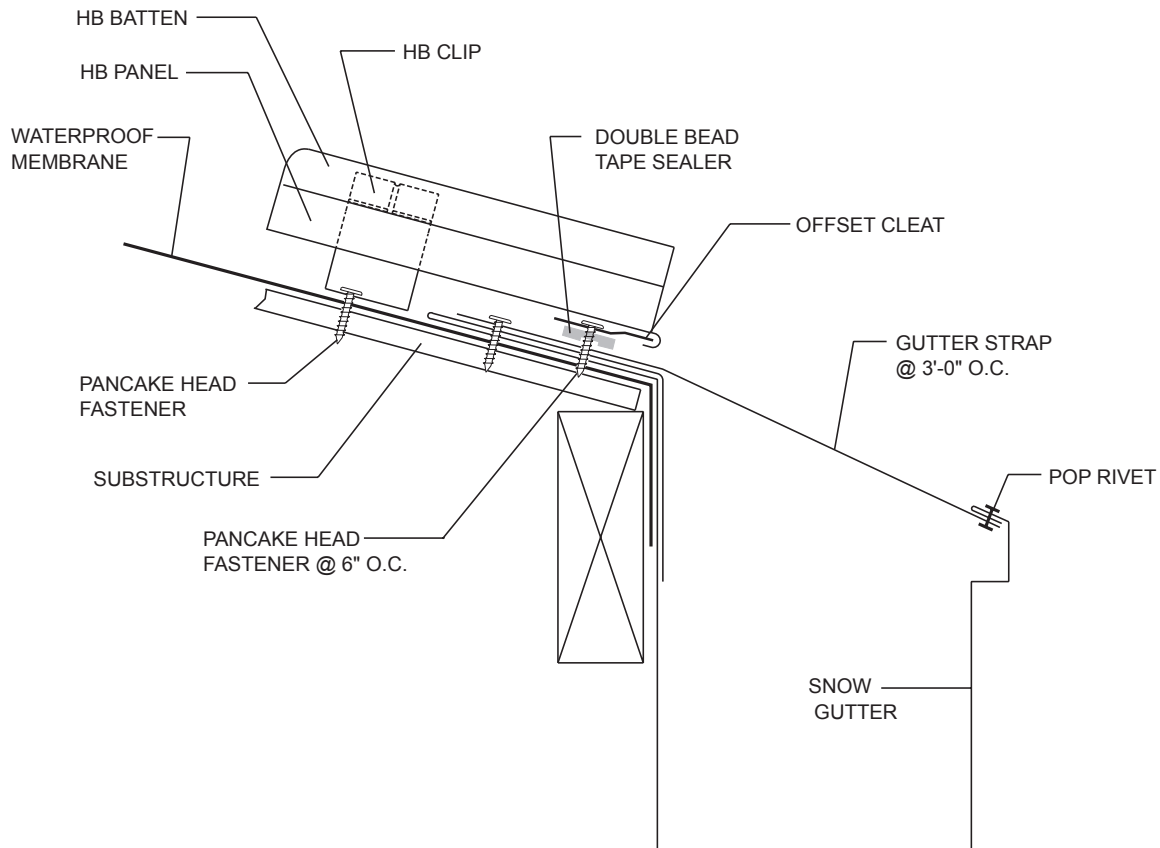
ISOMETRIC VIEW OF RIGID BOARD INSULATION OVER METAL DECK

NOTES:

1. Metal deck to be 1½" deep, 22 gauge.
2. Clips and bearing plates to be installed simultaneously with one #14 Dekfast fastener. Length of fastener to be ½" longer than combined thickness of metal deck and rigid board insulation.
3. Rigid board insulation must have a minimum density of 2 PCF.

HB DETAIL

MISCELLANEOUS DETAILS SNOW GUTTER



NOTES:

1. Install gutter to substructure with two pancake head fasteners per 10'-0".
2. Rivet gutter straps to gutter 3'-0" o.c.
3. Attach offset cleat with pancake head fasteners 1'-0" o.c. Fasteners must go through double bead tape sealer.
4. To field hem panels, see page CS-57.
5. To seal batten ends, see page CS-53.

NOTES



mbci.com