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EXPOSED FASTEN Design & Detail Guide – June 2018

**General Information**
The enclosed roofing system information and details are a design aid and do not represent all conditions. The designer and end-user are responsible to review climate and environmental conditions such as marine and salt air, acid rain from volcanic activity, governing code requirements, and the building use to modify the details and specify the appropriate project specific materials.

**Slope Requirement:**
EXPOSED FASTEN roofing panels should be installed on a minimum slope of 3:12 or greater. Inquire for slopes below 3:12.

**Substrate:**
EXPOSED FASTEN roofing panels can be used over solid substrates or can span over supports.

**Panel Attachment:**
Review the EXPOSED FASTEN fastener recommendations in this guide to select the correct fastener. For the attachment schedule, contact your HPM Technical Representative for proper spacing and fastener size, type, and quantities to meet the project's wind uplift (negative) load requirements. The details in this guide on page 2 are the recommended minimums for each panel profile. 

*NOTE: Exposed fasteners may be vulnerable to accelerated corrosion if not specified correctly. Consult with HPM for recommendations on appropriate fastener types.*

**Condensation, Insulation, & Ventilation:**
It is the designer's responsibility to determine the need and composition of condensation control materials including insulation, vapor retarders and ventilation requirements. Metal roofing is susceptible to condensation and its control should be carefully considered. Applications over rigid insulation may require solid blocking/framing for installation of perimeter flashings and drag load fasteners.

**Cut Edge Corrosion Protection:**
Metal roofing panels and flashings have cut edges that are not as protected as the main panel surface areas which have substrate treatment and paint as a barrier. Left untreated, the effects of exposure from marine air, and acid rain from volcanic activity will cause a condition called 'edge creep'. The designer should specify the end user/installer field apply a product designed to seal the cut edge and protect the base metal. This treatment should be applied during the initial install and annually as regular maintenance. See HPM's website for information about Edge Seal™, a product developed by a leading paint manufacturer specifically to protect cut edges and retard edge creep.

**Flashings:**
It is best practice to specify all flashings are the same material gauge, color, and finish as the roof panels. Where possible, flashings should be lapped away from prevailing winds. Check with an HPM Technical Representative if you intend to specify a prefinished flashing in a material different than the roof panels. The enclosed details have minimized the use of exposed fasteners where possible. The edges of flashings are shown hemmed to strengthen and minimize the exposure of cut edges. See notes under the 'Cut Edge Corrosion Protection' section. HPM provides standard flashing drawings as a reference in this guide and on the website. Project specific flashing drawings are generally the responsibility of the installer.

**Valleys:**
Valley dimensions must be the proper width to account for slope and rain conditions. Valleys must have positive slope for drainage and be kept free of debris so that water does not back up and intrude under the panels.

**Touch-up Paint:**
During installation minor scratches may occur. Most conditions can be treated with an air-dry Kynar paint pen. HPM provides paint pens in colors to match the roof panel system. Touch-up paint should always be used sparingly.

**Thermal Movement:**
Panels and flashings must allow for thermal movement (expansion and contraction) of the materials, especially where long lengths are used.

**Underlayment:**
Prior to installation, an underlayment material may be installed over the roof substrate. The designer should select and specify an appropriate material. The specified material must have a non-abrasive top surface that will not mar, scratch, or abrade the underside of the metal panels and flashings.

**Oil Canning:**
Flat metal surfaces can display waviness commonly referred to as 'oil canning'. This can be caused by variations in raw material, processing variations, product handling, or variations in substrate and roofing underlayments. Panels are available with striations, stiffening ribs, or embossments to minimize oil canning. Oil canning is a condition that occurs, not a defect and is not a cause for rejection.

**Product Warranty:**
Material options and warranties will vary based on project and site specific conditions such as severe marine, or acid rain from volcanic activity. Consult with your HPM Sales or Technical Representative to discuss the warranty options for your project.

**Technical Assistance:**
Contact your HPM Sales or Technical Representative for more information and assistance when selecting a custom metal roof system.
COMMERCIAL RIB (P7)

Wall Application 1.5 Rib Lap 32" Coverage

Roof Application 2.5 Rib Lap 29 \( \frac{1}{3} \)" Coverage

7/8"

CUSTOM 4-RIB (P9)

12"

36"

Anti-Capillary Break

1 \( \frac{3}{16} \)"

CUSTOM 6-RIB (P8)

6 1/2"

32 \( \frac{1}{2} \)"

Anti-Capillary Break

1 1/8"

CUSTOM BOX-RIB

6"

30"

Anti-Capillary Break

1 1/2"
# EXPOSED FASTEN DESIGN & DETAIL GUIDE - JUNE 2018

## COMMERCIAL RIB (P7)

![Diagram of COMMERCIAL RIB (P7)](image)

## CUSTOM 4-RIB (P9)

![Diagram of CUSTOM 4-RIB (P9)](image)

## CUSTOM 6-RIB (P8)

![Diagram of CUSTOM 6-RIB (P8)](image)

## CUSTOM BOX-RIB

![Diagram of CUSTOM BOX-RIB](image)

### OPEN FRAMING  
(to steel purlins)

- #12-14 x 2"
- #12-14 x 1 1/2"
- #12-14 x 1"
  
  (5/16" HWH)

### SOLID SUBSTRATE  
(to plywood deck)

- #9-15 x 2"  
- #9-15 x 1 1/2"  
- #9-15 x 1"
  
  (1/4" HWH)

### 2X WOOD BLOCKING  
(to dimensional lumber)

- #9-15 x 2"  
- #9-15 x 1 1/2"  
- #9-15 x 1"
  
  (1/4" HWH)

### LAP SCREW  
(light gauge to light gauge)

- #14 x 7/8" Lap Tek  
  (5/16" HWH)
- #10 x 3/4" Stich Screw  
  (1/4" HWH)
**COMMERCIAL RIB (P7)**

- Tape Sealant
- Tape Sealant

**CUSTOM 4-RIB (P9)**

- Tape Sealant

**CUSTOM 6-RIB (P8)**

- Tape Sealant

**CUSTOM BOX-RIB**

- Tape Sealant

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<th>2X WOOD BLOCKING</th>
<th>LAP SCREW</th>
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COMMERCIAL RIB (P7) INSIDE & OUTSIDE CLOSURE

CUSTOM 4-RIB (P9) OUTSIDE CLOSURE

CUSTOM 4-RIB (P9) INSIDE CLOSURE

CUSTOM 6-RIB (P8) OUTSIDE CLOSURE

CUSTOM 6-RIB (P8) INSIDE CLOSURE

CUSTOM BOX-RIB OUTSIDE CLOSURE

CUSTOM BOX-RIB INSIDE CLOSURE
EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY

INSIDE POLYETHYLENE CLOSURE
SET IN SEALANT

FASTENER
See notes below

UNDERLAYMENT

SUBSTRATE
(VARIES)

FASTENER
10 x 1 PANCAKE 12" ON CENTER

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3

EXPOSED FASTEN DESIGN & DETAIL GUIDE - JUNE 2018
NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
EXTerior WALL Varies

SIDEWALL COUNTERFLASHING

SIDEWALL FLASHING

1/4"-14X7/8" FASTENER 12" ON CENTER

BUTYL TAPE

FASTENER See notes below

EXPOSE FASTEN PANEL ACTUAL PROFILE MAY VARY

SUBSTRATE (VARIES)

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3

EXPOSED FASTEN DESIGN & DETAIL GUIDE - JUNE 2018
EXPOSED FASTEN
RIDGE / HIP

EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY
SEE PAGE 3

RIDGE / HIP

1/4"-14X7/8" FASTENER
12" ON CENTER

UNDERLAYMENT

FASTENER
See notes below

OUTSIDE CLOSURE
SET IN SEALANT
TOP AND BOTTOM

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3

EXPOSED FASTEN DESIGN & DETAIL GUIDE - JUNE 2018
EXPOSED FASTEN
RIDGE / HIP - VENTED

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3

EXPOSED FASTEN DESIGN & DETAIL GUIDE - JUNE 2018
EXPOSED FASTEN PANEL 
ACTUAL PROFILE MAY VARY 
SEE PAGE 3

OUTSIDE CLOSURE 
SET IN SEALANT 
TOP AND BOTTOM

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3

EXPOSED FASTEN DESIGN & DETAIL GUIDE- JUNE 2018
PEAK FLASHING

OUTSIDE CLOSURE
SET IN SEALANT
TOP AND BOTTOM

1/4"-14X7/8" FASTENER
12" ON CENTER

EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY
SEE PAGE 3

EXTERIOR
FINISH
(VARIES)

SUBSTRATE
VARIES

FASTENER
See notes below

UNDERLAYMENT

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
STEEP SLOPE TO LOW SLOPE

EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY
SEE PAGE 3

INSIDE CLOSURE
SET IN SEALANT
TOP AND BOTTOM

TRANSITION FLASHING

FASTENER
1/4-14 X 7/8 FASTENER
12" ON CENTER

UNDERLAYERMENT

SUBSTRATE VARIES

OUTSIDE CLOSURE
SET IN SEALANT
TOP AND BOTTOM

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY
SEE PAGE 3

UNDERLAYMENT

FASTENER
See notes below

6"

VALLEY FLASHING

INSIDE CLOSURE
SET IN SEALANT
TOP AND BOTTOM

SUBSTRATE VARIES

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
NOTES:
1. SUBSTRATE TO BE CUT 1" LARGER THAN PIPE BOOT BASE / FASTENERS TO ATTACH TO PANEL NOT SUBSTRATE.
2. HOLE IN PANEL TO BE 1" LARGER THAN PIPE TO ALLOW FOR THERMAL MOVEMENT.
3. BOOT SET IN BUTYL TAPE FASTEN BASE TO PANEL 1 1/2" O.C.
PIPE BOOTS MAY HAVE ROUND OR SQUARE BASE
EXPOSED FASTEN PROFILES
CURB LAYOUT

PAGE 18

EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY

TOP POLYETHYLENE CLOSURE
SET IN SEALANT

NOTES:
SET CURB FLASHING ON BUTYL TAPE
FASTEN 3" ON CENTER
CURBS OVER 30" REQUIRE CRICKET/DIVERTER
EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY

INSIDE POLYETHYLENE CLOSURE
SET IN SEALANT

CURB FLASHING

#9-15 X 1" FASTENER
12" ON CENTER

BUTYL TAPE

UNDERLAYMENT

SUBSTRATE
(VARIES)

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
FASTEN TOP OF RIB FOR COMMERCIAL RIB
FASTEN IN PAN FOR ALL OTHERS - PAGE 3
OUTSIDE POLYETHYLENE CLOSURE
SET IN SEALANT

#9-15 X 1" FASTENER
12" ON CENTER

CURB FLASHING

EXPOSE FASTEN PANEL
ACTUAL PROFILE MAY VARY

UNDERLAYMENT

SUBSTRATE
(VARIES)

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
EXPOSED FASTEN PANEL
ACTUAL PROFILE MAY VARY

Curb flashing

#9-15 x 1" Fastener
12" on center

Butyl tape

Underlayment

Substrate (Varies)

Notes:
Fasteners vary due to substrate
Fasten top of rib for commercial rib
Fasten in pan for all others - Page 3
WALL DETAIL

WALL OPENING OVERVIEW

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
WALL DETAIL

WALL SHEATHING

VAPOR BARRIER

WALL PANEL

INSIDE POLYETHYLENE CLOSURE SET IN SEALANT

1/4" CLEARANCE

DRIP FLASHING

Sealant Between Frame and Trim

Door / Window Frame

Framing Members
WALL DETAIL

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
WALL DETAIL

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
WALL DETAIL

NOTES:
FASTENERS VARY DUE TO SUBSTRATE
WALL DETAIL

- Framing Members
- Vapor Barrier
- Wall Sheathing
- Corner Trim
- 1/4"-14x7/8" Fastener 12" on center
- Wall Panel Vertical

Notes:
Fasteners vary due to substrate
NOTES:
ALL TRIMS REQUIRE A 3" LAP EXCEPT VALLEY TRIM WHICH REQUIRES A 9" LAP

(2) 3/8" BEADS OF BUTYL SEALANT

USE POP RIVETS IN SEALANT ONLY TO MIN. FISH-MOUTHING
Kapolei, Hawaii
Campbell Industrial Park
91-302 Hanua Street
Kapolei, HI 96707
Phone: (808) 682-8560
Toll Free: (877) 841-7633
Fax: (808) 682-8565
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