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**PANEL OVERVIEW**

**SLOPE**

The minimum recommended slope for any Image II roofing panel is 3:12.

**SUBSTRATE**

The recommended substrate is 5/8" plywood with a 30 pound felt moisture barrier. To avoid panel distortion, use a properly aligned and uniform substructure. Please note that Image II panels are not recommended for use over open framing.

**COVERAGE**

Image II panels are available in a 12" and 16" widths with a 1" rib height.

**LENGTH**

Minimum panel length is 5'-0". Maximum recommended panel length is 30'-0". Longer panels require additional consideration in packaging, shipping, and erection. Please consult your Metal Sales branch for recommendations (see PGI-2 and 3 for locations).

**AVAILABILITY**

Image II panels material gauges and finishes vary. Please refer to the Image II brochure/color chart.

**APPLICATION**

Applications include residential and architectural buildings ranging from new construction to retrofit. The term retrofit as applied to construction methods is to replace or rework.

**PERFORMANCE TEST**

UL 2218, UL790, UL263, ASTM E-1592

**FASTENING SYSTEM**

Concealed direct fastening system using Truss Head Woodscrews applied through factory punched fastening slots/groove into wood decking. Fastener spacing is 18" on center, except where extreme wind uplift conditions exist.

**FASTENERS**

The fastener selection guide should be consulted for choosing proper fasteners for specific applications. Quantity and type of fastener must meet necessary loading and code requirements (see PGI-12-13).

**MATERIALS**

Steel, minimum grade 50

**FINISH**

- Acrylic Coated Galvalume® (ACG) / ASTM A 792
- Prepainted Galvanized / ASTM A 792
- **PVDF Fluorocarbon**

  * Differential appearance of Acrylic Coated Galvalume roofing materials is not a cause for rejection.
  ** Meets both Kynar 500 and Hylar 5000 specifications.
**IMAGE II FLASHING PROFILES**

**EAVE**
- Length 10'-2" - *Specify Slope Angle

**EXTENDED EAVE**
- Length 10'-2" - *Specify Slope Angle

**CLEAT**
- Length 10'-2"

**OFFSET CLEAT**
- Length 10'-2"

**5K GUTTER**
- Length 20'-6"

**5K GUTTER ENDCAP**

**3" DOWNSPOUT**
- 29 Gauge - Length 10'-3"

**3" DOWNSPOUT ELBOW**

**12" DOWNSPOUT BRACKET**

**12" COIL**
(For Continuous Gutters)
- 16" Inside Diameter
- Length 150'-0"

**VALLEY**
- Length 10'-2", 20'-3" - *Specify Slope Angle

**IMAGE II RAKE**
- Length 10'-2", 20'-3"

**IMAGE II STEP RAKE**
- Length 10'-2", 20'-3"

**RAKEWALL**
- Length 10'-2"

**IMAGE II STEP RAKEWALL**
- Length 10'-2"
<table>
<thead>
<tr>
<th>Flashing Profiles (cont.)</th>
<th>COUNTER FLASHING</th>
<th>REGLET FLASHING</th>
<th>STEP RIDGE/HIP COVER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>13&quot; RIDGE/HIP COVER</strong></td>
<td><img src="image1" alt="13&quot; RIDGE/HIP COVER Diagram" /></td>
<td><img src="image2" alt="REGLET FLASHING Diagram" /></td>
<td><img src="image3" alt="STEP RIDGE/HIP COVER Diagram" /></td>
</tr>
<tr>
<td><strong>PITCH BREAK</strong></td>
<td><img src="image4" alt="PITCH BREAK Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.5&quot; SILL/HEAD</strong></td>
<td><img src="image5" alt="1.5&quot; SILL/HEAD Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1&quot; Z-CLOSURE</strong></td>
<td><img src="image6" alt="1&quot; Z-CLOSURE Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VENT DRIP</strong></td>
<td><img src="image7" alt="VENT DRIP Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PEAK</strong></td>
<td><img src="image8" alt="PEAK Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.5&quot; SILL TO SOFFIT</strong></td>
<td><img src="image9" alt="1.5&quot; SILL TO SOFFIT Diagram" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **C** indicates color side of flashing.

Lengths and dimensions vary, please refer to the specific diagrams for details.

- **0.032 Aluminum**
- **Linen White Only**

*Specify Slope Angle as needed.*
**ACCESSORY PROFILES**

**COBRA VENTED CLOSURE**

**OUTLET TUBE 2” X 3”**

**FACIA BRACKET**

**TUBE SEALANT**

10.3 oz. Cartridge Urethane

**TAPE SEALANT**

1/8” X 3/16” X 25’
Double Bead Butyl - Gray

**OUTSIDE CLOSURE**

36”

**RUBBER ROOF JACK**

MINI (1/4” to 1 1/2” O.D. Pipe)
#2 (1 1/4” to 3” O.D. Pipe)
#4 (3” to 6” O.D. Pipe)
#6 (6” to 9” O.D. Pipe)
#8 (7” to 13” O.D. Pipe)

**TOUCH-UP PAINT**

Available in pints
PVDF / MS Colorfast45

**METAL PANEL HEMMING TOOL**
Metal Roof Deck Panels

Metal Sales Manufacturing Corporation has obtained fire resistance ratings for various products conducted according to test criteria set forth by 'Underwriters Laboratories' "Standard Fire Tests of Building Construction and Material" (ANSI/UL 263). This test procedure is identical to ASTM E-119 and NFPA 251.

The fire resistance rating is for the total assembly and not just the external metal panel. Ratings are expressed in hours and vary depending upon the assemblies. In general, the test criteria is to evaluate the assembly's ability to continue to support the superimposed loads and resist the passage of flame, high temperatures, or hot gases which will ignite combustible materials. The test assemblies are identified by an alpha-numeric design number.

For detail information on specific assemblies and hourly ratings see UL Fire Resistance Directory.

METAL SALES MFG CORP
R9697

Mechanically attached metal roof panels - Type "Image II"


*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 min. 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 min. No. 14 self-drilling and/or self-tapping fasteners.

See the UL Fire Resistance Directory for explanation of each design number listed above.
SECTiON PROPERTiES AND gEnERAL INFORMATION

1. Theoretical section properties have been calculated per AISI 2001 “Specification for the Design of Cold-formed Steel Structural Members with 2004 Supplement.” Ixx and Sxx are effective section properties for deflection and bending.

2. Allowable load is calculated in accordance with AISI 2001 specifications considering bending, shear, combined bending and shear, deflection, testing, fastener pullout from 5/8” plywood, and pullover. Allowable load considers the worst case of 3 and 4 equal span conditions. Allowable load does not address web crippling. Panel weight is not considered.

3. Deflection consideration is limited by a maximum deflection ratio of L/180 of span.

4. Allowable loads do not include a 1/3 stress increase in uplift.

<table>
<thead>
<tr>
<th>Ga.</th>
<th>Width in</th>
<th>Yield ksi</th>
<th>Weight psf</th>
<th>Top In Compression</th>
<th>Bottom In Compression</th>
<th>Outward Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bxx in$^4$/ft</td>
<td>Sxx in$^3$/ft</td>
<td>bxx in$^4$/ft</td>
</tr>
<tr>
<td>26</td>
<td>16”</td>
<td>80</td>
<td>0.90</td>
<td>0.0157</td>
<td>0.0168</td>
<td>0.0163</td>
</tr>
<tr>
<td>24</td>
<td>16”</td>
<td>50</td>
<td>1.19</td>
<td>0.0210</td>
<td>0.0226</td>
<td>0.0210</td>
</tr>
</tbody>
</table>

GENERAL INFORMATION

► Slope
The minimum recommended slope for the Image II roof panel is 3:12.

► Substructure
Image II is designed to be utilized over a solid substrate. To avoid panel distortion use a properly aligned and uniform substructure.

NOTE: Image II roof panels are not recommended for use over open structural framing.

► Coverage
Image II panels are available in a 1” seam height with a 12” or 16” width coverage.

► Length
Minimum factory cut length is 5’-0”. Maximum recommended panel length is 30’-0”. Longer panels require additional consideration in packaging, shipping, and erection. Please consult Metal Sales for recommendations.

► Fasteners
The fastener selection guide should be consulted for choosing the proper fastener for specific applications. Quantity and type of fastener must meet necessary loading and code requirements.

NOTE: 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.

► Availability
Finishes: Acrylic Coated Galvalume®, MS Colorfast45®, or various Kynar 500 (PVDF) colors.

Gauge: 26 ga standard, 24 ga optional
### IMAGE II DESIGN / INSTALLATION CONSIDERATIONS

#### FASTENER INSTALLATION TECHNIQUE

**Recommended Tool Type** - Use depth locating nose or adjustable clutch on screw gun to prevent overdrilling and strip out. **Do not use impact tools or runners.**

**Seating the washer** - Apply sufficient torque to seat the washer - do not overdrive the fastener.

<table>
<thead>
<tr>
<th>CORRECT</th>
<th>TOO LOOSE</th>
<th>TOO TIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealing material slightly visible at edge of metal washer. Assembly is watertight.</td>
<td>Sealing material is not visible; not enough compression to seal properly.</td>
<td>Metal washer deformed; sealing material pressed beyond washer edge.</td>
</tr>
</tbody>
</table>

**To prevent wobbling** - Make sure fastener head is completely engaged in the socket. If the head does not go all the way in the socket - tap the magnet deeper into the socket to allow full head engagement. Metal chips will build up from drilling and should be removed from time to time.

**Protect drill point** - Push only hard enough on the screw gun to engage clutch. This prevents excess friction and burn out of the drill point. Correct pressure will allow screw to drill and tap without binding.

**Drilling through sheet and insulation** - Ease up on pressure when drilling through insulation to avoid striking the purlin or girt with the point - apply more pressure after drill point contacts purlin or girt.

**Drilling through purlin overlaps** - Drilling through lapped purlins requires extra care. Excessive voids between purlins sometimes damages drill points and two self-drillers might be necessary to complete the operation. It is sometimes advantageous to predrill.

**CONDITION OF SUBSTRUCTURE**

Whether over solid substrate or open structural framing, panel distortion may occur if not applied over properly aligned and uniform substructure.

The installer should check the roof deck for squareness before installing Image II panels. Several methods can be used to verify squareness of the structure for proper installation of the panels.

**METHOD "A"** - One method for checking the roof for squareness is to measure diagonally across one slope of the roof from similar points at the ridge and eave and obtain the same dimension.

**METHOD "B"** - The 3-4-5 triangle system may also be used. To use this system measure a point from the corner along the edge of the roof at a module of three (3). Measure a point from the same corner along another edge at a module of four (4). Then by measuring diagonally between the two points established, the dimension should be exactly a module of five (5) to have a square corner. Multiple uses of this system may be required to determine building squareness. If the endwall cannot be made square, the roof system cannot be installed as shown in these instructions.
VENTILATION

Proper design and installation of vapor barriers and ventilation systems are important to prevent condensation and the resulting problems of moisture damage and loss of insulation efficiency.

Condensation occurs when moisture laden air comes in contact with a surface temperature equal to or below the dew point of the air. This phenomenon creates problems that are not unique with metal roofing; these problems are common to all types of construction.

The underside of the metal roof on a typical Architectural building should be protected from condensation by installing panels directly over a minimum 30 lb moisture barrier and uniform solid substrate. This reduces airspace and the potential of condensation forming on the underside of the panels.

VENTILATION

Typical metal building (no attic)  

Building with attic or retrofitted

PANEL APPLICATIONS

The following chart highlights UL 580 Class 90 for clip installation on the selected applications (see Fastener Selection Guide page PGI-12-14 for other fasteners available). For more information on UL Construction numbers, refer to UL Roofing Materials and System Directories. Panel gauges and clip spacing should be determined by a professional engineer according to the governing building code.

<table>
<thead>
<tr>
<th>PANEL TYPE</th>
<th>APPLICATION</th>
<th>INSTALLATION REQUIREMENTS</th>
<th>FASTENER SPACING</th>
<th>*TYPE OF FASTENER</th>
<th>NUMBER REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMAGE II</td>
<td>OVER (\frac{7}{8})&quot; WOOD DECK AND METAL DECK</td>
<td>Standard 26 GAUGE</td>
<td>18° o.c.</td>
<td>CALL YOUR METAL SALES BRANCH FOR ASTM-E1592 UPLIFT VALUE</td>
<td></td>
</tr>
</tbody>
</table>

* Subject to project loading, closer fastener spacing may be required. Contact your local Metal Sales branch representative for more information (see pages PGI-2-3). Fastener spacing is based on maximum uplift suction load of 32 psf.

BEARING PLATE
Panel rib must be field notched and flat part of panel must be field bent to accept offset cleat (see Architectural Manual).
3:12 Slope Minimum

- Image II Panel
- Moisture Barrier (by others)
- #9-15 x 1" Woodscrew (4 per panel)
- Double Bead Tape Sealant
- Eave
- Fascia Bracket
- #9-15 x 1" Woodscrew (1'-0" o.c.)
- 5K Gutter (by others)

**CAUTION**
Additional screws may be required for high snow loading and steep slopes.

---

Panel rib must be field notched and flat part of panel must be field bent to accept offset cleat (see Architectural Manual).
### Slope Change Detail

**3:12 Slope**

- **Minimum**

```
- Image II Panel
- #8-18 x 3/4" Truss Head Wood Screw (1'-0" o.c.)
- Offset Cleat
- Tube Sealant
- Moisture Barrier (by others)
- Pitch Break
- #8-18 x 3/4" Truss Head Wood Screw (1'-0" o.c.)
- Double Bead Tape Sealant
- Double Bead Tape Sealant
- 1/16" x 3/16" Pop-Rivet (3 per panel)
- Z-Closure
- Image II Panel
```

**Note:** Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).

Panel rib must be field notched and flat part of panel must be field bent to accept offset cleat (see Architectural Manual).

### Valley Detail

**3:12 Slope**

- **Minimum**

```
- Image II Panel
- #9-15 x 1" Wood Screw (4 per panel)
- Double Bead Tape Sealant
- Moisture Barrier (by others)
- Valley
```

**Note:** Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).

**CAUTION**

Additional screws may be required for high snow loading and steep slopes.
Panel rib must be field notched and flat part of panel must be field bent to accept offset cleat (see Architectural Manual).
**RAKE WITH Z-CLOSURE DETAIL**

- 1/8" x 3/16" Pop-Rivet (1'-0" o.c.)
- Double Bead Tape Sealant
- Z-Closure
- Image II Panel (field cut and bend)
- #8-18 x 3/4" Truss Head Woodscrew (1'-0" o.c.)
- Rake
- Cleat
- Moisture Barrier (by others)

**RAKEWALL WITH Z-CLOSURE (COUNTER) DETAIL**

- Tube Sealant
- Fasteners (by others)
- Counter Flashing
- Moisture Barrier (by others)
- Rakewall
- Image II Panel
- Double Bead Tape Sealant
- 1/8" x 3/16" Pop-Rivet (1'-0" o.c.)
- Z-Closure
- #8-18 x 3/4" Truss Head Woodscrew (1'-0" o.c.)
**IMAGE II  RAKEWALL WITH Z-CLOSURE (REGLET) DETAIL**

- Tube Sealant
- Reglet Flashing
- Fasteners (by others)
- Moisture Barrier (by others)
- Rakewall
- Image II Panel
- \(\frac{1}{8}\)" x \(\frac{3}{16}\)" Pop-Rivet (1'-0" o.c.)
- Double Bead Tape Sealant
- Z-Closure
- #8-18 x \(\frac{3}{4}\)" Truss Head Wood screw (1'-0" o.c.)

**IMAGE II  STEP RAKEWALL (COUNTER) DETAIL**

- Tube Sealant
- Fasteners (by others)
- Counter Flashing
- Moisture Barrier (by others)
- Image II Step Rakewall
- Image II Panel
- #9-15 x 1" Woodscrew (1'-0" o.c.)
- Double Bead Tape Sealant
**IMAGE II  STEP RAKEWALL (REGLET) DETAIL**

- Tube Sealant
- Reglet Flashing
- Fasteners (by others)
- Moisture Barrier (by others)

**IMAGE II  ENDWALL WITH Z-CLOSURE (COUNTER) DETAIL**

- Tube Sealant
- Fasteners (by others)
- Counter Flashing
- Moisture Barrier (by others)
- Pitch Break
- #8-18 x 3/4" Truss Head Woodscrew (4 per panel)
- Tube Sealant
- Double Bead Tape Sealant
- 1/8" x 3/16" Pop-Rivet (3 per panel)
- Z-Closure
- Image II Panel

---

**CAUTION**

Additional screws may be required for high snow loading and steep slopes.

---

Note: Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).
**IMAGE II ENDWALL WITH Z-CLOSURE (REGLET) DETAIL**

3:12 Slope Minimum

- Tube Sealant
- Fasteners (by others)
- Reglet Flashing
- Moisture Barrier (by others)
- Pitch Break
- #8-18 x 3/4" Truss Head Woodscrew (4 per panel)
- Tube Sealant
- Double Bead Tape Sealant
- 1/8" x 3/16" Pop-Rivet (3 per panel)
- Z-Closure
- Image II Panel

*Note: Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).*

**IMAGE II ENDWALL WITH FOAM-CLOSURE (COUNTER) DETAIL**

3:12 Slope Minimum

- Tube Sealant
- Fasteners (by others)
- Counter Flashing
- Moisture Barrier (by others)
- Pitch Break
- 1/8" x 3/16" Pop-Rivet (1'-0" o.c.)
- Double Bead Tape Sealant
- Image II Outside Closure
- Image II Panel

*CAUTION Additional screws may be required for high snow loading and steep slopes.*
IMAGE II  ENDWALL WITH FOAM-CLOSURE (REGLET) DETAIL

3:12 Slope Minimum

- Tube Sealant
- Fasteners (by others)
- Reglet Flashing
- Moisture Barrier (by others)
- Pitch Break
- 1/8" x 3/16" Pop-Rivet (every rib)
- Double Bead Tape Sealant
- Image II Outside Closure
- Image II Panel

CAUTION
Additional screws may be required for high snow loading and steep slopes.

Note: Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).

IMAGE II  PEAK WITH Z-CLOSURE DETAIL

3:12 Slope Minimum

- Image II Panel
- 1/8" x 3/16" Pop-Rivet (3 per panel)
- Double Bead Tape Sealant
- Tube Sealant
- #8-18 x 3/4" Truss Head Woodscrew (4 per panel)
- Z-Closure
- Moisture Barrier (by others)
- Peak
- #8-18 x 3/4" Truss Head Woodscrew (1'-0" o.c.)
- Cleat

CAUTION
Additional screws may be required for high snow loading and steep slopes.
**IMAGE II**  **PEAK WITH FOAM-CLOSURE DETAIL**

3:12 Slope Minimum

- Image II Panel
- 1/8" x 3/16" Pop-Rivet (every rib)
- Double Bead Tape Sealant
- Image II Outside Closure
- Double Bead Tape Sealant
- Moisture Barrier (by others)
- Peak

#8-18 x 3/4" Truss Head Woodscrew (1'-0" o.c.)

Cleat

**IMAGE II**  **RIDGE/HIP COVER DETAIL**

3:12 Slope Minimum

- Image II Panel
- 1/8" x 3/16" Pop-Rivet (3 per panel)
- Double Bead Tape Sealant
- Z-Closure
- Tube Sealant
- #8-18 x 3/4" Truss Head Woodscrew (4 per panel)
- Double Bead Tape Sealant
- 10" Step Ridge/Hip Cover
- Moisture Barrier (by others)

**CAUTION**
Additional screws may be required for high snow loading and steep slopes.

Note: Z-Closures must be field cut and bent to fit between panel ribs (see Architectural Manual).
**IMAGE II**

**VENTED RIDGE (COBRA VENT) DETAIL**

3:12 Slope
Minimum

- Image II Panel
- 1/8" x 3/16" Pop-Rivet (every rib)
- Cobra Vented Closure
- 13" Step Ridge/Hip Cover
- Double Bead Tape Sealant
- Moisture Barrier (by others)

**IMAGE II**

**VENTED RIDGE (PERFORATED VENT DRIP) DETAIL**

3:12 Slope
Minimum

- Image II Panel
- 1/8" x 3/16" Pop-Rivet (1'-0" o.c.)
- Perforated Vent Drip
- 13" Step Ridge/Hip Cover
- 1/8" x 3/16" Pop-Rivet (every rib)
- Image II Outside Closure
- Moisture Barrier (by others)

**CAUTION**
Additional screws may be required for high snow loading and steep slopes.

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