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Notes to the Designer/User

The details contained in this packet are intended to be a design aid and do not depict all situations. Modifications are the responsibility of the designer/user and should take into account climate conditions such as wind and snow, governing code requirements, and the actual usage and maintenance of the structure. Where possible, roof panel side laps and flashings should be lapped away from prevailing winds. Certain flashings should be supported if it is likely that a ladder will be used against them or if foot traffic is anticipated. Check with AEP Span any time you intend to specify a prefinished flashing in a gauge different than the panels. It is good practice to specify that all flashings be of the same material as the panels (gauge, color, finish) to ensure long-term durability. Field-painted flashings rarely equal the durability and color fastness of factory baked-on paint systems. Where possible, we have hemmed the edges of flashings to strengthen them and to minimize the exposure of cut edges.

Framing

The details contained in this guide are shown with panels attached to spaced support members.

Slope requirements

It is suggested that all panels in this booklet be used on slopes of 1:12 or greater, except Nu-Wave Corrugated and U-Panel which have a 3:12 minimum slope requirement.

Condensation, Insulation & Ventilation

It is the designer’s responsibility to determine the need and composition of condensation control materials including insulation and vapor retarders, as well as ventilation requirements. Metal roofing is susceptible to condensation and its control should be carefully considered.

Valleys

Valley dimensions must be the proper width to account for slope, snow, ice, and rain conditions. If valleys are not kept free of debris, water can back up and intrusion may occur under the panels.

Snow Design

If possible, valleys, gutters, roof elevation changes and penetrations should be minimized or eliminated in snow areas. Roof penetrations should be located as close to the ridge or peak of the roof as possible to minimize accumulations of ice and snow.

Oil-Canning

Flat metal surfaces will display waviness commonly referred to as “oil-canning”. This is caused by steel mill tolerances, variations in the substrate and roofing underlayments. Oil canning is a characteristic, not a defect, of panels manufactured from light-gauge metal. Coils are factory “corrective-levelled” prior to rollforming to minimize oil canning. Oil canning is not a cause for panel rejection. Additional information is available upon request.

Technical Assistance

Call your AEP Span Sales or Technical Representative for additional information on any of these subjects.

Definitions

Sealant: Gunnable-grade single-component polyurethane

Mastic: Butyl mastic tape or butyl sealant

Hem: A 180˚ bend that is closed (or as closed as the formability of the metal will allow) to provide a uniform, attractive edge. High tensile strength (Grade 80) steel must be formed with a “teardrop hem” as shown to avoid cracking the steel at the tensile flattened bend. Lower steels can be close.

Hook: (also called an “open hem”) A 180˚ bend on a piece of sheet metal that is left open to allow insertion of another piece of sheet metal. For example, shown is the trim piece to a cleat below the trim.

Note: Each flashing part in this guide has been assigned a part number. Each part number contains one or two letters followed by one or two numbers, for example: (EW6). These part numbers have been provided to the user to make ordering these flashing parts quick and easy.

Underlayments:

Prior to installation of metal roofing panels, it is recommended that an underlayment be installed over the roof substrate. AEP Span encourages the use of AEP Span Underlayment HT as it is designed specifically for use under all AEP roofing systems and is suitable for use under any metal roofing system or coping. AEP Span Underlayment HT is required by AEP Span for AEP Span Full System Weathertightness Warranties. AEP Span Underlayment HT is a high temperature, self-healing, self-adhering, peel and stick underlayment with a non-abrasive surface that will not mar, scratch, or abrade the underside of metal panels and flashings. Please note that additional protection may be required to meet Class A fire ratings as defined in UL790 classified assemblies.

References

The Sheet Metal and Air Conditioning Contractors’ National Association Inc. (SMACNA) manual is an excellent reference for sheet metal contractors. Its guidelines for underlayments, gutter and downspout size requirements, and expansion/contraction of metals and flashings joints should be followed.
For suggestions on how to trim flashings in the different areas, please refer to the following pages:

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<td>Endwall</td>
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<td>Gutter</td>
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<table>
<thead>
<tr>
<th>Flashing</th>
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<td>12, 25</td>
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<tr>
<td>Valley</td>
<td>7, 20</td>
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</tbody>
</table>
Note: Lap panels away from prevailing weather. Use only those accessories specifically designed for use with this product. Use only galvanized or ZINCALUME®-coated fasteners. Isolate roofing and flashings from contact with dissimilar metals. Fastener selection will vary based upon substrate. The use of butyl mastic tape along the sidelaps, as shown above, is always recommended for roof panels. Space lap screws @ 18” o.c. maximum.
# Fastener Selection

<table>
<thead>
<tr>
<th>Fastener #</th>
<th>Description</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>#9 x 1&quot;, 1 1/2&quot;, 2&quot;, 2 1/2&quot;, 3&quot; Wood Screw 1/4&quot; Hex Head</td>
<td>Panel to Dimensional Lumber</td>
</tr>
<tr>
<td>2</td>
<td>#14 x 1&quot;, 2&quot; Wood Screw 5/16&quot; Hex Head</td>
<td>Panel to Plywood Minimum 1/2&quot; thick, structural grade</td>
</tr>
<tr>
<td>3</td>
<td>#12 x 3/4&quot; Stitch Screw 1/4&quot; Hex Head (compatible with #9 wood screw)</td>
<td>Trim and side lap attachments</td>
</tr>
<tr>
<td>4</td>
<td>#14 x 7/8&quot; Lap Self Driller 5/16&quot; Hex Head (compatible with #14 wood screw)</td>
<td>Trim and side lap attachments. Attach panels to 18, 20, 22 gauge supports.</td>
</tr>
<tr>
<td>5</td>
<td>STST–42 Stainless Steel Rivet 1/8 x 1/8 *Requires sealant over rivet head.</td>
<td>Trim-to-trim or trim-to-wall panel attachments</td>
</tr>
<tr>
<td>6</td>
<td>#12 x 1&quot;, 1 1/2&quot;, 2&quot;, 1 1/2&quot; Self Driller 5/16&quot; Hex Head</td>
<td>Panel to purlin attachments</td>
</tr>
</tbody>
</table>

## Notes:
The table above shows the metal buildings panel fasteners provided by AEP Span. Refer to the panel flashing details and fastener placement pages of this manual for specific usage.

Panel attachment screws must be long enough to fully penetrate through the roof decking, or penetrate solid lumber at least one inch.

All screws must be coated to provide protection against corrosion.

Exposed fasteners should have sealing washers and be the same color as the parts they attach.

Roofing nails will also be required, but not furnished by AEP Span. They are typically used to temporarily hold a flashing in place that needs to be installed prior to panels.

Screws must be properly driven to ensure proper seal and holding strength. Do not underdrive or overdrive the screws. Recommended drill speed is 2000 rpm. Use of a depth-sensing nosepiece will aid in properly driving screws.

## Proper Installation of Gasketed Fasteners

- **Correctly Driven**
- **Under Driven**
- **Over Driven**
Ridge/Hip Flashing
Box Rib, PBR Panel and HR-36,

Formed Ridge (R6)
PBR Panel

Formed Ridge
HR-36 (R11)
Box Rib (R43)

Note:
Maximum pitch with formed ridge 3:12.
**Valley Flashing**
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

**Note:**
Valley dimensions must be the proper width to account for slope, snow, ice and heavy rain conditions. An underlayment such as a rubberized cold-applied membrane is recommended extending a minimum of 3'-0" up from the center of the valley on each side.

*Special ordered beveled closures available for a specific pitch/slope.*
Eave Flashing
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Eave (E6)

Sculptured Eave (E7)
optional
Gutter Flashings
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Box Gutter (GU6) pre-hung

Box Gutter (GU8) post-hung

Sculptured Gutter (GU7) pre-hung

Sculptured Gutter (GU9) post-hung

Gutter Strap (GS6)

AEP SPAN SYSTEMS ROOF PANEL

BOTTOM CLOSURE SET IN SEALANT

GUTTER STRAP @ 36" O.C. MAX.
FASTEN EACH STRAP TO GUTTER

GUTTER, ALLOW FOR EXPANSION AND CONTRACTION PER SMACNA STANDARDS

#12 SELF DRILLER SEE FASTENER ILLUSTRATION

DOWN SPOUT AS REQUIRED
Gable Flashings
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Gable Trim (G8)  
PBR Panel

Sculptured Gable Trim (G15)

Sculptured Gable Trim (G9)  
HR-36

3 \#12x3/4” STITCH SCREW OR
4 \#14x7/8” LAP SELF DRILLER  @ 24” O.C.

BUTYL MASTIC TAPE

6 \#12 SELF DRILLER SEE FASTENER ILLUSTRATION

AEP SPAN SYSTEM ROOF PANEL

GABLE TRIM

OUTSIDE CLOSURE
STAGGERED UP RAKE,
SET IN SEALANT

2 \#14x7/8” LAP SELF DRILLER  @ 24” O.C.
Peak Flashings
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

- #12 SELF DRILLER PER ATTACHMENT SCHEDULE
- #14x7/8" LAP SELF DRILLER @ 24" O.C.
- #12x3/4" STITCH SCREW OR
- #14x7/8" LAP SELF DRILLER @ EVERY RIB OR 12" O.C. MAX.

OUTSIDE CLOSURE SET IN SEALANT
TOP CLOSURE SET IN SEALANT
Sidewall Flashings
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Sidewall (SW7)
*PBR Panel*

Sidewall (SW8)
Endwall Flashing
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

4 1/2" 6"
1/2" HEM

Endwall (EW6)

#12 SELF DRILLER
SEE FASTENER ILLUSTRATION

#12 SELF DRILLER
PER ATTACHMENT SCHEDULE

AEP SPAN SYSTEMS WALL PANEL
INSIDE CLOSURE SET IN SEALANT

#12x3/4" STITCH SCREW OR
#14x7/8" LAP SELF DRILLER @ EVERY RIB OR 12” O.C. MAX.

AEP SPAN SYSTEMS ROOF PANEL
TOP CLOSURE SET IN SEALANT
Panel Endlap
Box Rib, HR-36, Mini-V-Beam, and PBR Panel
Wall Details
Window/Door Trim

- C-Metal (C-6) PBR Panel
- Jamb Trim (J6) PBR Panel
- C-Metal (C-13) Nu-Wave Corrugated & U-Panel
- C-Metal (C11) Box Rib & HR-36
- C-Metal (C12) Mini-V-Beam

AEP SPAN’S SYSTEMS WALL PANEL

#12 SELF DRILLER

C-METAL OR J6 JAMB TRIM

GLAZING AND WINDOW FRAME BY OTHERS

C-METAL
Wall Details • Drip Edge, Wall Step, Panel Top
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Drip Edge (B6)

3  #12x3/4" STITCH SCREW
OR
4  #14x7/8" SELF DRILLER
   © EACH RIB OR 12" O.C. MAX.

C-METAL

#12 SELF DRILLER

AEP SPAN SYSTEMS WALL PANEL
DRIP EDGE
C-METAL
DRIP EDGE
Wall Details • Inside Corner
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Inside Corner (IC7)

Inside Corner (IC 11)
Wall Details • Outside Corner
Box Rib, HR-36, Mini-V-Beam, and PBR Panel

Outside Corner (OC7)
PBR Panel

Outside Corner (OC11)

AEP SPAN SYSTEMS WALL PANEL

#12 SELF DRILLER SEE FASTENER ILLUSTRATION

#12x3/4” STITCH SCREW OR
#14x7/8” LAP SELF DRILLER Ø 24” O.C. MAX.
Ridge/Hip Flashing
Nu-Wave Corrugated & U-Panel

Note:
Fasteners (except under ridge cap) should be located on tops of corrugations.

Special ordered beveled closures available for a specific pitch/slope.
Valley Flashing
Nu-Wave Corrugated & U-Panel

Note:
Valley dimensions must be the proper width to account for slope, snow, ice and heavy rain conditions. An underlayment such as a rubberized cold-applied membrane is recommended extending a minimum of 3'-0" up from the center of the valley on each side.

*Special ordered beveled closures available for a specific pitch/slope.
Eave Flashing
Nu-Wave Corrugated & U-Panel

Eave (E6)

- NU-WAVE OR U-PANEL
- BOTTOM CLOSURE SET IN SEALANT
- #12 SELF DRILLER
  SEE FASTENER ILLUSTRATION
- RIVET
- #14x7/8" LAP SELF DRILLER
  @ 16" O.C. MAX.
- EAVE
- OUTSIDE CLOSURE
  SET IN SEALANT
Gutter Flashing
Nu-Wave Corrugated & U-Panel

Box Gutter (GU6)  
*pre-hung*

Gutter Strap (GS6)

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NU-WAVE OR U-PANEL

BOTTOM CLOSURE SET IN SEALANT

GUTTER STRAP @ 36" O.C. MAX.
FASTEN EACH STRAP TO GUTTER

GUTTER, ALLOW FOR EXPANSION AND
CONTRACTION PER SMACNA STANDARDS

BUTYL TAPE OR SEALANT

#12 SELF DRILLER
SEE FASTENER ILLUSTRATION

DOWN SPOUT AS REQUIRED
Gable Flashing
Nu-Wave Corrugated & U-Panel

Gable Trim (G19)

3. #12x3/4" STITCH SCREW
   OR
4. #14x7/8" LAP SELF DRILLER @ 24" O.C.

BUTYL MASTIC TAPE

NU-WAVE OR U-PANEL (NU-WAVE SHOWN)

GABLE TRIM
OUTSIDE CLOSURE STAGGERED UP RAKE, SET IN SEALANT

#14x7/8" LAP SELF DRILLER @ 24" O.C.
Peak Flashing
Nu-Wave Corrugated & U-Panel

Peak (PF16)

6. #12 SELF DRILLER (add note)
3. #12x3/4” STITCH SCREW OR
4. #14x7/8” LAP SELF DRILLER @ EVERY RIB OR 12” O.C. MAX.

OUTSIDE CLOSURE SET IN SEALANT

TOP CLOSURE SET IN SEALANT

NU-WAVE OR U-PANEL
Sidewall Flashing
Nu-Wave Corrugated & U-Panel

Sidewall (SW8)

- 5"
- 5 1/4"
- 1/2" HEM
- RU-WAVE OR U-PANEL
- INSIDE CLOSURE SET IN SEALANT
- SIDEWALL
- 3 #12x3/4" STITCH SCREW OR
- 4 #14x7/8" LAP SELF DRILLER @ 12" O.C.
- BUTYL MASTIC TAPE
- RU-WAVE OR U-PANEL (RU-WAVE PANEL SHOWN)

#12 SELF DRILLER SEE FASTENER ILLUSTRATION
Endwall Flashing
Nu-Wave Corrugated & U-Panel

4 1/4"  6"

1/2" HEM

Endwall (EW6)
Wall Details • Base Trim
Nu-Wave Corrugated & U-Panel

Base Trim (B1)

- 1/2" HEM
- 1/2" (Nu-Wave)
- 1" (Nu-Wave)
- 2-1/8" (Nu-Wave)
- 1/2" HEM (Base Trim (B1))
Wall Details • “C” Trim
Nu-Wave Corrugated & U-Panel
Wall Details • Inside Corner
Nu-Wave Corrugated & U-Panel

Inside Corner (IC2)

BUTYL MASTIC TAPE

3\(\times\) #12x3/4" STITCH SCREW OR
4\(\times\) #14x7/8" LAP SELF DRILLER Ø 12" O.C.

INSIDE CORNER (IC2)

NU-WAVE OR U-PANEL
(NU-WAVE SHOWN)
Wall Details • Outside Corner
Nu-Wave Corrugated & U-Panel

Outside Corner (OC2)

- 3-1/2" MIN.
- 1/2" HEM

OUTSIDE CORNER (OC2)

- BUTYL MASTIC TAPE

3. #12x3/4" STITCH SCREW
   OR

4. #14x7/8" LAP SELF DRILLER
   @ 12" O.C.

NU-WAVE OR U-PANEL
(NU-WAVE SHOWN)
Custom Flashing Worksheet

Notes:
Girth (stretch-out) = a + b + c + d + e
Hooks & Hems count as 2 breaks (bends)

Custom Flashing Pricing:
A) Price per inch of girth per lineal ft = $_______(in/lft) (provided by AEP Span Rep.)
B) Total girth of custom flashing = _________ (in)
C) Slitting charge (required) = $0.13/flashing
D) Price per break (bend) = $0.15/break
E) Number of breaks in custom part = ________
F) Price per lineal ft = (A x B) + C + (D x E) = _________ ($/ft)

Custom Flashing Weight:
Per unit weights (lb/in/lft): 20ga = 0.12 22ga = 0.10 24ga = 0.08 26ga = 0.07
Flashng weight = Total girth (B) x per unit weight (above) = __________ (lbs/ft)