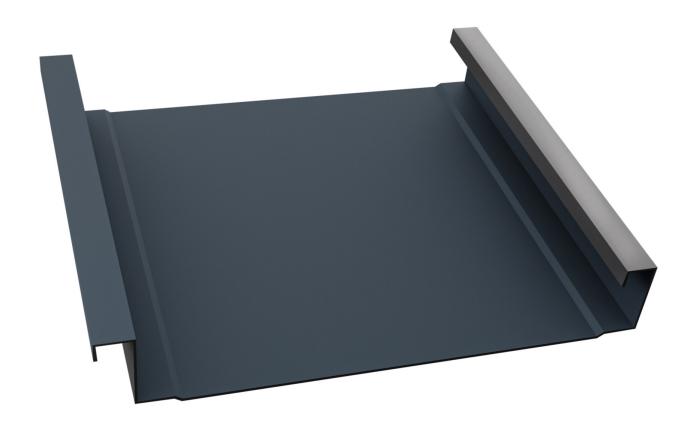


# WESTERN STATES METAL ROOFING

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# MS2® PANEL 2" MECHANICAL SEAM

# **INSTALLATION GUIDE** WITH TRIM, FLASHINGS AND DETAILS













Installation, Flashings & Shop Drawing Detail Guide

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Installation, Flashings & Shop Drawing Detail Guide

## **Special Design Considerations**

The details contained in this guide are proven industry details and are intended to be used as a design aid and installation guide. It does not depict all situations that may be encountered on all projects. Modifications are the responsibility of the designer/owner/installer.

Consideration should be given for fit for purpose, building use, climate conditions such as temperature, snow, wind, and moisture, governing building codes, and maintenance.

It is highly recommended that all trims and flashings be of the same material as the panels (metal, gauge, finish) to ensure long term performance and durability. Where possible, flashing edges should be hemmed to strengthen the edge and protect the cut edge from exposure.

#### Acceptance

Use of this manual is strictly voluntary. Details that are provided are to be used as a guide only. Details may not be applicable for all situations. This guide provides one standard detail and WSMR accepts that other installation details may be needed and other details may exist. WSMR makes no guarantee as to the weather tightness of the system or details found with in this guide. The information in this manual is believed to be correct and accurate at the time of printing. WSMR reserves the right to change details, discontinue products, change designs at any time without incurring obligation. It is best to consult your design engineer for recommendations.

## Underlayment

There are many types of underlayments on the market today that are all designed with a special purpose depending on the type of metal and profile. Many different types of metal will require a different type of underlayment, such as A606-4 (Corten), which requires a high temperature underlayment. It is best to consult your design engineer for recommendations.

Not all conditions require an underlayment, however, metal siding is susceptible to condensation and it is recommended that an appropriate underlayment be used on all wood substrates to protect the structure during installation. For added protection from rain and

snow, it is recommended to use rubberized ice and water shield.

### **Snow Design**

Design and dimensions must be the proper width to accommodate high snow, rain, ice, and slope conditions. If possible, splices, penetrations, should be minimized in areas of high snow and ice accumulations. Details found in this manual may not pertain in areas of high snow and ice accumulations.

#### Panel coverage and fastening

Normal panel width of MS-2® Standing Seam panels are 12", 16" and 18" wide coverage. However depending on the finish selected and the required coil feed, other sizes may be available. Please consult with your WSMR representative for details and fastening recommendations.

#### Safety and Maintenance

Extreme care should always be used when working with metals. Safety should always be a top priority and approved fall protection and equipment as approved by OSHA should always be used. No structure is immune to severe weather, or is completely maintenance free. To keep your siding performing as it was designed, an inspection and comprehensive maintenance program should be implemented.

#### References

For other installation techniques and details, The Sheet Metal and Air Conditioning Contractors National Association Inc. (SMACNA) and NRCA manuals are great resources for working with sheet metal.

#### **Technical Assistance**

Contact your WSMR sales or technical representative for any additional information or assistance. To insure you have the latest information available, please inquire or visit our web sites at Paintedrustedroofing.com or Metalforroofing.com

Installation, Flashings & Shop Drawing Detail Guide

## Notes to Designer and Installers

The details contained in this guide are proven industry details and are intended to be used as a design aid and installation guide. It does not depict all situations that may be encountered on all projects. Modifications are the responsibility of the designer/ owner/ installer. Consideration should be given for fit for purpose, building use, climate conditions such as temperature, snow, wind, and moisture, governing building codes, and maintenance. It is highly recommended that all trims and flashings be of the same material as the panels (metal, gauge, finish) to ensure long term performance and durability. Where possible, flashing edges should be hemmed to strengthen the edge and protect the cut edge from exposure.

#### Framing and Substrates

"MS-2® Standing Seam" panels are used over all type of substrates like steel framing, open purlins, spaced sheathing, and wood surface such as plywood. Most details in this guide are shown with panels attached to open framing.

#### Oil Canning

Oil canning is a condition common with flat metal surfaces. This waviness is caused by steel mill tolerances, forming, variations in the structures surfaces, and hardness of the steel. Measures are taken at the roll forming process, like profile design, steel gauge, corrective leveling, to minimize the effects of oil canning. Oil canning is a characteristic of steel and can not be eliminated totally and therefore is not reason for rejection of the panels.

## Job Site Storage

While waiting to be installed on the job site, storage of panels, trim crates, and flat sheet should be sloped in order to allow for proper moisture run off. One end should be elevated so as not to allow ponding of water on the metal surface. When using tarps for protection, proper ventilation should be provided to prevent condensation. Moisture or

condensation that is trapped inside a bundle can lead to white rust on sheeting. WSMR assumes no responsibility of liability for damage to our products which occurs in the possession of the consignee or which we deem to be improper handling and storage. Protective plastic film on trim or panel should be removed within 90 days. Failure to follow these instructions may void the warranty.

#### Slope Requirements

The panels in this install guide should be used on slopes 1:12 or greater with mastic.

#### 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.

#### **Pinning Requirements**

The MS2® panel must be "pinned" at one end only to resist the "drag" load caused by weight of the panels, live load, and snow loads.

The intensity of the drag load is a function of the slope, the loads involved, and the panels. Please consult a design engineer for exact pinning requirements.

## **Expansion & Contraction**

Both the panels and flashing must allow for expansion and contraction of the materials, especially where long lengths are used.

The overlap between the hidden cleat and the turnedunder end of the panel at the eave may need to be increased to accommodate thermal movement when 30ft + sheets are used.

#### **Valleys**

Valley dimensions must be the proper width to account for roof slope, snow, ice and rain conditions. Details found in this guide may not pertain to areas of high snow and ice accumulations.

Installation, Flashings & Shop Drawing Detail Guide

#### **Fastener Selection**

#### **Notes to Installers:**

Fastener Selection will vary depending on type and thickness of substrate. Design Calculations for clip spacing should be completed by the design engineer.

The use of Butyl tape mastic, Butyl sealants and Curing Sealants is always recommended to insure weather tight installation.

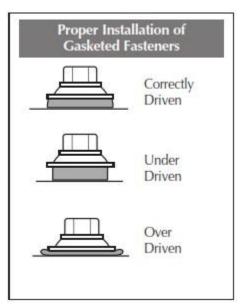
Panels and flashings should never be installed in contact with dissimilar metals. Use only those flashings and accessories designed for use with this panel.

Panel clip attachment screws must be long enough to fully penetrate through roof deck substrate or penetrate solid lumber at least one inch.

Exposed Trim Fasteners should have sealing washers and be coated to provide protection against corrosion.

Screws must be properly driven to ensure holding strength and proper seal. (see diagram) Recommended drill speed is 2000rpm. Improper setting of drill speed can lead to snapping of screw heads.

Pre drilling of screw holes may be necessary with heavy gauge metals



Installation, Flashings & Shop Drawing Detail Guide

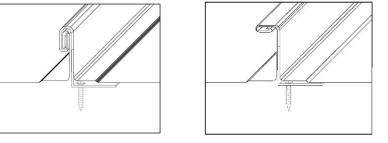
#### **Fastener Selection**

Description Application

14 x 7/8" Lap Self tap Used to attach trims.

Used to attach Panel clips. #10-12 x1" Pancake head Wood

Used to secure trims to substrates. #10-12 x 1" SD PH Self Driller Steel



\*Double Seam UL Rated

#9 x 1.5 " Woodgrip #9 x 2" Woodgrip

Used for Trim to Trim 1/8" Stainless Rivets attachment or trim to wall

panels.

Used for panel attachment #9 x 1" Woodgrip

Used for Metal to Metal #12-14 x 1" Self Driller Used for Metal to Metal #12-14 x 2" Self Driller

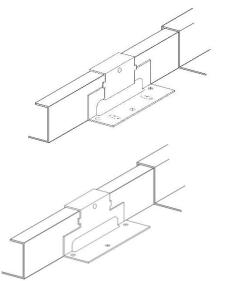
Floating clip allows for thermal movement. 18 ga. Floating Clip

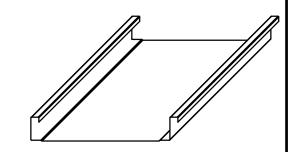
**Fixed Clip** 18 ga. Fixed Clip

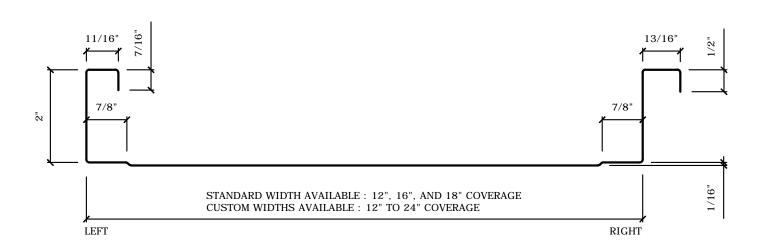
WSMR will not be responsible for final screw/clip selection. This guide is just a reference tool to be used. Please consult a design engineer for load and design calculations.





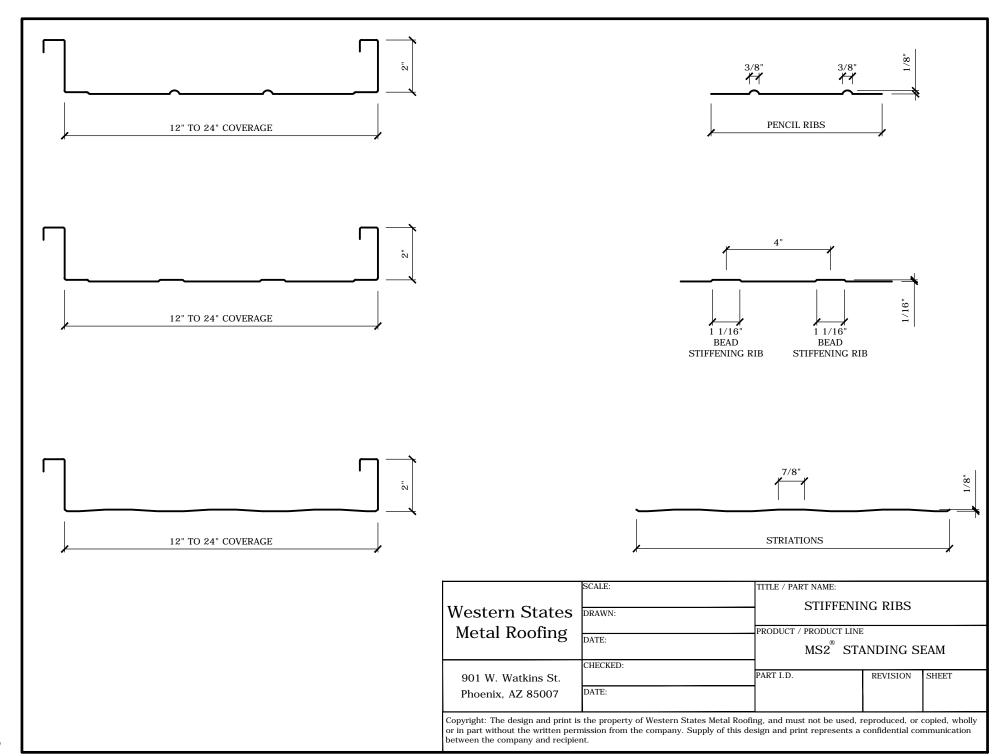






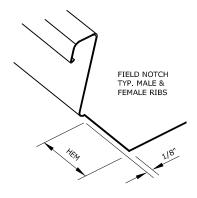
| Western States                          | SCALE: DRAWN: | TITLE / PART NAME:  MS2® STANDING SEAM |          |       |
|---|---------------|--|----------|-------|
| Metal Roofing                           | DATE:         | PRODUCT / PRODUCT LIN                  | ΙE       |       |
| 901 W. Watkins St.<br>Phoenix, AZ 85007 | DATE:         | PART I.D.                              | REVISION | SHEET |

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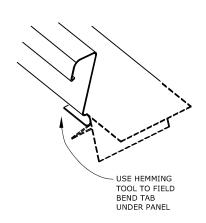


## **EAVE HEM**

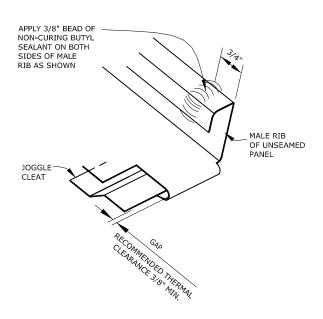
#### STEP ONE

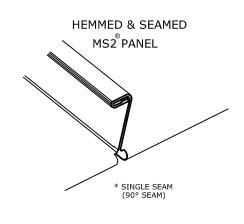


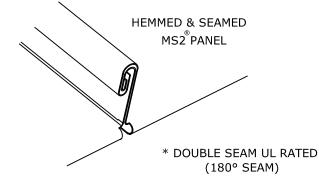
#### STEP TWO

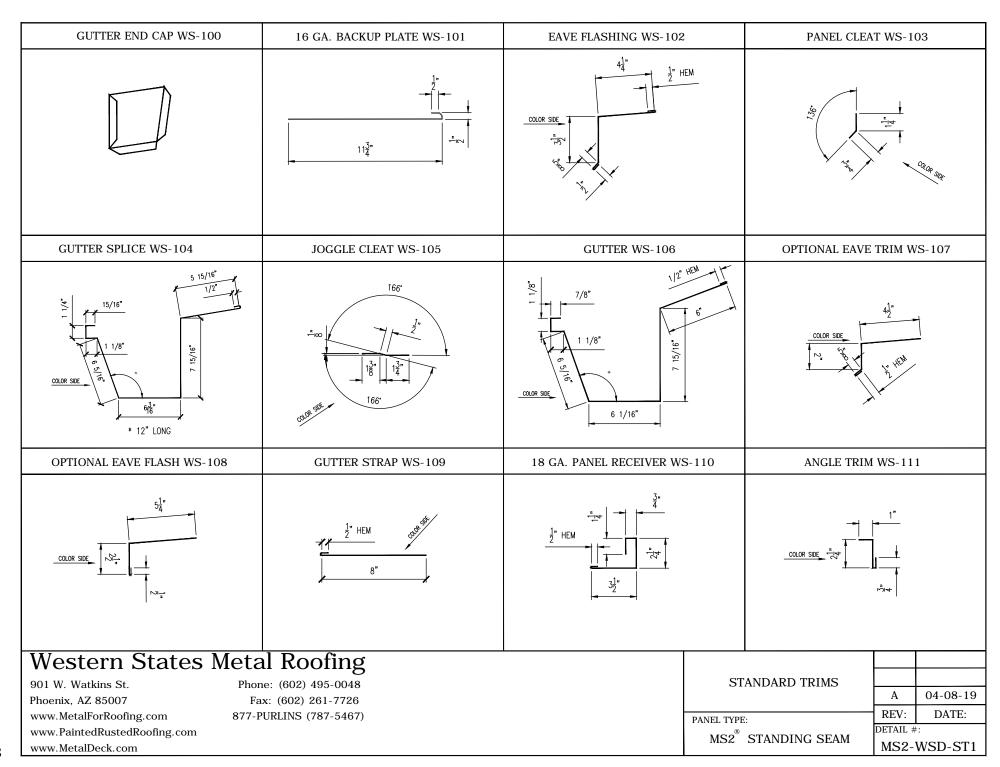


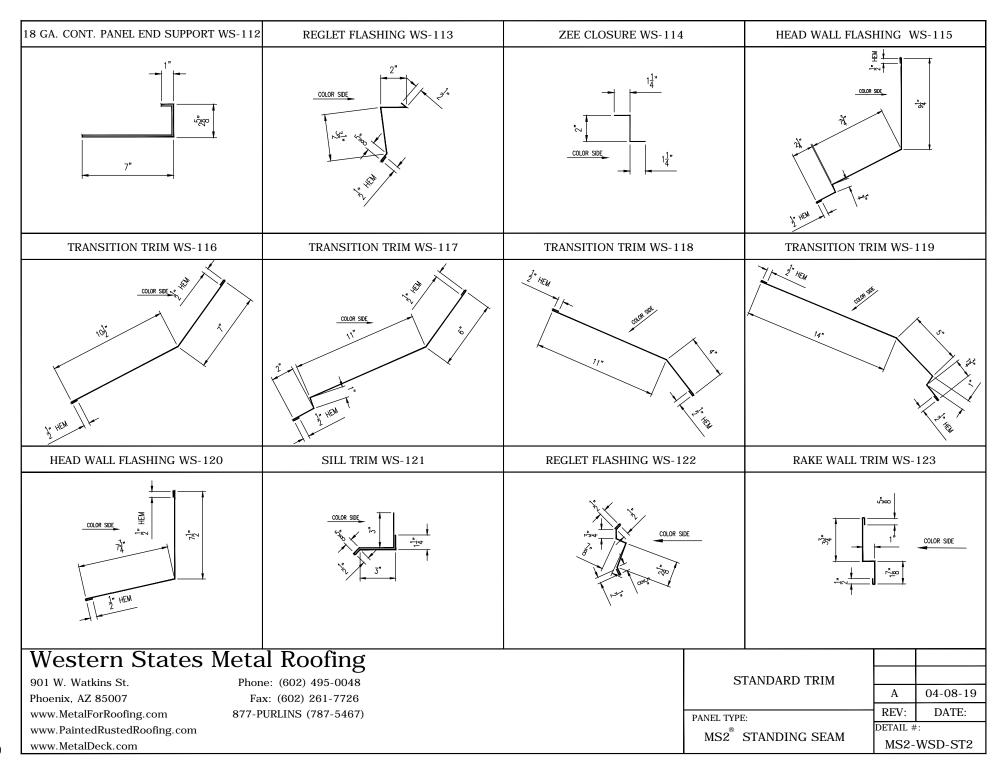
#### STEP THREE

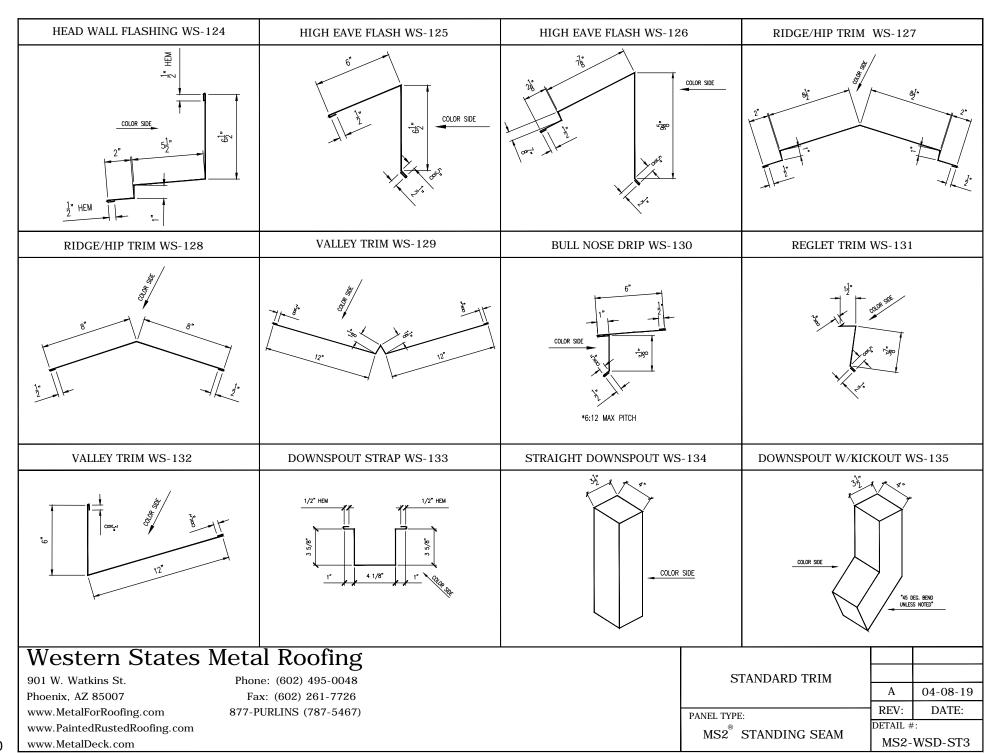


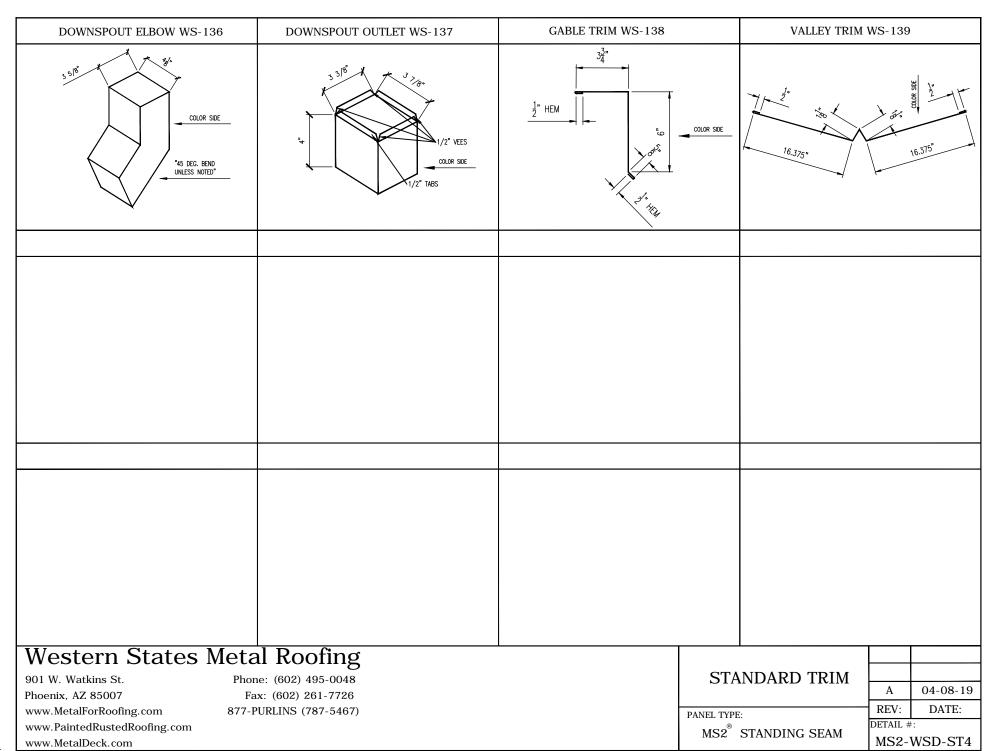






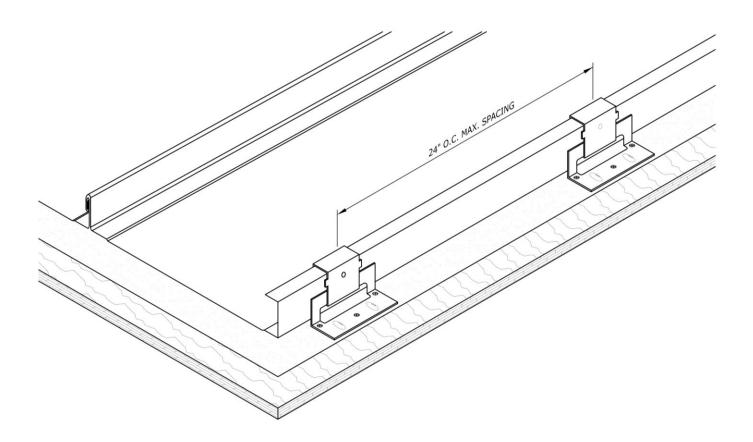




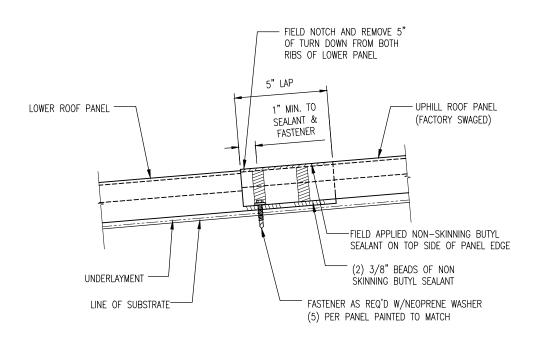


Installation, Flashings & Shop Drawing Detail Guide

For maximum holding power, it is recommended that the minimum wood penetration be 1 inch. Using pancake head screw fasteners that are designed to be used with fastening clips to the metal roofing panels.



WSMR will not be responsible for final screw/clip selection. This guide is just a reference tool to be used. Please consult a design engineer for load and design calculations.



#### INSTALLATION NOTES:

- -SWAGE TOP PANEL ONLY
- -PANEL MUST BE INSTALLED LEFT TO RIGHT ONLY
- -END LAPS OF ADJACENT PANELS MUST BE STAGGERED AT LEAST ONE PURLIN OR A MINIMUM OF 24" TO PREVENT MATERIAL

BUILD-UP AT LAPS

#### GAUGE: COLOR: LENGTH: FINISH:

MATERIAL:

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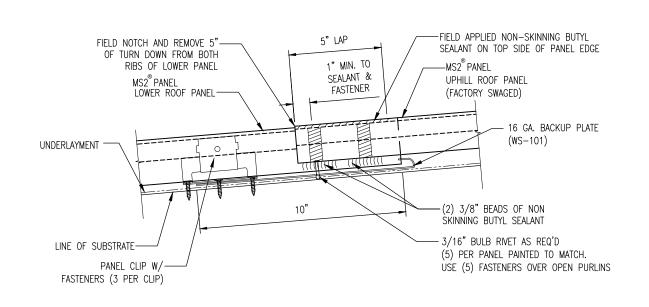
FIXED LAP DETAIL

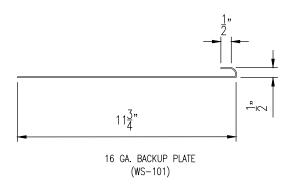
PANEL TYPE:

MS2<sup>®</sup> STANDING SEAM

04-08-19 REV: DATE: DETAIL #:

MS2-WSD-S1





#### INSTALLATION NOTES:

-SWAGE TOP PANEL ONLY -PANEL MUST BE INSTALLED LEFT TO RIGHT ONLY -END LAPS OF ADJACENT PANELS MUST BE STAGGERED AT LEAST ONE PURLIN OR A MINIMUM OF 24" TO PREVENT MATERIAL BUILD-UP AT LAPS

| GAUGE:  | COLOR:  |
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| LENGTH: | FINISH: |

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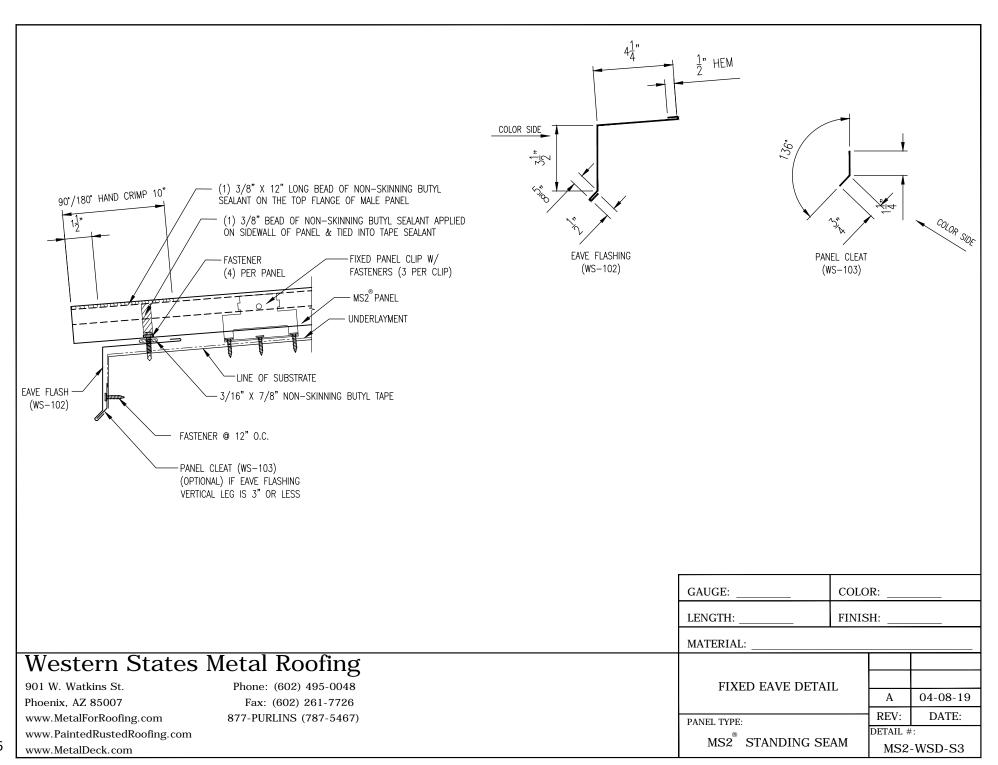
FLOATING LAP DETAIL PANEL TYPE:

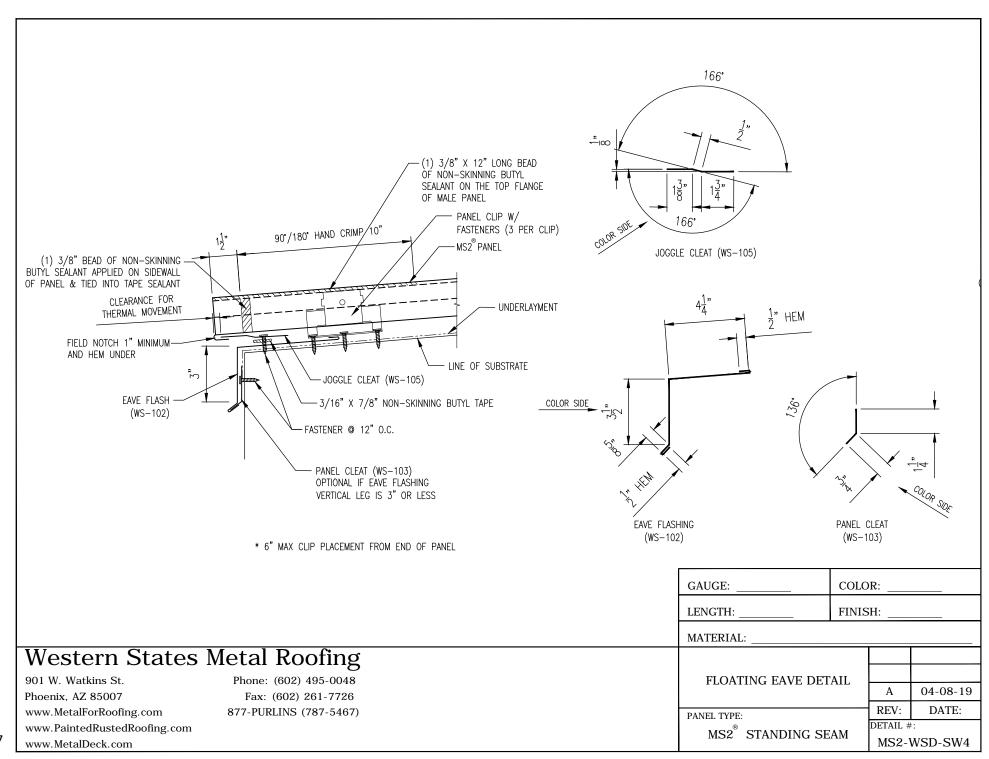
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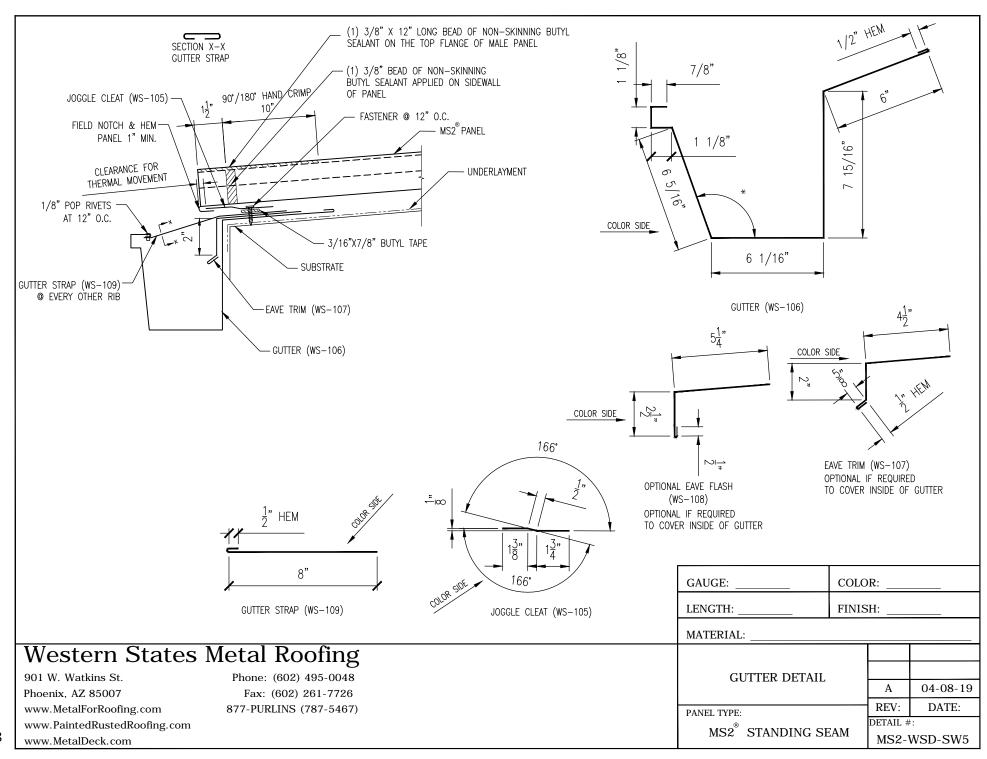
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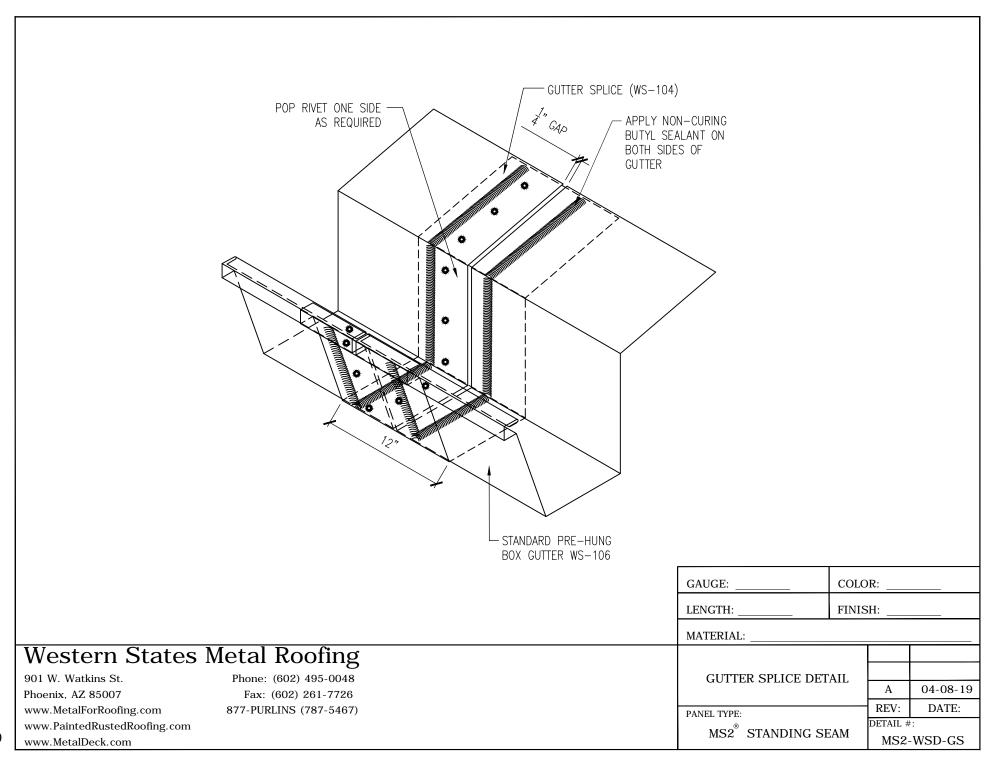
MS2<sup>®</sup> STANDING SEAM

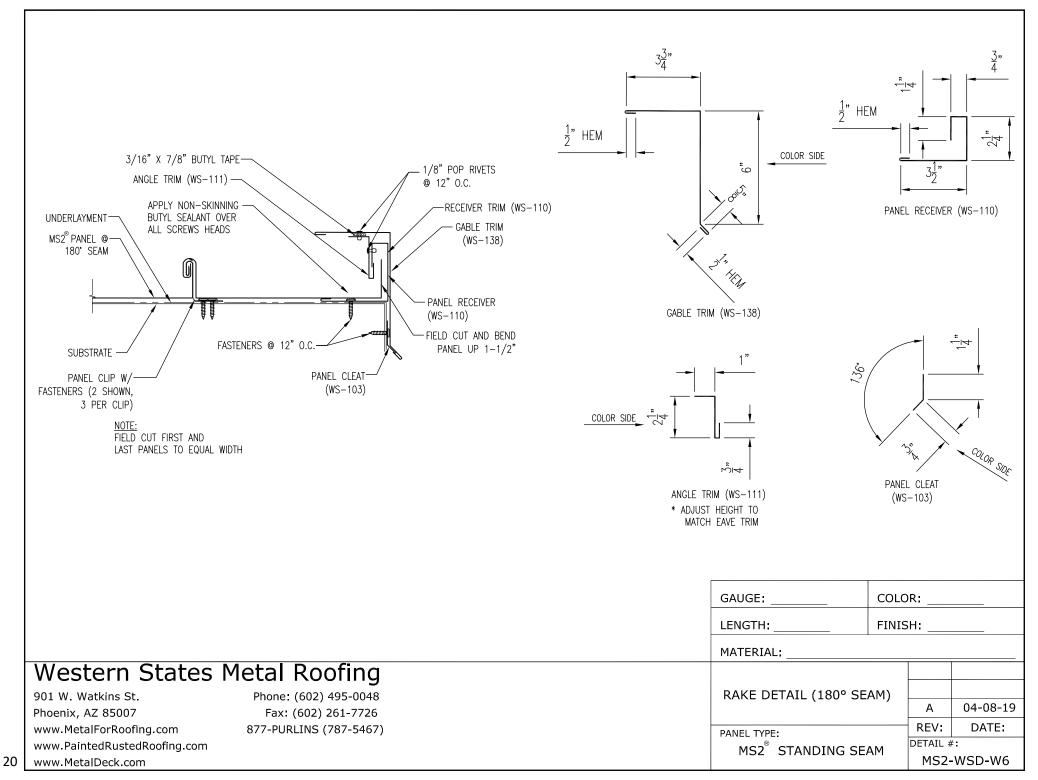
#### Western States "MS-2® Standing Seam" Installation, Flashings & Shop Drawing Detail Guide ROOF PANEL SWAGED END OF UPPER PANEL 16 GA. SWAGE PLATE SLIDE ON TO UPPER INSTALL 3/8" BEAD OF NON- -END OF LOWER PANEL CURING BUTYL SEALANT NEAR TOP THERMAL SPACER EDGE OF 5" CUT BACK PRIOR BOND TO PURLIN TO INSTALLATION OF NEXT PANEL W/BATT INSULATION FIELD APPLIED 3/8" X 5" LONG BEAD OF ONLY NON-SKINNING BUTYL SEALANT ON TOP FLANGE PANEL CLIP OF FEMALE PANEL. FIELD NOTCH & REMOVE 5" CUT BACK 5" OF TURNDOWN FROM BOTH RIBS OF LOWER PANEL (2) 3/8" BEAD OF NON-SKINNING **BUTYL SEALANT** FIELD APPLIED 5" CUT BACK NON-SKINNING BUTYL SEALANT ON TOP SIDE OF PANEL EDGE SHEETING DIRECTION LEFT TO RIGHT MALE LEG UPHILL ROOF PANEL FACTORY SWAGE (TYP.) 1" MIN TO SEALANT & FASTENER FEMALE LEG (2) 3/8" BEAD OF NON-SKINNING BUTYL SEALANT SWAGE PLATE INSTALLATION NOTE (4) SEALING FASTENERS PER PANEL END LAP OF ADJACENT PANEL MUST BE STAGGERED AT LEAST ONE PURLIN SPACING OR A MIN. 24" TO PREVENT MATERIAL BUILDUP AT LAPS

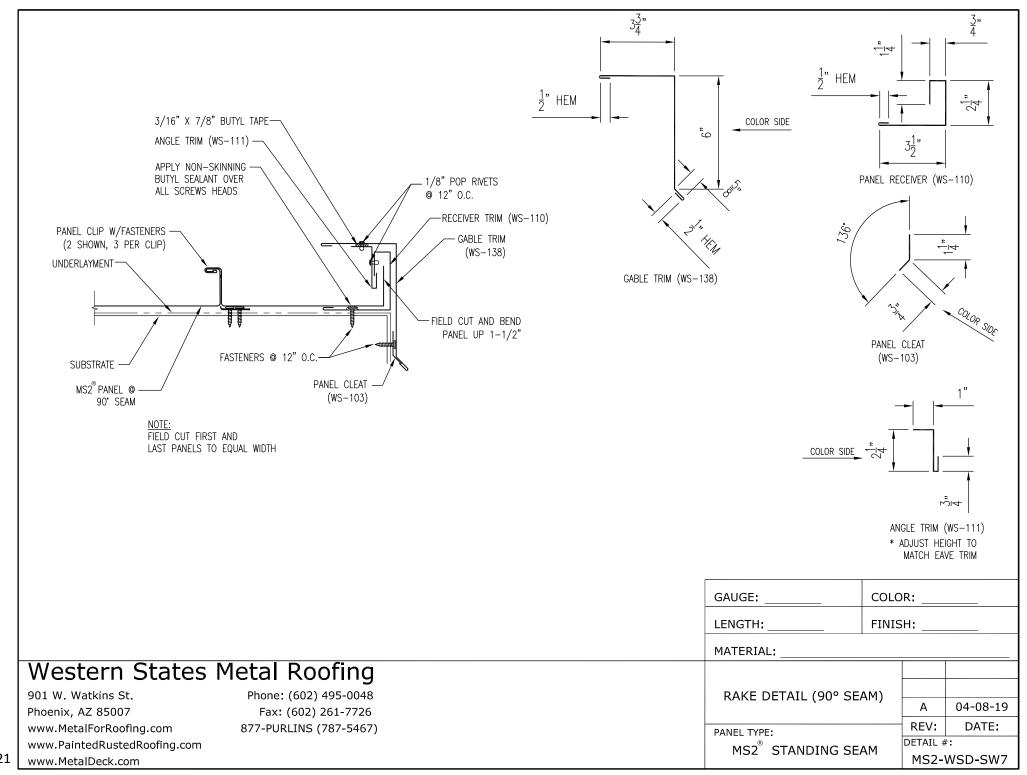


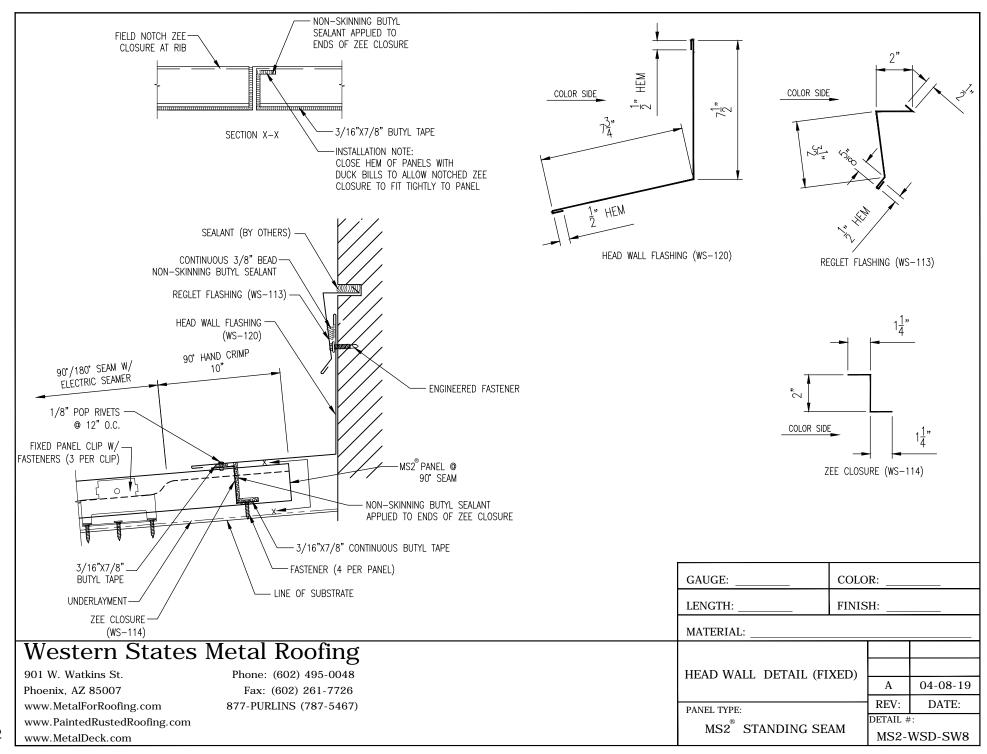


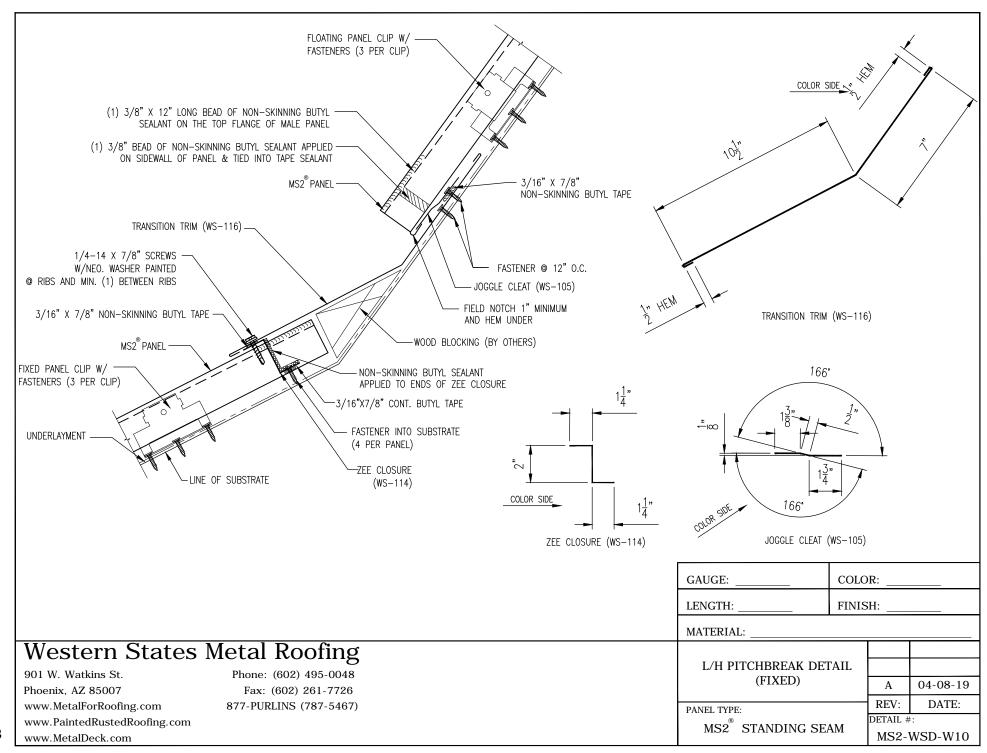


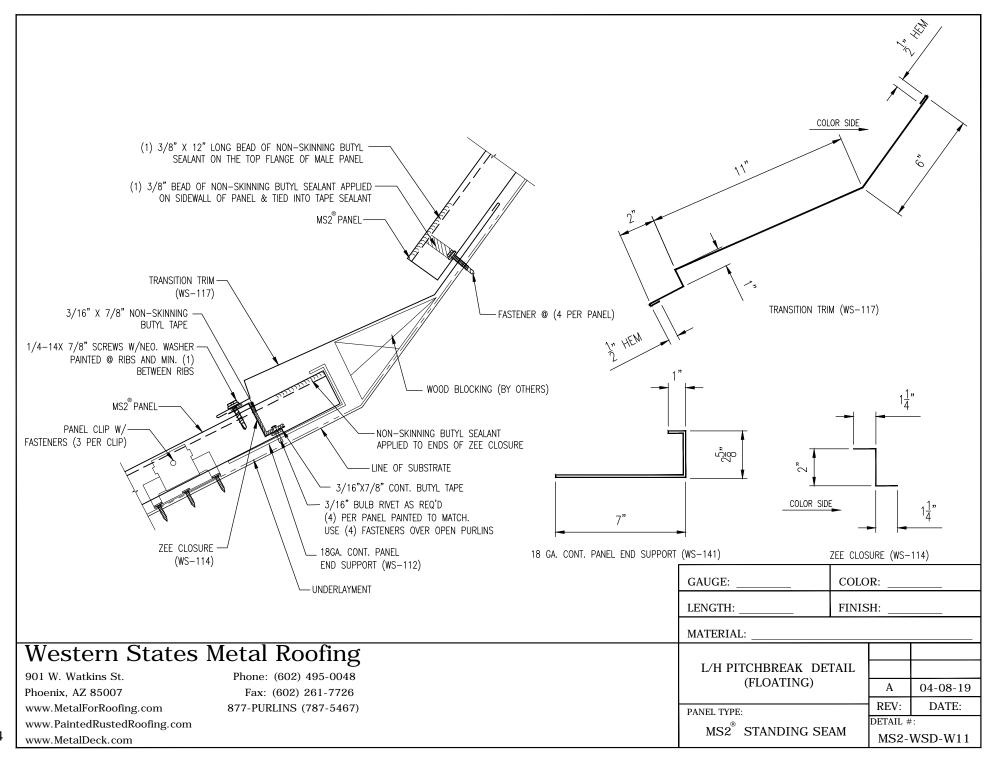


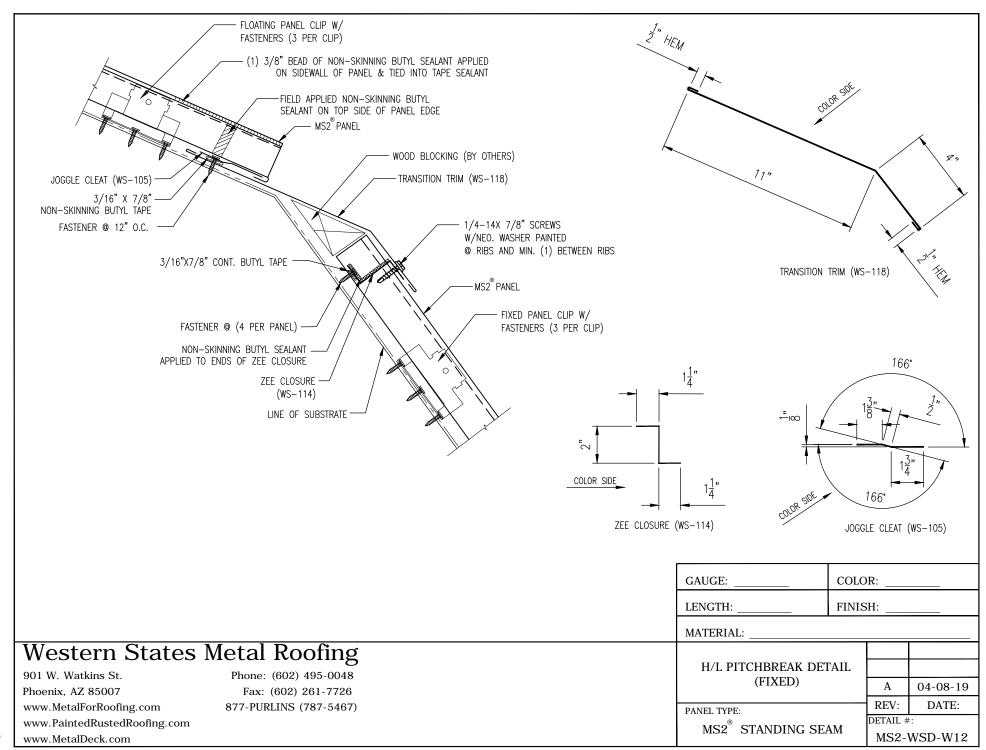


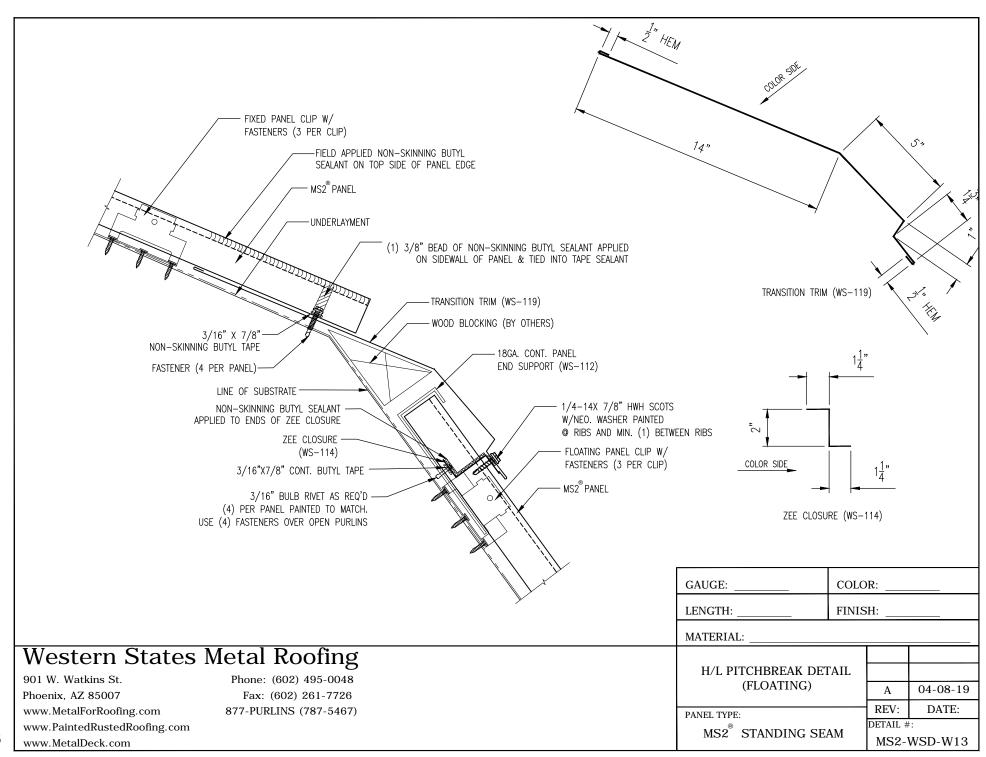


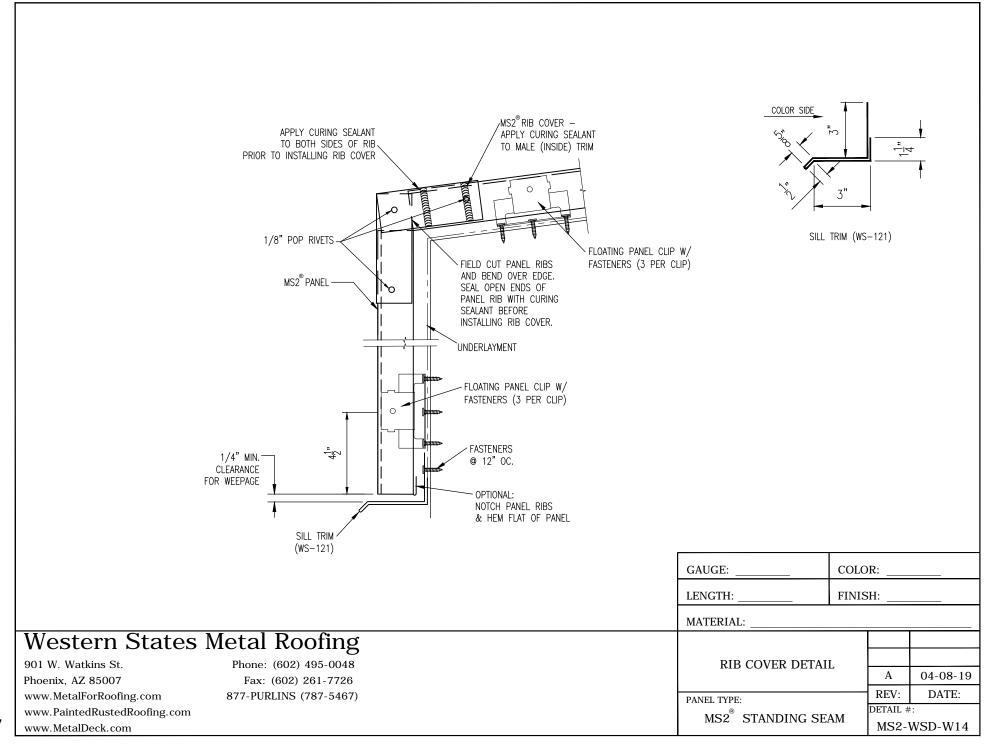


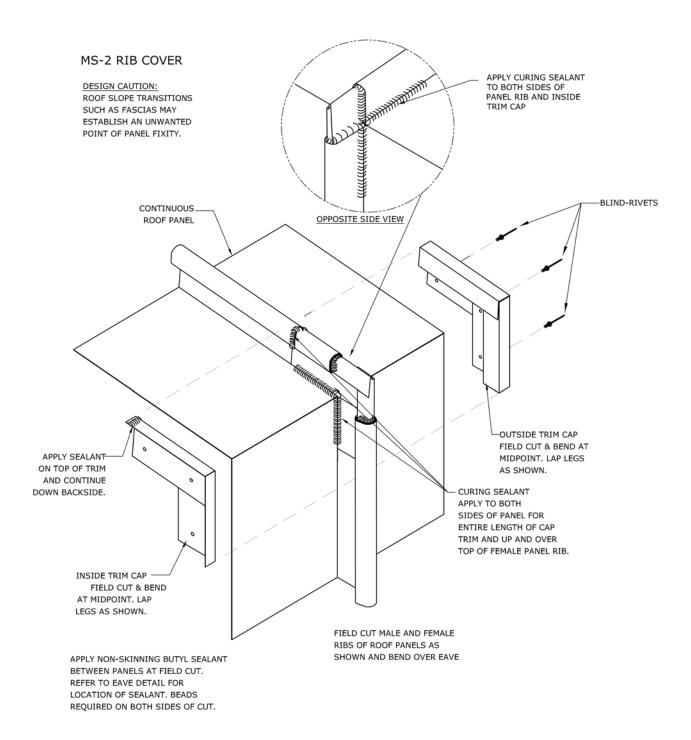


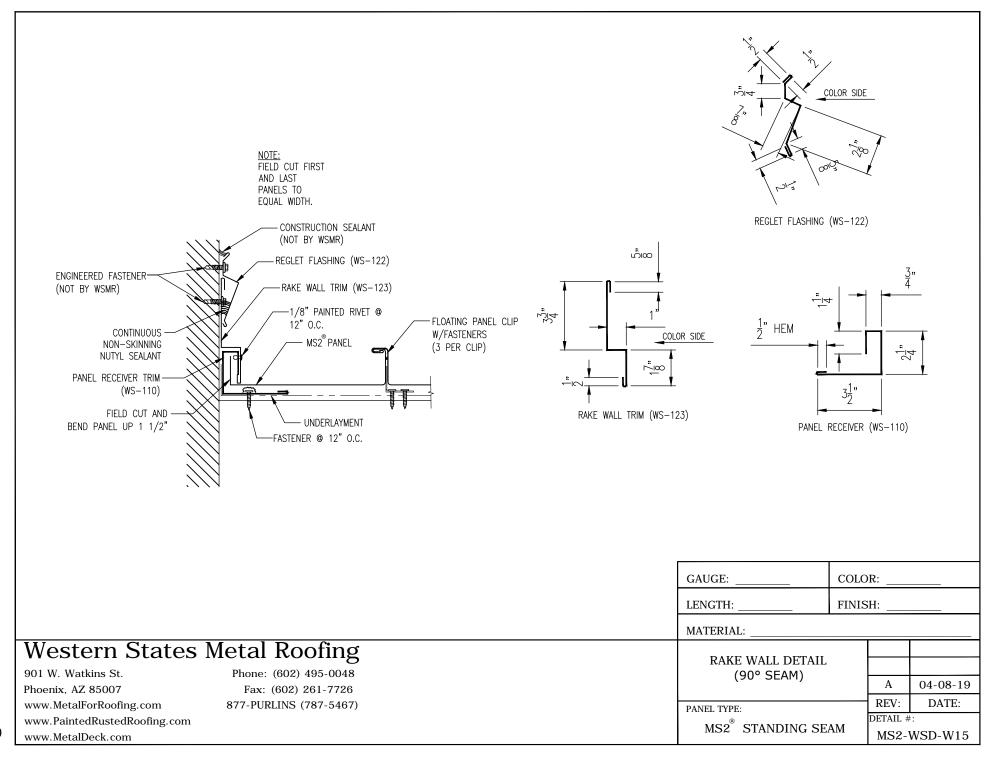


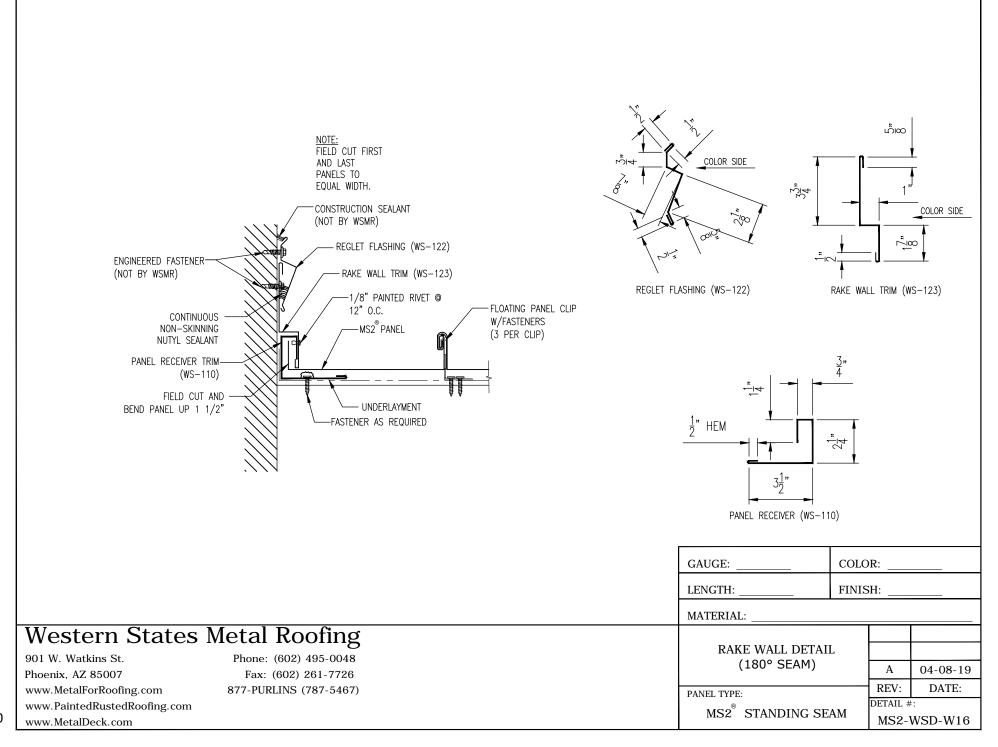


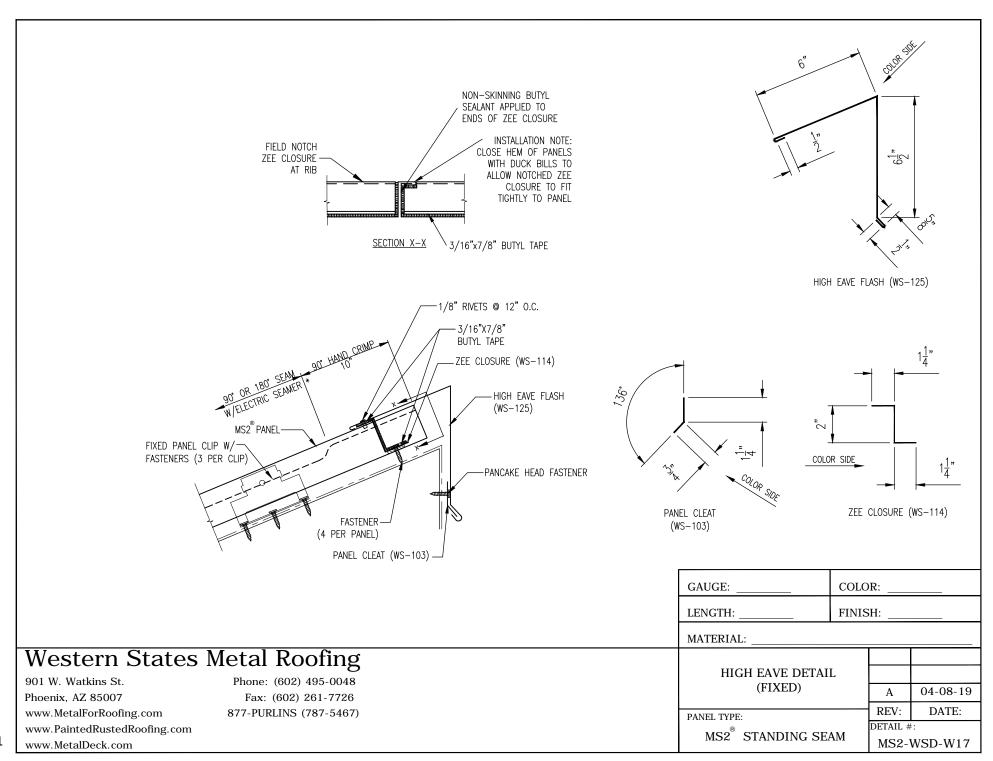


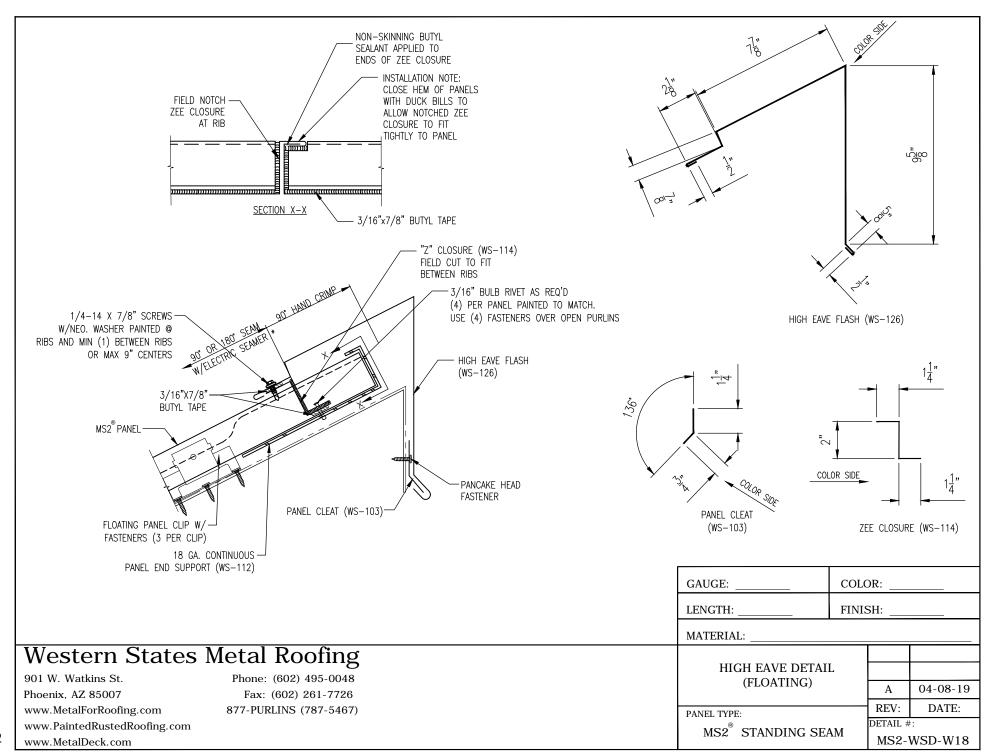


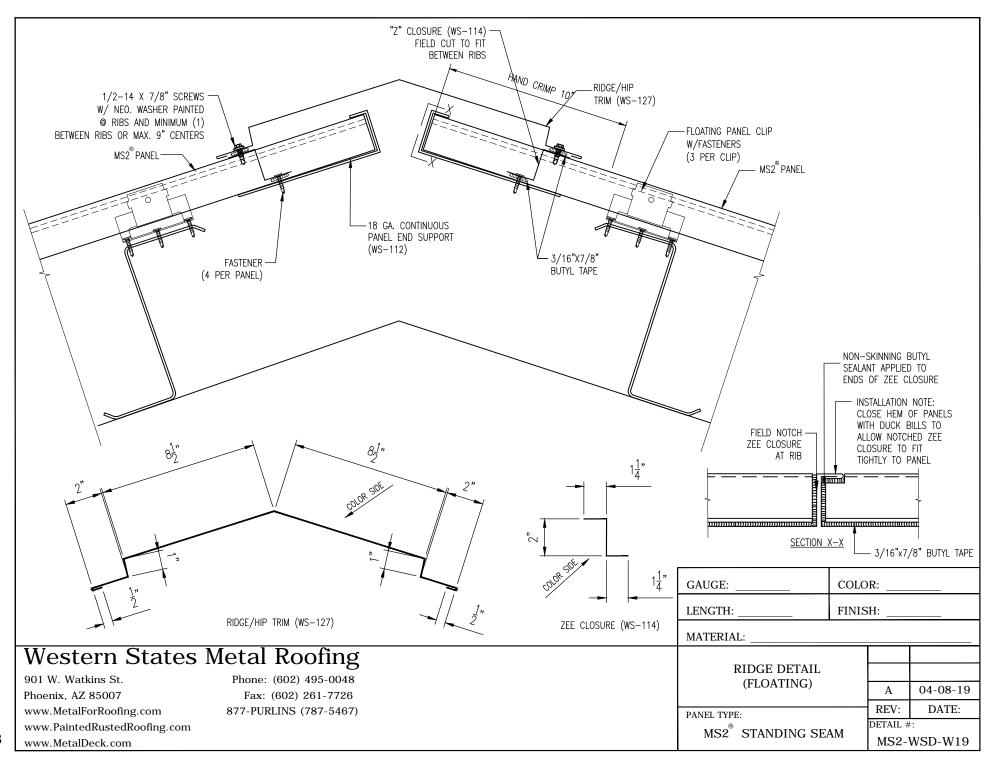


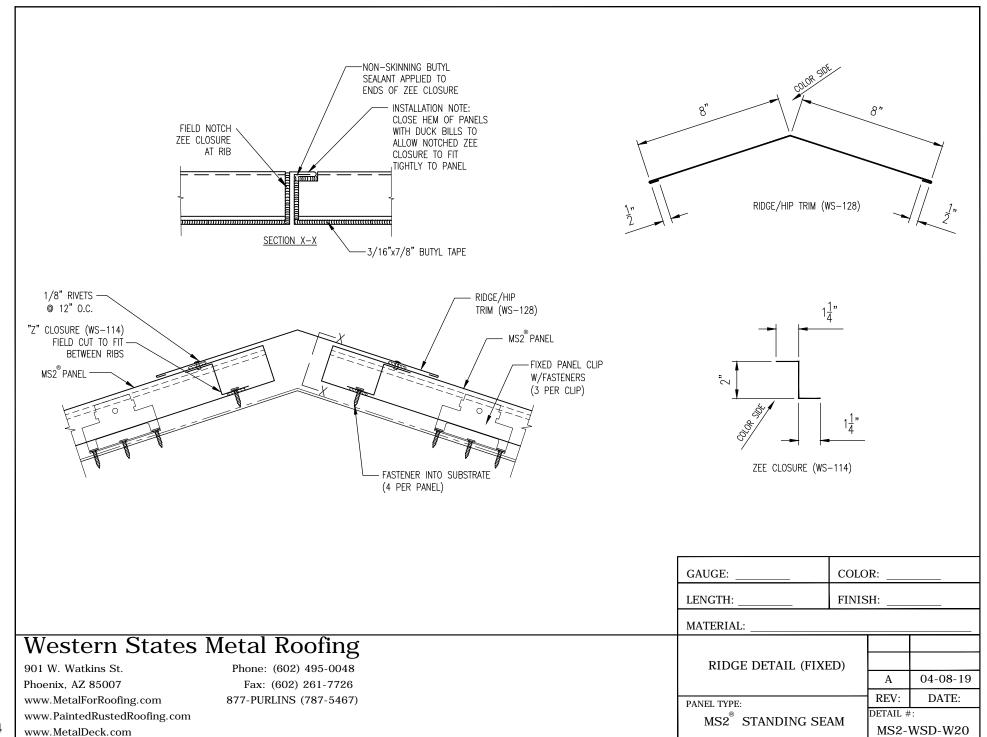


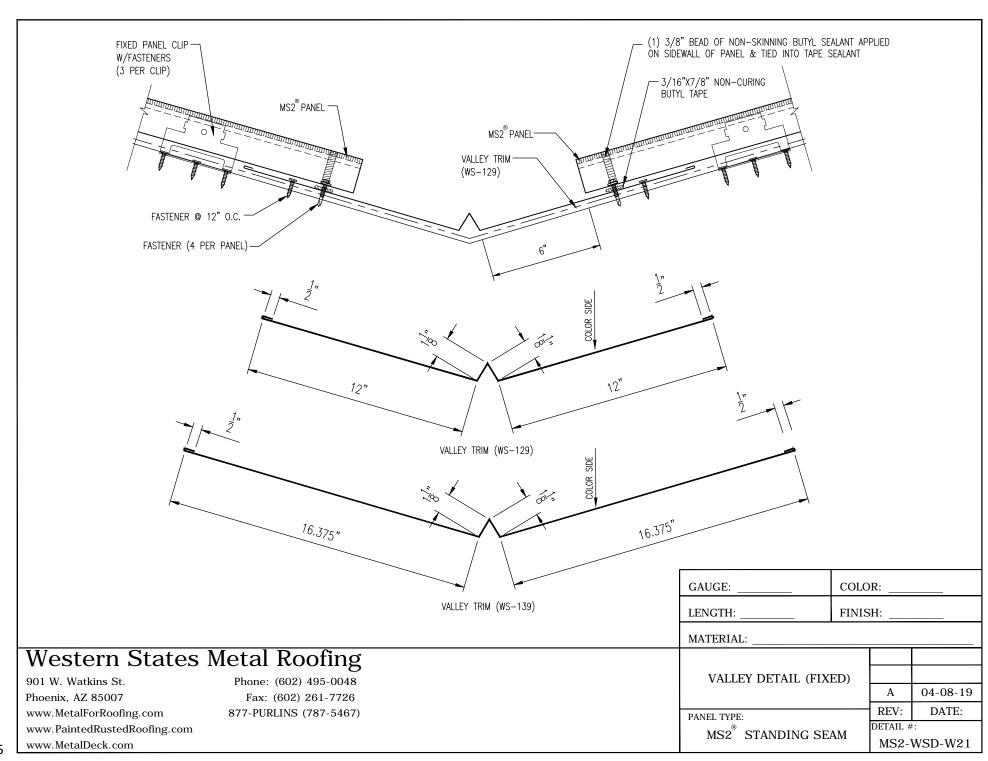


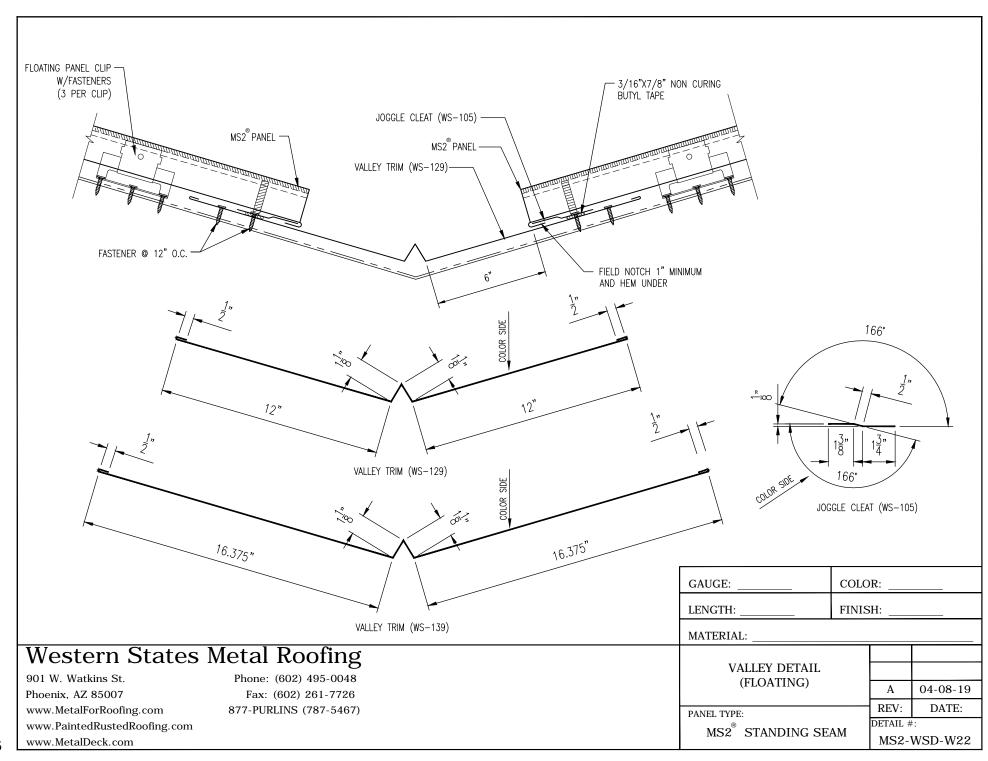


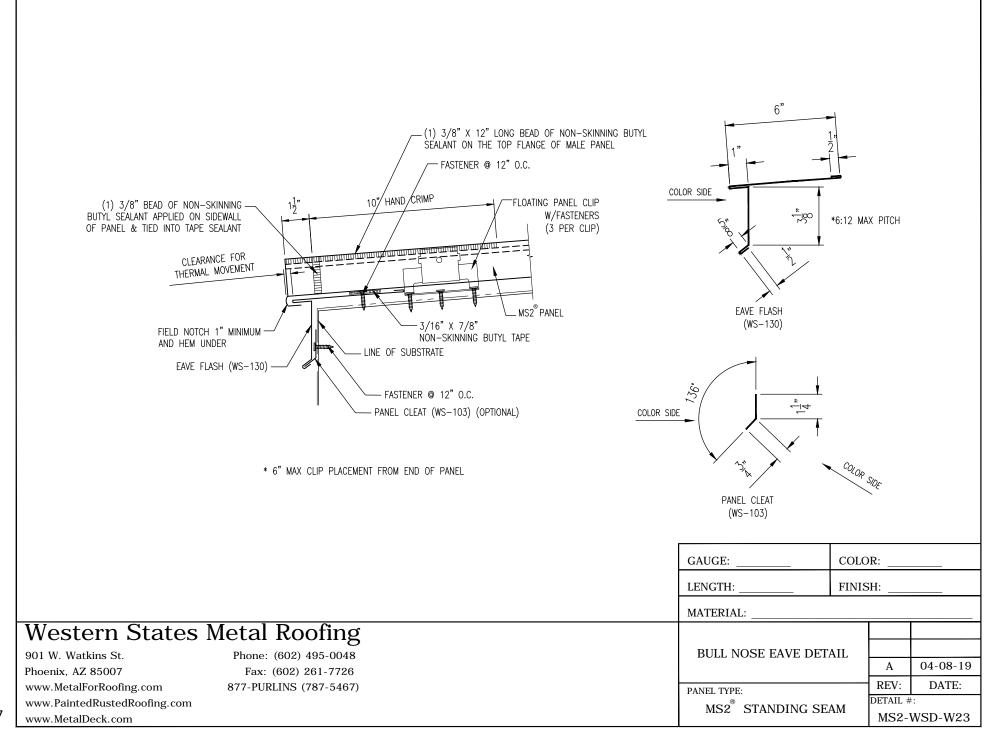


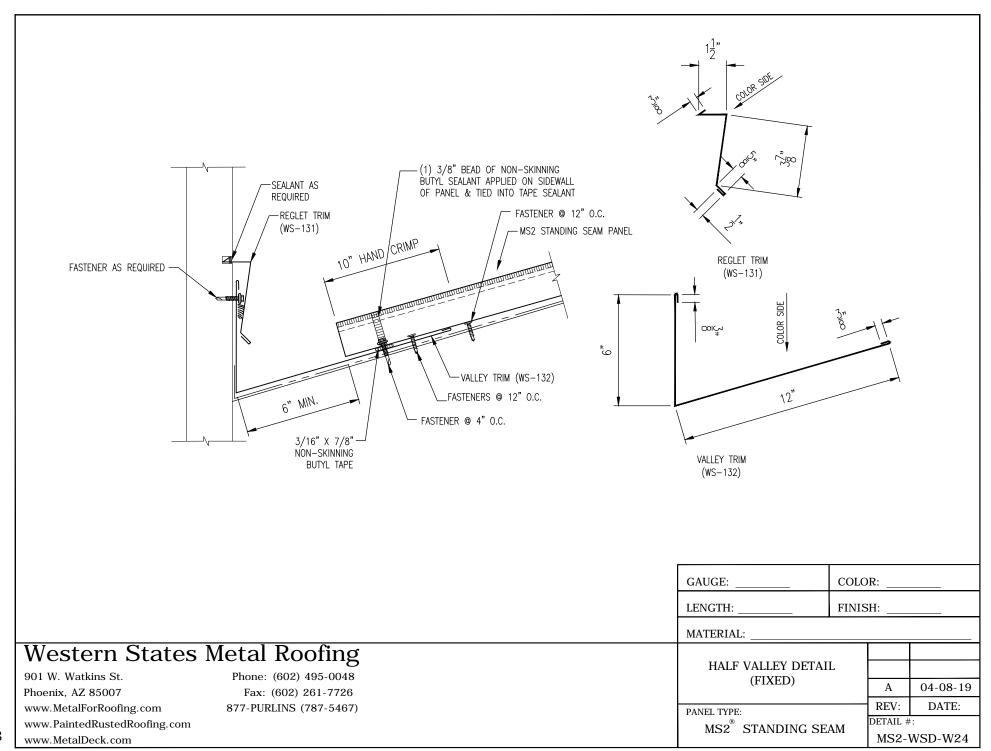


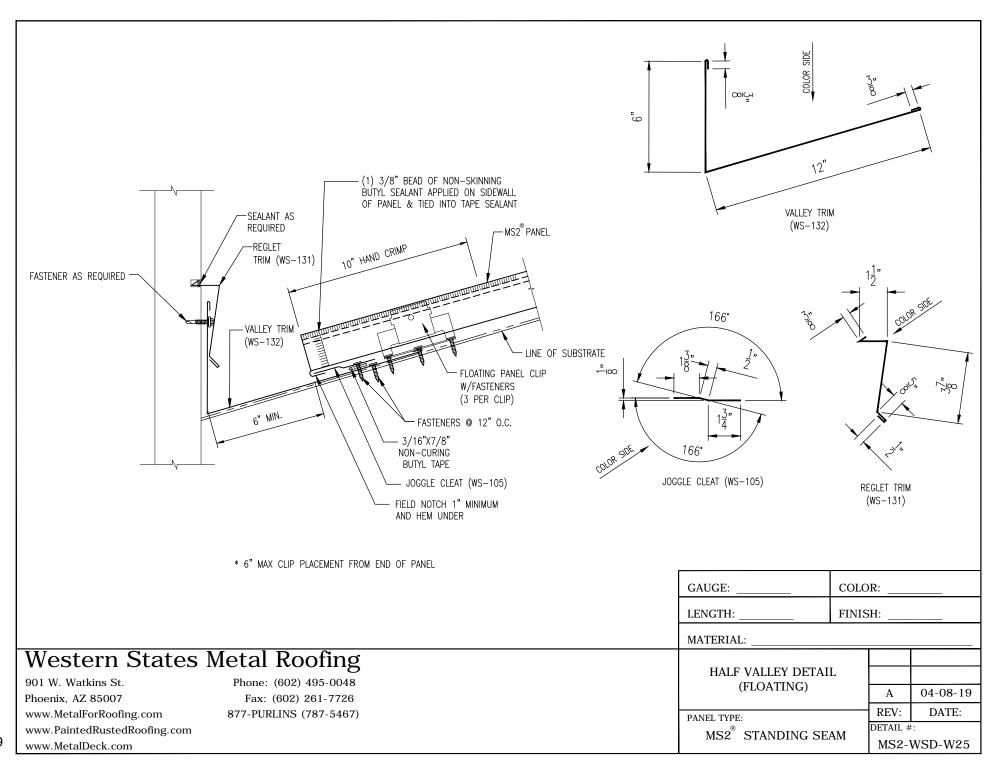


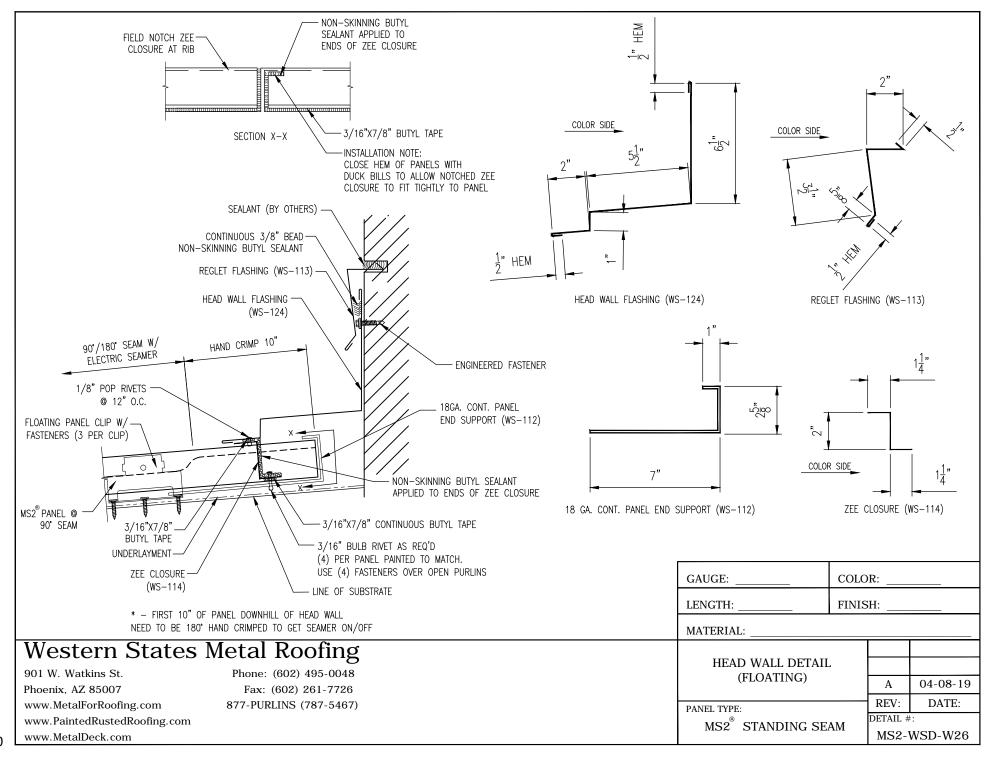












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| www.Paintedkustedkooning.com www.MetalDeck.com                                 | MS2 <sup>®</sup> STANDING SEAM |      | · •      |

# **CUSTOM TRIM** GAUGE: COLOR: BREAKS: FINISH: STRETCH OUT: LENGTH: MATERIAL: Western States Metal Roofing CUSTOM TRIM NAME: 901 W. Watkins St. Phone: (602) 495-0048 04-08-19 Fax: (602) 261-7726 Phoenix, AZ 85007 REV: DATE: www.MetalForRoofing.com 877-PURLINS (787-5467) PANEL TYPE: DETAIL #: www. Painted Rusted Roofing. comMS2<sup>®</sup> STANDING SEAM www.MetalDeck.com



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