

# UL Evaluation Report

## UL ER25913-01

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### COMPANY:

TAYLOR METAL INC, DBA TAYLOR METAL PRODUCTS  
4566 RIDGE DRIVE NE  
SALEM, OR 97301-6992  
(503) 581-8338  
[www.taylormetal.com](http://www.taylormetal.com)

### 1. SUBJECT:

EASY LOCK, VERSA SPAN, MS 100, MS 150, MS 200, PREMIER-LOCK 100, PREMIER LOCK 150,  
AND CLIP-LOCK 150 METAL ROOFING PANELS

### 2. SCOPE OF EVALUATION:

- 2015, 2012, and 2009 *International Building Code*® (IBC)
- 2015, 2012, and 2009 *International Residential Code*® (IRC)
- 2013 California Building Code
- 2013 California Residential Code
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014
- ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated October 2012

### The products were evaluated for the following properties:

- Roofing Systems for Exterior Fire Exposure (ANSI/UL790, ASTM E108)
- Roof Deck Construction (ANSI/UL 580)
- Corrosion Resistance (ASTM A653, ASTM A792)
- Corrosion Resistance (ASTM B370)



### 3. REFERENCED DOCUMENTS

- ICC-ES:
  - ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated October 2012
  - ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014
- ANSI/UL:
  - ANSI/UL 580, Fifth Edition, Standard for Tests for Uplift Resistance of Roof Assemblies
  - ANSI/UL790, Seventh Edition (ASTM E108-07a), Standard Test Methods for Fire Tests of Roof Coverings
- ASTM:
  - ASTM A653/A653M-08, *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*
  - ASTM A792/A792M-10, *Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process*
  - ASTM B370-12, *Standard Specification for Copper Sheet and Strip for Building Construction*
  - ASTM G154-06, *Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials*
- State of California:
  - 2013 California Building Code
  - 2013 California Residential Code

### 4. USES

Easy Lock, MS 200, Versa Span, MS 100, MS 150, Premier-Lock 100, Premier-Lock 150, and Clip-Lock 150 metal roofing panels are used as roof covering materials in Class A roofing systems installed on roof decks having slopes 2:12 or greater, in accordance with this report, and the manufacturer's published installation instructions.

### 5. PRODUCT DESCRIPTION

Taylor Metal Products' metal roofing panels described in this report are either coated or painted metal formed from ASTM A653 G90, ASTM A792 AZ50 hot-dip coated sheet steel, or from ASTM B370 cold-rolled copper sheet.

Steel Easy Lock panels are manufactured to have a base metal thickness not less than 26 gauge [0.0179 in. (0.455 mm)]. Steel MS 100, MS 150, MS 200, Versa Span, Premier-Lock 100, Premier-Lock 150, and Clip-Lock 150 panels are manufactured to have a base metal thickness not less than 25 gauge [0.0209 in. (0.531 mm)]. Copper Easy Lock, MS 100, MS 150, MS 200, Versa Span, Premier-Lock 100, Premier-Lock 150, and Clip-Lock 150 panels are manufactured to a finished weight not less than 16 ounces per square foot having a thickness of [0.0216 in. (0.549 mm)], with the allowable tolerances.

The panels are metal roof coverings complying with [Section 1507.4](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, [Section R905.10](#) of the 2015, 2012, and 2009 IRC, and California Residential Code.

**Fire Certification:** Taylor Metal Products' metal roofing panels covered under this report have been tested for Class A fire Certification in accordance with ANSI/UL790 (ASTM E108) and qualify for use under [Section 1505.1](#) of the 2015, 2012, and 2009 IBC, [Section R902.1](#) of the 2015, 2012, and 2009 IRC, and 2013 California Residential Code. Refer to [Table 1](#) and [Table 2](#).

**Wind Resistance:** Roofing assemblies shall be designed to resist the design wind load pressures for components and cladding in accordance with [Section 1609.5](#) and [Section 1504.3](#) of the 2015, 2012, and 2009 IBC, 2013 California Building Code, and [Section R905.1](#) of the 2012, 2009 and 2006 IRC, and 2013 California Residential Code.

**Wind Uplift Resistance:** Taylor Metal Products' metal roofing panels covered under this report have been tested for wind uplift resistance in accordance with ANSI/UL 580 complying with Section 1504.3.1 of the 2015 IBC and 2013 California Building Code, [Section 1504.3.2](#) of the 2012, and 2009 IBC. Refer to [Table 1](#) and [Table 2](#).

**Wind-Driven Rain Resistance:** The metal roofing panels covered under this report are not intended for installation in High-Velocity Hurricane Zones. Therefore, the wind-driven rain test specified in AC166 was not conducted under this evaluation.

**Corrosion Resistance:** Taylor metal roofing panels covered under this report comply with the performance requirements for metal panel roof coverings as outlined in [Section 1507.4.3](#) of the 2015, 2012, and 2009 IBC and 2013 California Building Code, [Section 905.10.3](#) of the 2015, 2012, and 2009 IRC and California Residential Code meet the requirements for resistance to corrosion in accordance with ASTM A792.

## 6. INSTALLATION

### 6.1 General

Taylor metal roofing panels must be installed in accordance with [Section 1507.4](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, or [Section R905.10](#) of the 2015, 2012, and 2009 IRC, and California Residential Code, except as noted in this report, and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at all times on the jobsite during installation. The metal roofing panels must be attached to the decked sheathing in a manner that will secure the panels in place.

### 6.2 Slope

MS 100 and MS 150 metal roofing panels are not to be installed on roof decks having slopes less than 1:12. MS 200 metal roofing panels are not to be installed on roof decks having slopes less than ½:12. All other products covered in this report are intended for roof decks having 2:12 slope or greater. Installation of Taylor metal roofing panels covered in this report are to be installed in accordance with [Section 1507.4.2](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code or [Section R905.10.2](#) of the 2015, 2012, and 2009 IRC and California Residential Code.

### 6.3 Roof Deck

Roof decking is to be as described in [Section 1507.4.1](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, or [Section R905.10.1](#) of the 2015, 2012, and 2009 IRC and 2013 California Residential Code. Roof deck must be code-compliant, minimum 15/32 inch-thick (11.9 mm) exterior plywood sheathing complying with Section 2304.8.2 of the 2015 IBC, [Section 2304.7.2](#) of the 2012 and 2009 IBC and 2013 California Building Code, or [Section R803](#) of the 2015 and 2012 IRC and 2013 California Residential Code, or minimum No. 22 gauge [0.030 inch thick (0.76 mm)] steel complying with [Section 2210.1.1.2](#) of the 2015 and 2012 IBC, and 2013 California Building Code. The sheathing must be structurally sound and adequately fastened to resist wind loads for components and cladding as specified in [Section 1609](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, or [Section R301.6](#) of the 2015, 2012, and 2009 IRC and California Residential Code.

### 6.5 Underlayment

An ice barrier must be installed along the eaves in locations historically prone to ice in accordance with [Section 1507.7.4](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, or Section R905.2.7.1 of the 2015 IBC, the 2013 California Residential Code, or [Section R905.5.3.1](#) of the 2012, and 2009 IRC. In addition to the ice barrier, an underlayment must be installed over the entire roof deck in

accordance with [Section 1507.7.3](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, and [Section R905.6.3](#) of the 2015, 2012, and 2009 IRC and California Residential Code.

Underlayments installed on roofs in locations prone to high winds must be installed in accordance with [Section 1507.4.5](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, or [Section R905.6.3](#) of the 2015, 2012, and 2009 IRC and 2013 California Residential Code. Include type 226 comment

## **6.6 Flashing**

Flashing materials are to be installed in accordance with [Section 1503.2](#) and [Section 1507.7.7](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code, [Section R903.2](#) and [Section R905.6.6](#) of the 2015, 2012, and 2009 IRC and 2013 California Residential Code, as applicable.

## **6.7 Hips and Ridges**

Hips and ridges must be installed in accordance with Taylor Metal, Inc.'s published installation instructions for exposure dimension and fastener type.

## **6.8 Fasteners and Attachment**

Attachment of the roof panels must be in accordance with [Section 1507.4.4](#) of the 2015, 2012, and 2009 IBC, and 2013 California Building Code.

## **6.9 Reroofing**

Existing roof covering materials detrimental to performance of the roofing assembly are to be completely removed and replaced prior to installation of the Taylor metal roofing panels. Installation is to be performed for new construction as described in Section 6 of this report.

The existing roof shall be inspected in accordance with the provisions and limitations of Section 1511 of the 2015 IBC, [Section 1510](#) of the 2012 and 2009 IBC, and 2013 California Building Code, and Section R908 of the 2015 IRC, [Section R907](#) of the 2012 and 2009 IRC and California Residential Code, as applicable. Prior to the reroofing, hip and ridge coverings must be removed.

Flashing and edging must comply with Section 6.6 of this report and with Sections 1511.5 and 1511.6 of the 2015 IBC, [Sections 1510.5](#) and [1510.6](#) of the 2012 and 2006 IBC and 2013 California Building Code, and Sections R908.5 and R908.6 of the 2015 IRC, [Sections R907.5](#) and [R907.6](#) of the 2012 and 2009 IRC and California Residential Code, as applicable.

Taylor Metal Products metal roof panels may be installed over existing Class A asphalt glass fiber mat shingles or any Class A UL Listed roof system as described in the UL Certification Category for Prepared Roof-covering Materials, Formed or Molded Metal, Fiber-Cement, Plastic or Fire-retardant-treated Wood (TFXX), for applicable coverage and details of the roof assembly.

## **7. CONDITIONS OF USE**

### **7.1 General**

The metal roofing panels described in this report comply with, or are suitable alternatives to, what is specified in those codes listed in Section 2 of this report, subject to the following conditions:

**7.2** Materials and methods of installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between the installation instructions and this report, this report governs.

- 7.3 Only Taylor specified fasteners shall be used in the installation of the roof covering system.
- 7.4 See the UL Online Certification Directory for Metal Roof Deck Panels ([TJPV](#)), Roofing Systems ([TGFU](#)), and Roof-covering Materials, Impact Resistance ([TGAM](#)), respectively.
- 7.5 Wind uplift pressures on any roof area, including edges and corner zones shall not exceed the allowable wind pressure for the roof covering installed in that particular area. The allowable wind uplift pressure for the roof assembly shall be based on a minimum factor of safety of 2.0 as shown in the Certification for uplift resistance (TGIK). The allowable wind uplift pressure is for the roof system only. The deck and framing to which the roofing system is attached shall be designed for the applicable components and cladding wind loads in accordance with the applicable code.
- 7.6 The metal roofing panels covered under this report are produced under the UL LLC Listing/Certification and Follow-Up Service Program, which includes audits in accordance with quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## 8. SUPPORTING EVIDENCE

- 8.1 Data in accordance with ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated October 2012.
- 8.2 Manufacturer's descriptive product literature, including installation instructions.
- 8.3 UL Certification reports in accordance with ANSI/UL 580, ANSI/UL 790, and UL 2218. See UL Product Certification Categories (TJPV), (TGFU), and (TGAM), File R25913.
- 8.4 Documentation of quality system elements described in ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014.

## 9. IDENTIFICATION

Taylor metal roofing panels described in this evaluation report are identified by a marking bearing the report holder's name (Taylor, Inc.) and address, the product name, the UL Certification Mark, and the evaluation report number UL ER25913-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Certification Mark certificate.

## 10. USE OF UL EVALUATION REPORT

- 10.1 The approval of building products, materials, or systems is the responsibility of the applicable authorities having jurisdiction.
- 10.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 10.3 The current status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the On-Line Certifications Directory at [www.ul.com/erdirectory](http://www.ul.com/erdirectory).

**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES**

System Number	Combustible Deck		Barrier Product	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>24 Gauge Steel Easy Lock<sup>4</sup>, Maximum 18 inches wide</b>					<b>Class 90</b>
<b>1</b>	Minimum nominal <sup>5</sup> / <sub>8</sub> inch APA Span-Rated plywood	Minimum #6 x 1- <sup>7</sup> / <sub>8</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific <sup>1</sup> / <sub>4</sub> inch minimum DensDeck board or <sup>1</sup> / <sub>4</sub> inch minimum United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> inch minimum UL Certified gypsum board with all joints staggered a minimum of 6 inches from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	Minimum #10 x 1 inch pancake head screws spaced 12 inches oc in slotted fastener flange	<b>-52.5</b>

<sup>1</sup>Unlimited Slope

<sup>2</sup>All side and butt joints to be sealed with urethane caulk

<sup>3</sup>Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory may be used directly underneath the metal roof cover

<sup>4</sup>Meets Class 4 Impact Rating

<sup>5</sup>Structural members spaced maximum 24 inches oc

**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Combustible Deck		Barrier Product	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>24 Gauge Steel Versa Span<sup>4</sup>, Maximum 18 inches wide</b>					<b>Class 90</b>
<b>2</b>	Minimum <sup>19</sup> / <sub>32</sub> inch APA Span-Rated plywood	#6 x 1- <sup>7</sup> / <sub>8</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific <sup>1</sup> / <sub>4</sub> inch minimum DensDeck board or <sup>1</sup> / <sub>4</sub> inch minimum United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> inch minimum UL Certified gypsum board with all joints staggered a minimum of 6 inches from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(2) Minimum #10-12 x 1 inch pancake head screws spaced 36 inches oc in Versa Span Clips	<b>-52.5</b>
<b>3</b>				(2) Minimum #10-12 x 1 inch pancake head screws spaced 36 inches oc in Versa Span Clips	<b>-52.5</b>

<sup>1</sup>Unlimited Slope

<sup>2</sup>All side and butt joints to be sealed with urethane caulk

<sup>3</sup>Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory may be used directly underneath the metal roof cover

<sup>4</sup>Meets Class 4 Impact Rating

<sup>5</sup>Structural members spaced maximum 24 inches oc

**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Combustible Deck		Barrier Product Configuration	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>16 Oz. Copper MS 100<sup>4</sup>, Maximum 17 inches wide</b>					<b>Class 90</b>
<b>4</b>	Minimum <sup>19</sup> / <sub>32</sub> inch APA Span-Rated plywood	#6 x 1- <sup>7</sup> / <sub>8</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific <sup>1</sup> / <sub>4</sub> inch minimum DensDeck board or <sup>1</sup> / <sub>4</sub> inch minimum United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> inch minimum UL Certified gypsum board with all joints staggered a minimum of 6 inches from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(2) Minimum #10-12 x 1 inch pancake head screws spaced 18 inches oc in MS 100 Clips	<b>-52.5</b>
<b>24 Gauge Steel MS 100<sup>4</sup>, Maximum 18 inches wide</b>					<b>Class 90</b>
<b>5</b>	Minimum nominal <sup>5</sup> / <sub>8</sub> inch APA Span-Rated plywood	#8 x 2- <sup>1</sup> / <sub>2</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific <sup>1</sup> / <sub>4</sub> inch minimum DensDeck board or <sup>1</sup> / <sub>4</sub> inch minimum United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> inch minimum UL Certified gypsum board with all joints staggered a minimum of 6 inches from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(2) Minimum #10-12 x 1 inch pancake head screws spaced 24 inches oc in MS 100 Clips	<b>-52.5</b>



**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Combustible Deck		Barrier Product Configuration	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>24 Gauge MS 150<sup>4</sup>, Maximum 16 inches wide</b>					<b>Class 90</b>
<b>6</b>	Minimum nominal 1/2 inch APA Span-Rated plywood	#7-6 x 1-5/8 inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific 1/4 in. min DensDeck board or 1/4 in. min United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or 1/2 in. min UL Certified gypsum board with all joints staggered a min of 6 in. from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(4) Minimum #10-12 x 1 inch pancake head screws spaced 48 inches oc in MS 150 Clips	<b>-52.5</b>
<b>24 Gauge Steel Premier-Lock 100<sup>4</sup>, Maximum 16 inches wide</b>					<b>Class 90</b>
<b>7</b>	Minimum nominal 5/8 inch APA Span-Rated plywood	#8 x 2-1/2 inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific 1/4 in. min DensDeck board or 1/4 in. min United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or 1/2 in. min UL Certified gypsum board with all joints staggered a min of 6 in. from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(1) Minimum #10-12 x 1 inch pancake head screws spaced 16 inches oc in slotted fastener flange	<b>-52.5</b>

**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Combustible Deck		Barrier Product Configuration	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>24 Gauge Steel Premier-Lock 150<sup>4</sup>, Maximum 14-<sup>1</sup>/<sub>2</sub> inches wide</b>					<b>Class 90</b>
<b>8</b>	Minimum nominal <sup>5</sup> / <sub>8</sub> inch APA Span-Rated plywood	#8 x 2- <sup>1</sup> / <sub>2</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific 1/4 in. min DensDeck board or 1/4 in. min United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> in. min UL Certified gypsum board with all joints staggered a min of 6 in. from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(4) Minimum #10-12 x 1 inch pancake head screws spaced 18 inches oc in slotted fastener flange	<b>-52.5</b>
<b>22 Gauge Steel Premier-Lock 150<sup>4</sup>, Maximum 16-<sup>1</sup>/<sub>4</sub> inches wide</b>					<b>Class 90</b>
<b>9</b>	Minimum nominal <sup>5</sup> / <sub>8</sub> inch thick APA Span-Rated plywood	#8 x 2- <sup>1</sup> / <sub>2</sub> inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific 1/4 in. min DensDeck board or 1/4 in. min United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or <sup>1</sup> / <sub>2</sub> in. min UL Certified gypsum board with all joints staggered a min of 6 in. from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(1) Minimum #10 x 1 inch pancake head screws spaced 20- <sup>3</sup> / <sub>4</sub> inches oc in slotted fastener flange	<b>-52.5</b>

**TABLE 1: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Combustible Deck <sup>2</sup>		Barrier Product Configuration <sup>5</sup>	Metal Panel <sup>3</sup> Attachment	Allowable Uplift Pressure ANSI/UL 580
	Plywood Sheathing <sup>2</sup>	Attachment			
<b>24 Gauge Steel Clip-Lock 150<sup>4</sup>, Maximum 16 inches wide</b>					<b>Class 90</b>
<b>10</b>	Minimum nominal 5/8 inch thick APA Span-Rated	#8 x 2-1/2 inch bugle head screws or #8d annular ring shank nails spaced 6 inches oc at board edge and 12 inches oc into framing members <sup>5</sup>	Georgia Pacific 1/4 in. min DensDeck board or 1/4 in. min United States Gypsum Co SECUROCK Glass-Mat Roof Board (Type SGMRX), National Gypsum DEXcell Glass Mat Roof Board or DEXcell FV Glass Mat Roof Board, CertainTeed Gypsum GlasRoc or 1/2 in. min UL Certified gypsum board with all joints staggered a min of 6 in. from the plywood joints, or one layer GAF-Elk VersaShield Underlayment or Firestone Building Products CLAD-GARD SA FR Underlayment	(2) Minimum #10-12 x 1 inch pancake head screws spaced 36 inches oc in Clip-Lock 150 Clips	<b>-52.5</b>

<sup>1</sup>Unlimited Slope

<sup>2</sup>All side and butt joints to be sealed with urethane caulk

<sup>3</sup>Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory may be used directly underneath the metal roof cover

<sup>4</sup>Meets Class 4 Impact Rating

<sup>5</sup>Structural members spaced maximum 24 inches oc

**TABLE 2: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES**

System Number	Noncombustible Deck	Insulation	Coverboard or Barrier Product	Ply Sheet	Metal Panel Attachment	Allowable Uplift Pressure ANSI/UL 580
	Steel Decking <sup>2</sup>					
<b>24 Gauge Steel MS 200<sup>3</sup>, Maximum 16 inches wide</b>						<b>Class 90</b>
<b>11</b>	Minimum 22 MSG steel	Any UL Listed Polyisocyanurate glass fiber, perlite or wood fiber, any thickness	N/A	Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory	(1) #18 hex washer head screws spaced 48 inches oc in NC3300, NCF-3300, NCF-3300-SS Series Clip <sup>6</sup>	<b>-52.5</b>
<b>24 Gauge Steel Versa Span<sup>3</sup>, Maximum 18 inches wide</b>						<b>Class 90</b>
<b>12</b>	Minimum 22 MSG steel <sup>4</sup>	Any UL Listed Polyisocyanurate glass fiber, perlite or wood fiber, any thickness	Optional-Min 15/32 inch plywood, or min 7/16 inch thick OSB, , 1/2 inch thick gypsum board, 1/2 inch wood fiberboard, 1/4 inch min. thickness G-P Gypsum DensDeck, 1/4 inch min thick USG SECUROCK Glass Mat Board or SECUROCK Roof Board applied over the liner panel in lieu of Foamed Plastic or over Foamed Plastic <sup>5</sup>	Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory	(2) #14 truss head screws spaced 48 inches oc through NC3300, NCF-3300, NCF-3300-SS Series Clip with bearing plate <sup>6</sup>	<b>-52.5</b>

<sup>1</sup>Unlimited Slope

<sup>2</sup>Minimum 33 ksi

<sup>3</sup>Meets Class 4 Impact Rating

<sup>4</sup>6 mil vapor barrier may be used between steel deck and foam plastic insulation

<sup>5</sup>Fasteners used to attach insulation layer to liner panel to be minimum No. 11-13 truss head screws and to penetrate steel deck by minimum of 1/2 inch

<sup>6</sup>Insulation bearing plate not required if coverboard is used

**TABLE 2: UL 790 CLASS A<sup>1</sup> FIRE RATED WIND UPLIFT ASSEMBLIES (continued)**

System Number	Noncombustible Deck	Insulation	Coverboard or Barrier Product	Ply Sheet	Metal Panel Attachment	Allowable Uplift Pressure ANSI/UL 580
	Steel Decking <sup>2</sup>					
<b>24 Gauge Steel Versa Span<sup>3</sup>, Maximum 18 inches wide</b>						<b>Class 90</b>
<b>13</b>	Minimum 22 MSG steel <sup>4</sup>	Any UL Listed Polyisocyanurate glass fiber, perlite or wood fiber, any thickness, or 5 inch composite structural fiber cement with foam plastic core	Minimum <sup>7</sup> / <sub>16</sub> inch thick APA rated OSB <sup>5</sup>	Any UL Certified Type G1, G2 or G3 base or ply sheet, Type 15 or 30 felt or UL Certified prepared roofing accessory	(2) #10-12 hex washer head screws spaced 36 inches oc in NC3300, NCF-3300, NCF-3300-SS Series Clip <sup>6</sup>	<b>-52.5</b>

<sup>1</sup>Unlimited Slope

<sup>2</sup>Minimum 33 ksi

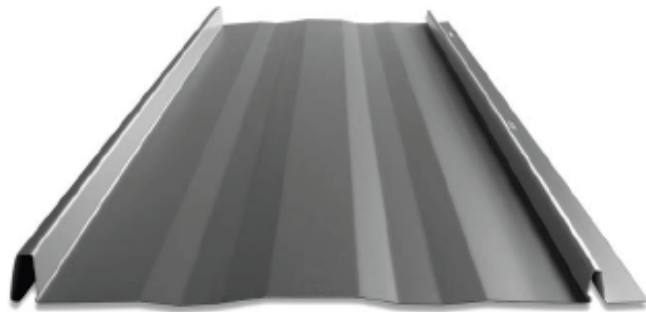
<sup>3</sup>Meets Class 4 Impact Rating

<sup>4</sup>6 mil vapor barrier may be used between steel deck and foam plastic insulation

<sup>5</sup>Fasteners used to attach insulation layer to liner panel to be minimum No. 11-13 truss head screws and to penetrate steel deck by minimum of <sup>1</sup>/<sub>2</sub> inch

<sup>6</sup>Insulation bearing plate not required if coverboard is used

## Easy-Lock Detail



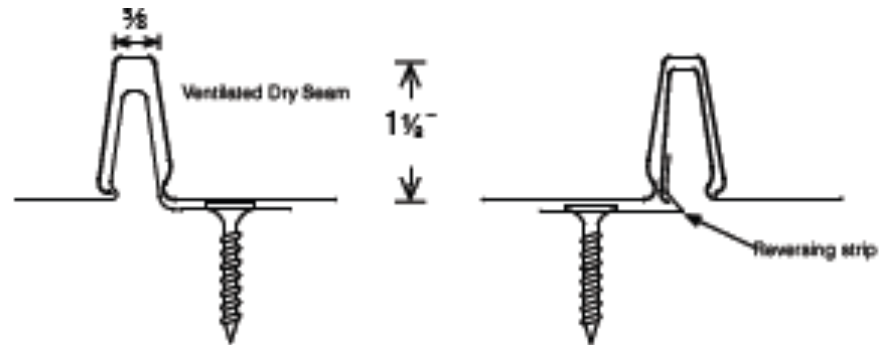
STRIATED



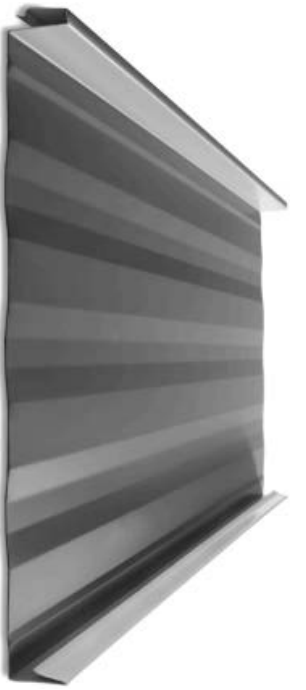
ACCENT RIBS  
3 Accent ribs for 12" panel  
4 Accent ribs for 16" & 18" panel



FLAT PAN



# Versa-Span Detail



STRIATED

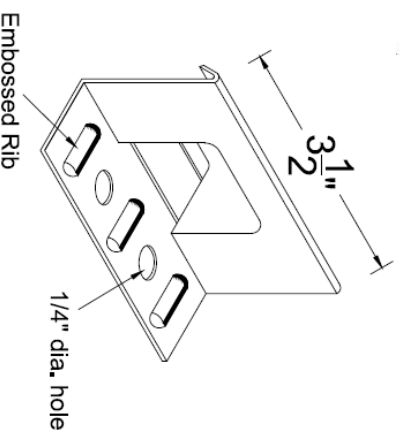
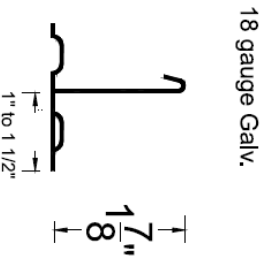
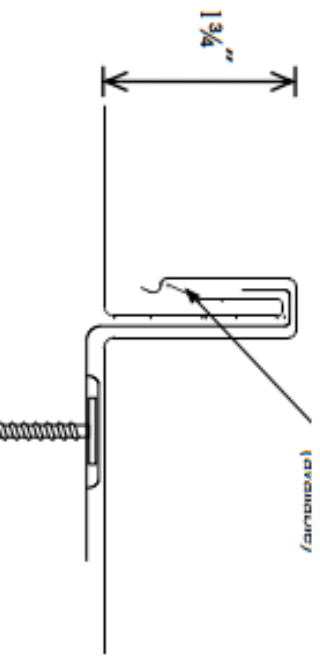


ACCENT RIBS

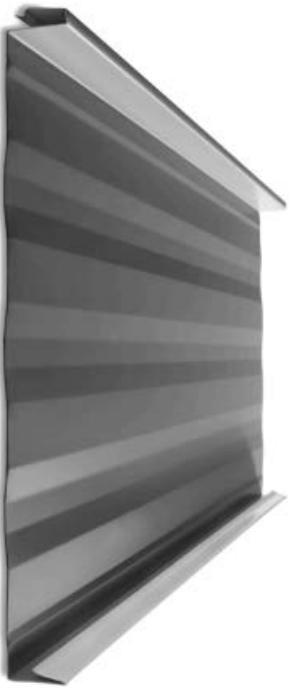
2 Accent ribs for 12" to 14 1/2" panel  
3 Accent ribs for 16" to 18" panel



FLAT PAN



# MS-100, MS-150 Detail



STRIATED

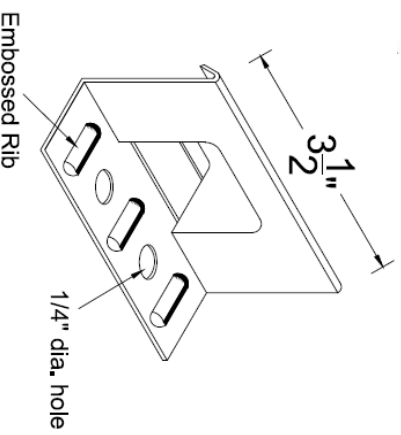
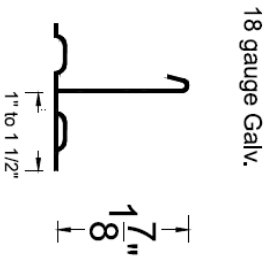
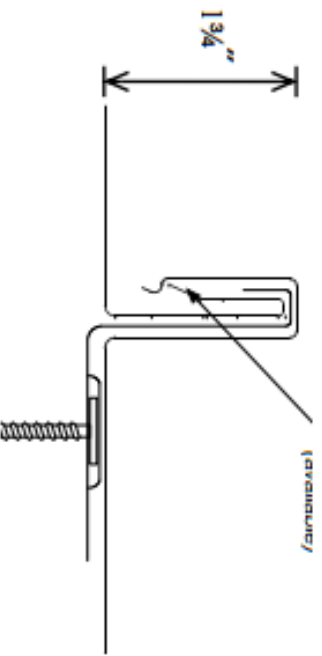


ACCENT RIBS

2 Accent ribs for 12" to 14 1/2" panel  
3 Accent ribs for 16" to 18" panel

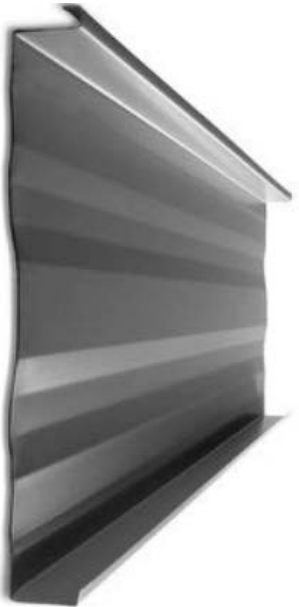


FLAT PAN





**MS-100, MS-150 Detail**



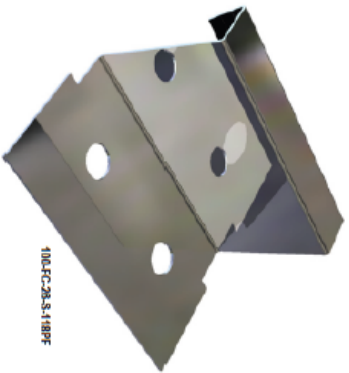
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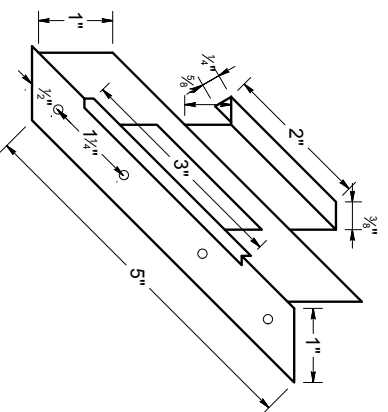
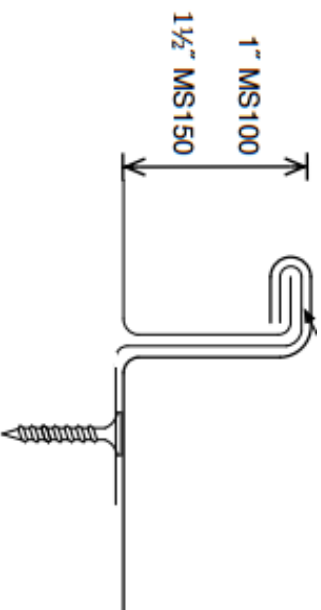
ACCENT RIBS



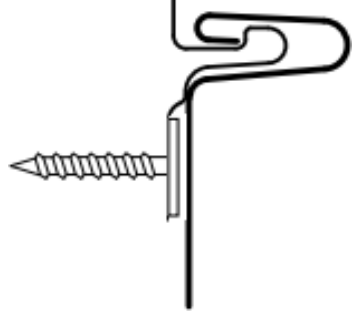
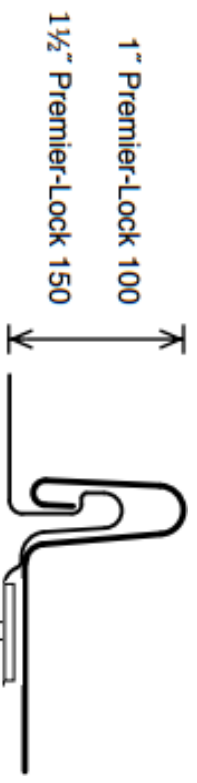
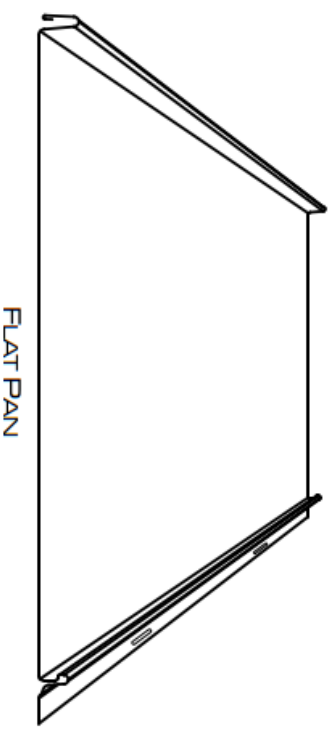
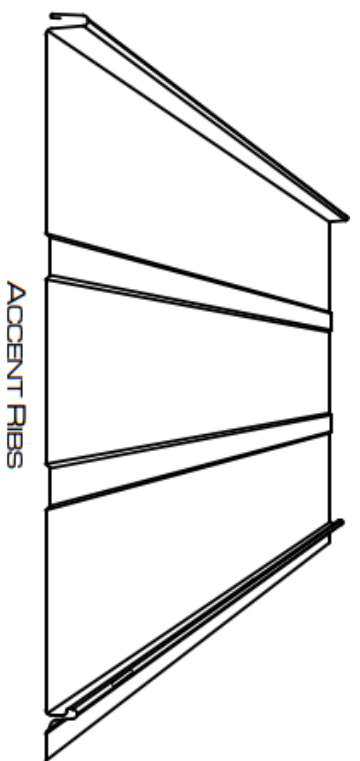
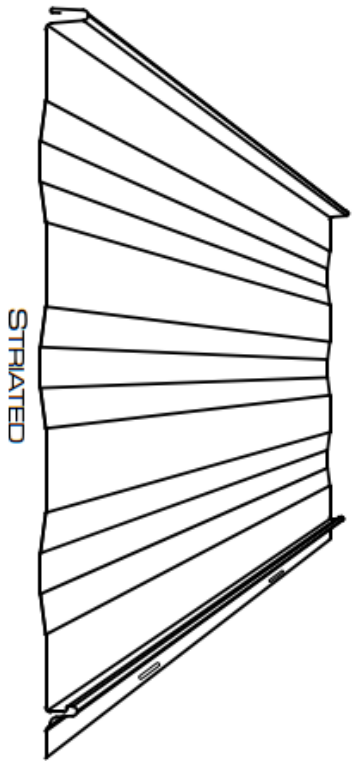
FLAT PAN



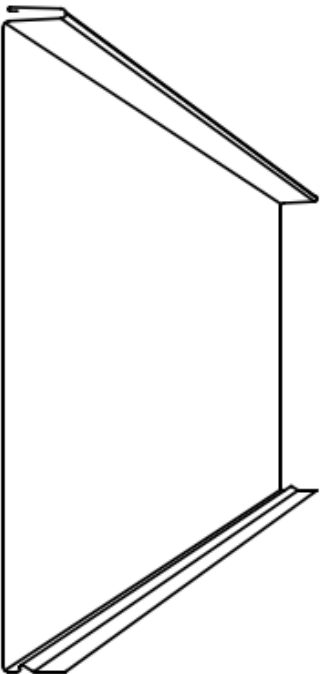
106FC28.518PF



Premier-Lock Detail



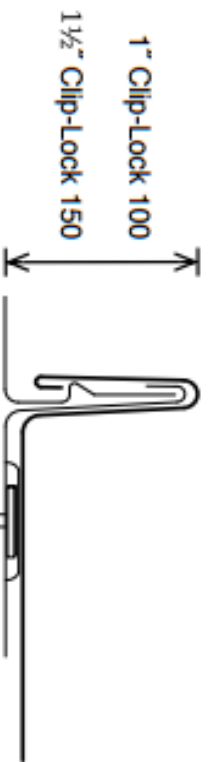
### Clip-Lock Detail



FLAT PAN



150-SLU-18-G



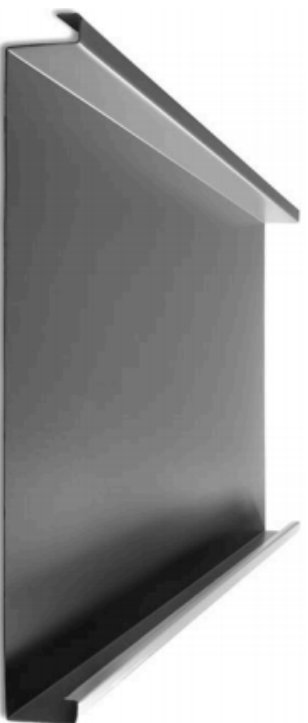
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STRIATED

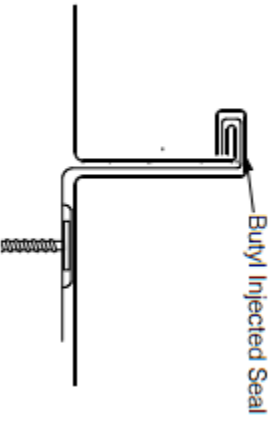


ACCENT RIBS 2 Accent ribs for 12" to 14 1/2" panel  
3 Accent ribs for 16" to 18" panel

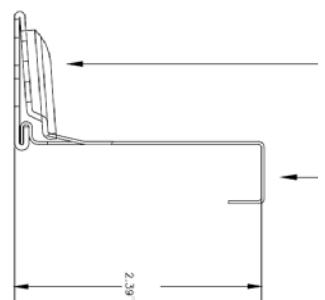
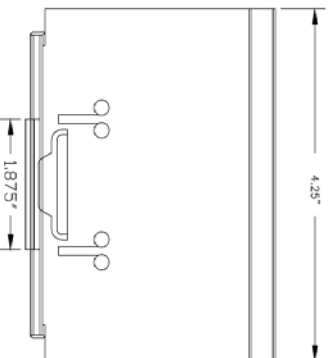
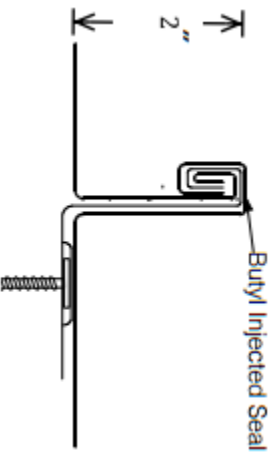


FLAT PAN

## 90° SEAM DETAIL



## 180° SEAM DETAIL



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