Note: All standard roof panels are the same except for the panel length variations, and the notch and swag used only at endlaps. Refer to the job's installation drawings for location of the specific length panels.
GENERAL INFORMATION

PRODUCT CHECKLIST

CFR Panel

30”, 36” and 42”

Panel Thickness
2” □ 4” □ 42” □
2½” □ 5” □ 36” □
3” □ 6” □ 30” □

CFR Clip

Panel Thickness
4102 2” □
4125 2½” □
4103 3” □
4104 4” □
4105 5” □
4106 6” □

Perimeter Flashing Butyl Sealant Tape

• ⅝” x 1” x 20’
• Use to seal trim to panels when sealant will cross mesa profile of panel

Endlap Butyl Sealant Tape

• ¾” x 1½” x 30’
• For use at end laps

Seam Butyl Sealant Tape

• ¾” x ½” x 40’
• Applied to male leg of panels

1” Butyl Sealant Tape

• ⅛” Diameter x 40’
• Used to seal between flashings and panels
• Gray

Back-up Plate

• 1½” x 1” x 40’
• 16 Gauge Galvanized
• Factory installed for ridge and high eave
• Field installed for hip panels

Tube Sealant

Urethane
HW-540 (White)
Non-Skinning Butyl
7100 (White)
• For use in panel vapor groove

Clip Butyl Sealant Tape

• ⅞” Diameter x 40’
• Applied to clip before installation

CFR-22 REV 00.00

SUBJECT TO CHANGE WITHOUT NOTICE
**GENERAL INFORMATION**

**PRODUCT CHECKLIST**

**Metal Outside Closure**
- Used at ridge and high eave conditions
- 24 Gauge

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Panel Width</th>
<th>Color</th>
</tr>
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<tbody>
<tr>
<td>7900</td>
<td>42&quot;</td>
<td>Kynar Polar White</td>
</tr>
<tr>
<td>7900</td>
<td>42&quot;</td>
<td>Sandstone</td>
</tr>
<tr>
<td>7900</td>
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<td>30&quot;</td>
<td>Black</td>
</tr>
<tr>
<td>7902</td>
<td>36&quot;</td>
<td>Black</td>
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</table>

**Gutter Strap**
- Used to attach gutter to CFR Panel
- 2 Fasteners (#4) per strap

**Rake Zee**

**Parapet Reglet**

**Parapet High Eave Trim**

**Parapet Rake Trim**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>WLL Thickness</th>
<th>Girth</th>
<th>DIM “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-3770</td>
<td>2&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3771</td>
<td>2½&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3773</td>
<td>3&quot;</td>
<td>1¼&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3774</td>
<td>4&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3775</td>
<td>5&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3776</td>
<td>6&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
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<table>
<thead>
<tr>
<th>PART NO.</th>
<th>WLL Thickness</th>
<th>Girth</th>
<th>DIM “A”</th>
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<tr>
<td>F-3790</td>
<td>2&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
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<tr>
<td>F-3791</td>
<td>2½&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
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<tr>
<td>F-3793</td>
<td>3&quot;</td>
<td>1¼&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3794</td>
<td>4&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3795</td>
<td>5&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F-3796</td>
<td>6&quot;</td>
<td>1½&quot;</td>
<td>¾&quot;</td>
</tr>
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F-3444

F-3443

F-3775

F-3776

F-3795

F-3796
# General Information

## Product Checklist

### Rake Trim

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<table>
<thead>
<tr>
<th>PART NO.</th>
<th>WALL THICKNESS</th>
<th>ROOF THICKNESS</th>
<th>DIM &quot;A&quot;</th>
<th>DIM &quot;B&quot;</th>
<th>GIRTH</th>
</tr>
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<tbody>
<tr>
<td>F-3430</td>
<td>2&quot;, 2 1/8&quot;, 2&quot;</td>
<td>2&quot;, 2 1/8&quot;, 2&quot;</td>
<td>3 1/2&quot;</td>
<td>7&quot;</td>
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<td>4&quot;, 5&quot;, 5&quot;</td>
<td>5 1/2&quot;</td>
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<td>6&quot;</td>
<td>6 1/2&quot;</td>
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<td>F-3433</td>
<td>4&quot;, 5&quot;</td>
<td>2&quot;, 2 1/8&quot;, 2&quot;</td>
<td>3 1/2&quot;</td>
<td>9&quot;</td>
<td>19 1/2&quot;</td>
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<tr>
<td>F-3434</td>
<td>4&quot;, 5&quot;</td>
<td>4&quot;, 5&quot;, 5&quot;</td>
<td>5 1/2&quot;</td>
<td>9&quot;</td>
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<td>F-3435</td>
<td>4&quot;, 5&quot;</td>
<td>6&quot;</td>
<td>6 1/2&quot;</td>
<td>9&quot;</td>
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<td>10&quot;</td>
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<td>F-3437</td>
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<td>5 1/2&quot;</td>
<td>10&quot;</td>
<td>22 1/2&quot;</td>
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<tr>
<td>F-3438</td>
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<td>6&quot;</td>
<td>6 1/2&quot;</td>
<td>10&quot;</td>
<td>23 1/2&quot;</td>
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### High Eave Trim

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<table>
<thead>
<tr>
<th>PART NO.</th>
<th>ROOF THICKNESS</th>
<th>DIM &quot;A&quot;</th>
<th>GIRTH</th>
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<tbody>
<tr>
<td>F-3440</td>
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<tr>
<td>F-3441</td>
<td>4&quot;, 5&quot;</td>
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<td>F-3442</td>
<td>6&quot;</td>
<td>6 1/2&quot;</td>
<td>20 1/2&quot;</td>
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### Low Eave Trim

```
<table>
<thead>
<tr>
<th>PART NO.</th>
<th>ROOF THICKNESS</th>
<th>ROOF SLOPE</th>
<th>DIM &quot;A&quot;</th>
<th>DIM &quot;B&quot;</th>
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<tbody>
<tr>
<td>F-3415</td>
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<td>16&quot;, 2 1/2&quot;</td>
<td>4 1/4&quot;</td>
<td>1 1/2&quot;</td>
<td>11 3/8&quot;</td>
</tr>
<tr>
<td>F-3416</td>
<td>2&quot;, 3&quot;</td>
<td>3 4/12&quot;</td>
<td>4 1/4&quot;</td>
<td>1&quot;</td>
<td>11 3/8&quot;</td>
</tr>
<tr>
<td>F-3417</td>
<td>4&quot;, 5&quot;</td>
<td>16&quot;, 2 1/2&quot;</td>
<td>6 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>13 3/8&quot;</td>
</tr>
<tr>
<td>F-3418</td>
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<td>3 4/12&quot;</td>
<td>6 1/2&quot;</td>
<td>1&quot;</td>
<td>13 3/8&quot;</td>
</tr>
<tr>
<td>F-3419</td>
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<td>16&quot;, 2 1/2&quot;</td>
<td>7 3/8&quot;</td>
<td>1 1/2&quot;</td>
<td>14 3/8&quot;</td>
</tr>
<tr>
<td>F-3420</td>
<td>6&quot;</td>
<td>3 4/12&quot;</td>
<td>7 3/8&quot;</td>
<td>1&quot;</td>
<td>14 3/8&quot;</td>
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### Gutter

```
<table>
<thead>
<tr>
<th>PART NO.</th>
<th>ROOF THICKNESS</th>
<th>ROOF SLOPE</th>
<th>DIM &quot;A&quot;</th>
<th>GIRTH</th>
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</thead>
<tbody>
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<td>16&quot;, 2 1/2&quot;</td>
<td>3 1/4&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>F-3422</td>
<td>2&quot;, 3&quot;</td>
<td>3 4/12&quot;</td>
<td>3 1/4&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>F-3423</td>
<td>4&quot;, 5&quot;</td>
<td>16&quot;, 2 1/2&quot;</td>
<td>5 1/2&quot;</td>
<td>1/2&quot;</td>
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<tr>
<td>F-3424</td>
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<td>3 4/12&quot;</td>
<td>5 1/2&quot;</td>
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<td>F-3425</td>
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<td>16&quot;, 2 1/2&quot;</td>
<td>6 1/2&quot;</td>
<td>1/2&quot;</td>
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<td>F-3426</td>
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<td>6 1/2&quot;</td>
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**Specify angle**
# GENERAL INFORMATION

<table>
<thead>
<tr>
<th>PRODUCT CHECKLIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4A</strong></td>
</tr>
<tr>
<td>- Use to attach trim to panels</td>
</tr>
<tr>
<td>- Use to attach gutter strap</td>
</tr>
<tr>
<td>¼-14 x ⅜” Laptek</td>
</tr>
</tbody>
</table>

| **43L** |
| - Use at end laps |
| 30” Panel = 7 per endlap |
| 36” Panel = 9 per endlap |
| 42” Panel = 11 per endlap |
| ¼-14 x 1½” TEK2 Long Life w/1⅛” diameter washer |

| **1100 Series** |
| - For fastening Rake Zee to 18-12 Ga. Steel |

<table>
<thead>
<tr>
<th>Panel Thickness</th>
<th>Fastener Length “A”</th>
<th>1100 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>3”</td>
<td>1124</td>
</tr>
<tr>
<td>2½” or 3”</td>
<td>4”</td>
<td>1132</td>
</tr>
<tr>
<td>4”</td>
<td>5”</td>
<td>1140</td>
</tr>
<tr>
<td>5”</td>
<td>6”</td>
<td>1148</td>
</tr>
<tr>
<td>6”</td>
<td>7”</td>
<td>1156</td>
</tr>
<tr>
<td>¼-14 x “A” TEK 3 w/washer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **1200 Series** |
| - For fastening CFR Rake Through Panel Fastener |

<table>
<thead>
<tr>
<th>Panel Thickness</th>
<th>Fastener Length “A”</th>
<th>1200 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>4”</td>
<td>1232</td>
</tr>
<tr>
<td>2½” or 3”</td>
<td>5”</td>
<td>1240</td>
</tr>
<tr>
<td>4”</td>
<td>6”</td>
<td>1246</td>
</tr>
<tr>
<td>5”</td>
<td>7”</td>
<td>1256</td>
</tr>
<tr>
<td>6”</td>
<td>8”</td>
<td>1264</td>
</tr>
<tr>
<td>¼-14 x “A” TEK 5 w/washer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **1724** |
| - For fastening clips into ¾”-½” Steel |
| ¼-14 x 3” TEK5 w/o washer |

| **1816** |
| - Optional Clip Fastener |
| ¼-14 x 2” Type B w/o washer |

| **1816S** |
| - Optional Clip Fastener |
| ¼-14 x 2” Type B 304 Stainless w/o washer |

| **17** |
| - Use to attach outside closures to panels |
| 12 x 1” TEK3 w/washer |

| **14** |
| - Use to fasten panels from the back side when required |
| 2202 - 1/4” grip |
| 2204 - 1/4” - 1/2” grip |
| 2206 - 1/2” - 3/4” grip |

| **1616** |
| - For fastening clips into 16-12 Ga. Steel |
| - Two per clip |
| - For FM, use three fasteners per clip if fastening into support members less than 12 gauge |
| ¼-14 x 2’ TEK 3 w/o washer |

| **14A** |
| - Stainless Steel |
| - ⅜” Diameter |
| - ¼” Grip Range |
| ½” x ⅜” Pop Rivet |

| **1724** |
| - For fastening clips into ¾”-½” Steel |
| ¼-14 x 3” TEK5 w/o washer |

| **1816** |
| - Optional Clip Fastener |
| ¼-14 x 2” Type B w/o washer |

| **1816S** |
| - Optional Clip Fastener |
| ¼-14 x 2” Type B 304 Stainless w/o washer |

| **17** |
| - Use to attach outside closures to panels |
| 12 x 1” TEK3 w/washer |

| **14** |
| - Use to fasten panels from the back side when required |
| 2202 - 1/4” grip |
| 2204 - 1/4” - 1/2” grip |
| 2206 - 1/2” - 3/4” grip |

| **1616** |
| - For fastening clips into 16-12 Ga. Steel |
| - Two per clip |
| - For FM, use three fasteners per clip if fastening into support members less than 12 gauge |
| ¼-14 x 2’ TEK 3 w/o washer |

| **14A** |
| - Stainless Steel |
| - ⅜” Diameter |
| - ¼” Grip Range |
| ½” x ⅜” Pop Rivet |
## Product Information

### Product Checklist

<table>
<thead>
<tr>
<th>Endlap Assembly Gauge</th>
<th>Seam Clamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot; Panel - 9947</td>
<td>• Used at endlap to help hold module. Two recommended per project.</td>
</tr>
<tr>
<td>36&quot; Panel - 9948</td>
<td></td>
</tr>
<tr>
<td>42&quot; Panel - 9949</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rib Clamp</th>
<th>Hand Seamer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Used to pull the male and female ribs together during installation to insure that the tongue and groove joint is fully engaged. One every 10' of panel length recommended with a minimum of 3.</td>
<td>• Used to crimp each roof sidelap at the eave and ridge end of the panels and at the roof panel endlaps prior to using the motorized seamer. One per project.</td>
</tr>
</tbody>
</table>

### Note:

Do not attempt to install the roof with other tools which are not specifically designed for the CFR roof. The clamps may be padded with plastic or cloth tape to avoid marring the roof panel surfaces.
Typical Roof Panel Installation

This section describes the roof panel installation for a typical roof with a ridge condition.

For other conditions such as roof panel overlaps, high eave trim and high eave transition, refer to that specific section in addition to this section.
**Interior Ridge Flashing Installation**

1. If the roof has a ridge condition, the interior ridge flashing must be installed before the vapor sealant and roof panels are installed.

2. Position the flashing so that it is centered over the ridge structural.

3. Align the end of the flashing flush with the outer edge of the rake structural.

4. Fasten the flashing to the structural with 1/8" dia. blind rivets as necessary to secure the flashing until the roof panels are installed.

5. At flashing splices, apply vapor seal caulk, lap flashings 2" and secure lap with blind rivets @ 3" o.c. and centered over vapor sealant.
Starting Dimension Layout

1. Determine the starting dimension. Note: The starting dimension may be shown on the job’s installation drawings.

2. Measure the starting dimension from the face of the rake structural and mark the dimension on the eave structural and the ridge or high eave structural.

3. Stretch a chalk line between the marks and snap the chalk line across the roof structural.
Perimeter Vapor Seal Application

1. Apply continuous beads of vapor seal caulk along the rake and eave structural and along the ridge flashing.

2. To avoid damage or contamination of the caulk, do not apply until immediately before installation of the next roof panel and apply only as much caulk as needed for that panel.

3. Apply the caulkite bead large enough to assure filling the roof panel’s interior face mesa ribs.

4. Ensure that the perimeter structural joints have been vapor sealed.

5. Important: Cold storage applications may not require the vapor seal at the roof’s interior face. Refer to the installation drawings for specific instructions.
Starting Panel Installation

1. Field cut the starting panel to the required width and clean the panel of cutting residue.
2. Position the leading edge of the starting panel along the starting dimension chalk marks.
3. Position the end of the panel at 2” beyond the face of the wall. This dimension may vary for specific job conditions, refer to the job’s installation drawings.
4. Temporarily clamp (or fasten) the cut edge of the panel to the rake structural.
5. Secure the leading edge of the panel to the eave and roof structural with the panel clips. See following Panel Clip Installation Detail.
**Panel Clip Installation**

1. Apply clip sealant to underside of the clip’s tab. Extend sealant 1/4" beyond ends of clip tab.
2. Remove sealant’s paper backing and position clip over the panel’s leading edge. Align the clip’s center attachment holes over the roof structural’s top flange.
3. While holding the clip tight against the panel’s edge, push the clip’s base into the panel’s foam core.
4. Fasten the clip to the roof structural with the specified type and quantity of fasteners.
5. Crimp the clip’s tab around the panel’s male rib with the manual seaming tool.
Seam Sealant & Vapor Sealant Application

1. Apply seam sealant continuously along top of the panel's male rib and panel clips. Use the sealant's paper backing as a guide to center the sealant on the rib. The seam sealant must marry with the exposed clip sealant ends.

2. Apply vapor seal chalk continuously in the panel's interior face groove.

3. Apply vapor seal chalk pigtails to connect the vapor seal in the groove with the vapor seal on the eave structural and on the interior ridge flashing. The pigtails must marry with the vapor seals.

4. Apply sealant pigtails at the eave and ridge ends of the panel's male rib. See following Sealant Pigtails Application Detail.
**Sealant Pigtail Application**

1. Apply sealant pigtail at the panel's eave end. The pigtail must marry with the seam sealant and extend below the panel's face to later engage the sealant on the eave trim.
2. Apply sealant pigtail at the panel's ridge end. The pigtail must marry with the seam sealant and must cover the full width of the male rib's underside.
3. Do not remove the pigtail's paper backings until installation of the next panel.
4. Apply vapor seal pigtails at the panel's eave and ridge end. The pigtails must marry with the vapor seal in the panel's groove and the eave and ridge perimeter vapor seals.
Panel Sidelap Engagement

1. Remove the paper backing from the seam sealant on the previously installed panel.
2. Carry the roof panel to its position next to the previous panel.
3. Tilt the panel to hook its female rib over the male rib of the previous panel.
4. Align the eave end of the panel with the end of the previous panel.
5. Lower and push on the leading edge of the panel so that its tongue engages the groove of the previous panel.
Panel Installation

1. Check that the end of the panel is 2" beyond the outer face of the wall (or the dimension specified on the project's installation drawings).
2. Use the rib clamps to pull the panel sidelap together.
3. Check that the panel's tongue and groove joint is fully engaged, metal to metal contact at the interior face is desired.
4. Important: If the adjacent panels are bowed due to vertical misalignment of the roof structural or thermal bowing, it may be necessary to walk along the panel's trailing edge to force the panel's tongue into vertical alignment with the previous panel's groove. Then use the rib clamps to pull the panel sidelap together.
Panel Edge Attachment

1. Check for excessive space between the bottom edge of the panel and the top of each roof structural. A space exceeding 1/8" indicates a low roof structural.

2. At the low roof structural, install the required thickness of shims to fill the space between the panel and the roof structural. The shims may be fabricated from layers of corrosion resistant sheet metal and must provide a minimum bearing of 2 1/2" X 6".

3. Install a panel clip at each roof structural (including the eave structural). Attach the clips to the roof structural with the specified quantity and type of clip fasteners. If there are roof panel endlaps, do not install the panel clips at the endlap support structural until after the endlap is assembled.
Panel Coverage Measurement

1. To assure proper fit-up of the finish rake, ridge closures and roof accessories, the panel coverage must be checked frequently and corrected as necessary.
2. During the panel installation, adjust the clamping pressure of the rib clamps to provide an exact 30", 36", or 42" coverage per panel.
3. If correction is required, do not attempt more than +1/8" or -1/16" correction per panel.
Finish Panel Installation

1. Complete the installation of all the roof panels except for the finish panel.
2. Field cut the finish panel to the required width and clean the panel of cutting residue.
3. Install the finish panel and temporarily clamp the cut edge of the panel to the rake structural.
Typical Roof With Endlap Condition

This section describes the assembly of roof panel endlaps for a typical roof with endlap conditions.

Use this section in conjunction with the previous Roof Panel Installation section.
**Endlap Vapor Seal Application**

1. Apply continuous beads of vapor seal caulk upslope and downslope of the center of the endlap support structural.

2. To avoid damage or contamination of the caulk, do not apply until immediately before installation of the next roof panel and apply only as much caulk as needed for that panel.

3. Apply the caulking bead large enough to assure filling the roof panel's interior face mesa ribs.

4. Assure that the endlap support structurals joints have been vapor sealed.

5. Important: Cold storage applications may not require the vapor seal at the roof's interior face. Refer to the installation drawings for specific instructions.
Downslope Panel Installation

1. Position the downslope panel and check that its end aligns with the center of the endlap support structural ± 1/2".

2. Install the panel and secure the panel edge with the panel clips. Do not install the panel clip at the endlap until after the upslope panel is installed.

3. Set the Endlap Assembly Gauge on the end of the panel. Set the gauge with the long lip turned down and flush against the end of the panel.
**Endlap Sealant Application**

1. Apply endlap sealant continuous across the panel. Align the edge of the sealant’s paper backing with the lip of the gauge. See following Sealant Placement detail.

2. Apply 3 1/2” strip of seam sealant on the end of the female rib. Extend the sealant to marry to the endlap sealant and the previous seam sealant.

3. At this time, check that all of the panel’s back-up plates are in position. See Standard Roof Panel Description detail.
Endlap Sealant Placement

1. Start the endlap sealant by marrying its end to the previous sealant pigtail.
2. Apply the endlap sealant continuous across the panel. Align the edge of the paper backing with the assembly gauge and panel notches. Be sure that it is pushed completely into all of the panel’s corners.
3. Finish the endlap sealant by folding its end $1/4"$ over the panel’s leading edge.

Important

The sealant must be its full thickness. Do not use flattened, pinched or stretched sealant.
**PRODUCT INFORMATION**

**Important**
Do not displace or peel off the endlap sealant from the panel ribs during installation of the upslope panel.

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**Upslope Panel Engagement**

1. Position the upslope panel so the end of its female rib butts the notch of the downslope panel. Be sure the panel's tongue is engaging the previous panel's groove.

2. Push the male rib of the downslope panel outward and lower the upslope panel to nest into the downslope panel.

3. Check that the endlap sealant is not displaced or peeled off from the panel ribs when the upslope panel is lowered into the downslope panel.
Upslope Panel Installation

1. Use rib clamps to pull the upslope panel sidelay together. Check that the panel is aligned to the alignment marks. Secure the panel to the roof structurals with panel clips. Do not install clips at the endlap until the endlap assembly is completed.

2. Compress the endlap together by using seam clamps on the panel ribs. At the trailing edge, position the clamp over the lapped ribs. At the leading edge position the clamp to straddle both (upslope and downslope) ribs.

3. In cold weather, close the clamps slowly to allow the sealant to flow and prevent distortion of the panel ribs.
Endlap Fastener Layout

1. Set the endlap assembly gauge on the end of the upslope panel. Set the gauge with its short lip down and against the edge of the panel.

2. Using a marking pen, mark the panel through each hole in the endlap assembly gauge.

3. Check that the marks are at the center of each high mesa rib and are 3/4" from the edge of the panel.
Important
Allow the endlap screws to drill through to the back-up plates. Forcing the screws may push the back-up plates into the foam and away from the screw.

Endlap Fastener Installation

1. Stand on the upslope panel’s end to compress the endlap during installation of the endlap fasteners.

2. Install the endlap fasteners at each mark. Check that the fasteners are penetrating the center of the endlap sealant.

3. Tighten the endlap fasteners as necessary to assure uniform and complete contact of the endlap sealant to both panel surfaces.
Endlap Pigtail and Panel Clip Installation

1. Apply endlap pigtail to straddle the male rib’s butt joint. Use 1 1/4” strip of seam sealant for pigtail. Lap one end of pigtail over the side of the rib. Lap the other end under the rib.

2. Install panel clips at the ends of the upslope and downslope panels. Position both clips so they can be fastened to the endlap support structural.

3. Install the clip fasteners through the clip’s outer holes as necessary for attachment to the endlap support structural.

4. Crimp the clips over the panel’s male ribs with the manual seaming tool.
Seam Sealant and Vapor Sealant Application

1. Apply seam sealant continuously along the top of the panel run’s male rib and panel clips. The seam sealant must marry with the clip sealant ends.

2. Apply vapor sealant chalk continuous in the panel’s interior face groove.

3. Apply vapor seal pigtails to connect the vapor seal in the groove to the vapor seals on the endlap support structural.
Start/Finish Panel Pigtails Application
(Finish Panel Shown, Start Panel Similar)

1. Before installing the upslope starting and finish panels, apply the start/finish pigtail sealant. Use a 4" long strip of seam sealant for the pigtail. Marry the edge of the pigtail sealant with the edge of the endlap sealant.

2. Check that the rake closure sealant will cross the pigtail sealant when the rake closure is installed.

3. Install the upslope starting or finish panel and cover the exposed pigtail sealant with its paper backing until immediately before installation of the rake closure.
**SEAMING OPERATION**

As panels are installed, hand tool the seam at each clip with hand tool. Panels should be completely seamed with electric seamer as soon as possible.

Place hand tool over clip location with crimping arms together. Push crimping arms apart to form finished seam.

Bring crimping arms back together and remove hand tool from seam.

**NOTE**

The ridge end of the panel seams must be closed before installation of the ridge closures.
SEAMING OPERATION (continued)

The electric seamer will run upslope and downslope and is controlled by a hand-held forward and reverse remote switch. The seamer will form the seam when running in either direction. An orientation plate on the seamer indicates forward and reverse. The remote switch is designed to stop the seamer when the button is released. The seamer will continue for approximately 6 to 8 inches after the button is released. Do not try to immediately switch directions with the seamer button to stop the seamer.

On lower roof slopes, walking with the seamer is recommended.

On steep sloped roofs (6:12 and greater) a 12-gauge extension cord (not included with seamer kit) may be installed between the remote switch and the seamer. Seaming can then be accomplished by starting the seamer at the eave from a manlift. When using this method the seam will be formed upslope and then the seamer will be reversed down the seam to the eave, removed and placed on the next seam. During panel installation, hand crimp the end of the panels 12” downslope from the ridge or high side of the roof. Stop the seamer at this point to prevent the seamer from running into the flashing or running off the roof. Finish remainder of seam with the hand crimp. To prevent the seamer from running off of the roof, always hand crimp the first and last 12” of panel seam.

To begin seaming, set the seamer on the seam with the locking arm up and to the open side of the seam. The wheels should be even with the edge of the panel. Push the locking arm down to engage the tools and turn on the seamer.

CAUTION
- Seamer operation should be closely supervised at all times.
- A safety line should be attached to the seamer.
- Be aware of which direction the seamer will move before engaging the switch.
- Do not entangle the electrical cords in the seamer tooling while it is in operation. This could cause serious injury or death to the operator and severely damage the seamer.
- Electrical cords should be 10-gauge to provide power to the seamer and never be over 200 feet from the electrical source.
- The seamer will move approximately 6” to 8” after the hand switch is released.
- Bring seamer to a complete stop before changing direction.

The use of any field seaming machine other than that provided by the manufacturer may damage the panels, void all warranties and will void all engineering data.
This section describes the installation of the rake and ridge closures for a typical roof with standard rake, ridge or high eave conditions.

Ridge conditions shown, high eave conditions are similar.
Rake Closure Sealant Application

1. Determine the rake closure location on the starting and finish panels. The rake closure must set fully on a high or low mesa rib and must be positioned so the rake closure attachment screws will properly engage the rake structural. Note: The specific rake closure location may be shown on the job's installation drawings.

2. Mark the location for the rake closures face with a chalk line stretched from the eave end to the ridge end of the starting and finish panels.

3. Apply flashing sealant continuously from the eave end to the ridge end of the panel. Align the edge of the sealants paper backing with the chalk mark on the panel.
PRODUCT INFORMATION

Caution
Check for unsealed gaps between the rake closure and depressions in the roof panel surface. Such gaps must be sealed with an additional layer of sealant.

End of closure (flush with end of panel, eave end similar)
Ridge end of panel

Startor or Finish Panel

Upslope Rake Closure (install first, starting at the ridge)

Downslope Rake Closure

Closure’s face flush with edge of sealant

Ridge Structural

Rake Closure Splice (lap downslope closure over upslope closure)

Thru-panel Fastener (locate @ splices, @ 12” o.c. and @ 6” from eave end and ridge end of panel)

Flashing Sealant

Rake Structural (typical)

Roof Structural

Rake Closure Installation

1. To provide watershed laps at the rake closure splices, install the rake closures from the ridge to the eave. Start and finish the closures flush with the ridge and eave ends of the panel. Field cut the last closure to the required length.

2. Set the rake closure on the flashing sealant with the closure’s face flush with sealant’s edge.

3. Secure the rake closure with thru-panel fasteners located at the splices and at 12” o.c. Check that the fasteners penetrate through the center of the sealant and engage the rake structural.

4. Tighten fasteners as necessary to assure uniform and complete contact of sealant to the panel and rake closure surfaces.

5. See following Rake closure Splice Assembly detail.
Rake Closure Splice Assembly

1. Apply the splice pigtail on the end of the upslope rake closure. Use a 4" and a 2" long strip of seam sealant for the pigtailed.
2. Position the edge of the pigtail 1/8" beyond the rake closure’s end. Marry the bottom of the pigtail with the flashing sealant on the panel.
3. Compress the splice with panel clamps. In cold weather, close the clamp slowly to allow the sealant to flow and to avoid distortion of the closure.
4. Install a thru-panel fastener and a lap fastener through the splice. Install the lap fastener so its head and sealing washer are on the weather side of the rake closure.
**PRODUCT INFORMATION**

**Important**
The ridge end of the panel seams must be closed before installation of the ridge closure. Use the manual seamer tool.

**Important**
The alignment marks are only required when the panel ends are not within the tolerances shown.

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**Preparation For Ridge Closure**

*ridge shown, high eave similar*

1. Use the manual seaming tool (as shown above) to close the ridge end of the panel seams.

2. Check that the roof panel ends are at 1"±1/2" from the centerline of the ridge (or at the dimension specified on the project’s installation drawings). If the panel ends are not within this tolerance, a special width ridge flashing may be required.

3. Check that the panel ends are aligned within 1/4" of each other. If the panels ends are not within this tolerance, alignment marks must be laid—out on the panels (as shown above) to guide the placement of the ridge closure sealant.

4. If alignment marks are required, use a chalk line to establish a uniform line of marks on the panel at 4" from the centerline of the ridge (or at the dimension specified on the project’s installation drawings).
PRODUCT INFORMATION

1. If the roof panel ends are within the specified tolerance (see previous page), use the endlap assembly gauge to guide the sealant placement. If the panel ends are not within tolerance, use the alignment marks to guide the placement of the sealant.

2. Apply endlap sealant continuous across the roof panels, and wrap the sealant completely around the panel ribs. Install the pigtail sealant to cover any exposed area of the panel’s factory notch.

3. At this time, check that all the panel’s backer plates are in position. See Standard Roof Panel Description detail.
PRODUCT INFORMATION

Ridge Closure Installation
(ridge shown, high eave similar)

1. Tilt the ridge closure so its stepped end will slide under the roof panel’s seam. Spring the panel rib outward to ease the installation of the closure. Check that the sealant is not displaced during the closure installation.

2. Align the face of the closure with the alignment marks. Check that the closure sits fully on the sealant. Use clamps to pull down and hold the closure during fastening.

3. Install the fasteners through each hole in the bottom flange of the closure. Check that the fasteners penetrate through the sealant and into the roof panel’s backer plates. Tighten the fasteners as necessary to assure uniform and complete contact of the sealant to the closure and panel surfaces.

4. Fasten the closure to the seam with a blind rivet.

5. At the rakes, field cut and tab the end of the ridge closure to fit with the rake closure. Fasten the tab to the rake closure with blind rivets.

Note: Check for gaps between the closure and the panel ribs and seam. Seal these gaps with flashing caulk applied at back side of closure.
Typical Trim and Flashing Installation

This section describes the installation of the ridge flashing, rake trim, eave trim and eave gutter.

Installation of high side eave trim is similar.

See Transition Flashing Installation section for rake transition and high eave transition flashing installation.

For clarity of details, filler insulation is not shown. Refer to the job's installation drawings for filler insulation requirements.
Ridge Flashing Installation

1. Apply flashing sealant along the top of ridge closures. At the rakes, apply the pigtail sealant on top of the rake closure.

2. Center the ridge flashing over the ridge closures. Use a string line to assure a straight ridge run.

3. Set the ridge flashing in position and clamp to the ridge closures. Check that the flashing is set at a pitch 1/2:12 greater than the roof pitch. This will assure that the flashing will not sag during cold weather contraction.

4. Fasten the ridge flashing edges to the ridge closures with flashing fasteners at 12” O.C. Check that the fasteners penetrate the sealant.

5. At splices, lap the ridge flashings 2”. Apply flashing sealant and pigtails to seal the splice and fasten with flashing fasteners at 2” O.C. Check that the splice is secured at its proper pitch to prevent sagging of the finished splice.
Rake Flashing Installation

1. To assure water shed of the rake trim splices, install the rake trim from the eave to the ridge.

2. Apply flashing sealant continuously along top of rake closure.

3. Align the ends of the rake trim flush with the eave and rake ends of the rake closure. Plumb and level the rake trim. Use string lines to assure a straight rake trim run.

4. Fasten the rake trim to the rake closure with flashing fasteners at 12” O.C. Check that the fasteners penetrate the sealant.

5. At the rake trim splices, lap the rake trims 2”. Seal and fasten the splice with flashing caulk and blind rivets.
PRODUCT INFORMATION

Caution
The sealant must be its full thickness to seal the panel's mesa rib. Do not use flattened, pinched or stretched sealant.

Important
If gutter is used, do not install fasteners at roof.

1. If gutter is to be used, notch eave trim's lip to clear gutter end cap.
2. Apply flashing sealant continuously along top of eave trim. Align edge of sealant's paper backing with outer edge of eave trim.
3. Align end of eave trim with outer face of wall. Plumb the eave trim and temporarily clamp to roof panel.
4. Fasten the eave trim to the wall panels with flashing fasteners. Install the fasteners at 3" on center. Attach the eave trim to the roof.
5. At eave trim splices, lap the trim 2". Seal with flashing caulk and fasten with blind rivets.
Eave Gutter Installation

1. Lift the gutter into position under the eave trim and fasten the gutter and eave trim to the roof panel with LapTek fastener at each high mesa.
2. Plumb the outer face of the gutter perpendicular to the roof pitch. Use a string line to assure a straight gutter run.
3. Install the gutter straps at each panel rib. Fasten the strap to the panel rib and the gutter’s outer lip.
**PRODUCT INFORMATION**

**Note:**
Seal and fasten gutter assemblies with flashing caulk and blind rivets.

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**Gutter End and Splice Assemblies**

1. At the rakes, align the face of the gutter end cap flush with the face of the rake closure. Seal and fasten the end stops to the gutter.

2. Field cut rake closure drop-off to be used as the bird stops. Seal and fasten the bird stop to the top of the gutter end cap and to the rake closure.

3. At gutter splices, lap the gutters 2”. Field notch the overlapping gutter’s hem to clear the lap.

4. Seal and fasten the gutter assemblies with flashing sealant and blind rivets.
**PRODUCT INFORMATION**

**Corner and Peak Cap Assemblies**

1. For roofs without eave gutter, field modify and install the end cap to fit inside the eave end of the rake trim.
2. For roofs with eave gutter, install the corner cap inside the eave end of the rake trim and over the end of the gutter.
3. For roofs with a ridge condition, install the peak cap over the ridge ends of the rake trim.
4. Seal and fasten assemblies with flashing caulk and blind rivets.

**Note**

Seal and fasten cap assemblies with flashing caulk and blind rivets.
Typical Transition Flashing Installation

This section describes the installation of the high side transition flashing and rake transition flashing.

For clarity of details, filler insulation is not shown. Refer to the job's installation drawings for filler insulation requirements.
High Side Transition Flashing Installation

1. Apply flashing sealant along the top of the ridge closures. At the rakes, apply the pigtail sealant on top of the rake closure.

2. Set the transition flashing in position and clamp to the ridge closures. Check that the flashing is set at a pitch 1/2:12 greater than the roof pitch. Temporarily fasten the top edge of the flashing to the wall.

3. Fasten the flashing to the ridge closures with flashing fasteners at 12" O.C. Check that the fasteners penetrate the sealant.

4. At splices, lap the ridge flashings 2". Apply flashing sealant and pigtailed to seal the splice and fasten with flashing fasteners at 2" O.C. Check that the splice is secured at its proper pitch to prevent sagging of the finished splice.
Rake Transition Flashing Installation

1. Apply flashing sealant along the top of the ridge closure. At the ridge or high side condition, continue the sealant over the end of the ridge or high side flashing.

2. Set the rake flashing in position and clamp to the rake closure. Check that the flashing is set at a 1/2:12 pitch. Temporarily fasten the top edge of the flashing to the wall.

3. Fasten the ridge flashing to the ridge closures. Check that the fasteners penetrate the sealant.

4. At splices, lap the ridge flashings 2”. Apply flashing sealant and pigtailed to seal the splice and fasten with flashing fasteners at 2” O.C. Check that the splice is secured at it’s proper pitch to prevent sagging of the finished splice.

Important
Install transition flashing at 1/2:12 pitch.
Reglet Installation

1. Use chalk line to lay out reglet groove along the wall at 1/2" above the transition flashing.
2. Field cut a continuous 1/8" wide x 1" deep groove into the walls outer face. Cut groove to angle upward at 30° from horizontal.
3. Fill the groove completely with flashing caulk.
4. Apply flashing sealant along the top edge of the transition flashing.
5. Insert the reglet's top edge into the groove.
6. Fasten the reglet to the wall with flashing fasteners.
7. Apply a bead of flashing caulk along the top of the reglet to wall junction. Tool and feather this bead to form a watershed.