

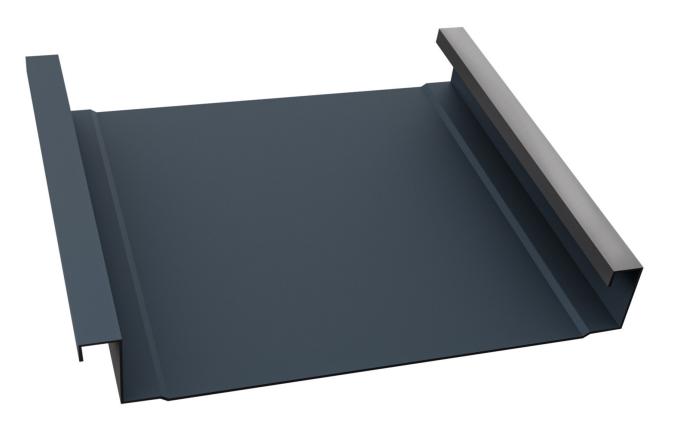
Finishes You've Never Seen Before®

# WESTERN STATES METAL ROOFING

(877) 787-5467 • WESTERNSTATESMETALROOFING.COM

# MS2<sup>®</sup> PANEL 2" MECHANICAL SEAM

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





 Phoenix: ☎ (602) 495-0048 ⊠ sales@westernstatesmetalroofing.com
 Was

 Tucson: ☎ (520) 574-4247 ⊠ tucsonsales@westernstatesmetalroofing.com

Washington: ☎ (509) 418-2833 ⊠ washington-wsmr@westernstatesmetalroofing.com .com Texas: ☎ (972) 843-4343 ⊠ texas-sales@westernstatesmetalroofing.com

### Western States "MS-2® Standing Seam"

Installation, Flashings & Shop Drawing Detail Guide

## Table of Contents

Section	Page
Special Design Considerations	. 1
Notes to Designer /Installers	2
Fastener Placement and Selection	. 3-4
Panel Profile	5
Stiffening Ribs	6
Eave Hem	7
Key Flashing / Trims	8-11
Clip Spacing	12
Fixed Lap Detail	13
Floating Lap Detail	. 14
Swage Detail	15
Fixed Eave Detail	16
Floating Eave Detail	. 17
Gutter Detail	18
Gutter Splice Detail	. 19
Rake Detail (180 Degree Seam)	. 20
Rake Detail (90 Degree Seam)	. 21
Head Wall Detail (Fixed)	. 22
L/H Pitchbreak Detail (Fixed)	23
L/H Pitchbreak Detail (Floating)	24
H/L Pitchbreak Detail (Fixed)	25
H/L Pitchbreak Detail (Floating)	26
Rib Cover Detail	27

Section	Page
Rib Cover 3D	28
Rake Wall Detail (90 Degree Seam)	29
Rake Wall Detail (180 Degree Seam)	30
High Eave Detail (Fixed)	31
High Eave Detail (Floating)	32
Ridge Detail (Floating)	33
Ridge Detail (Fixed)	34
Valley Detail (Fixed)	35
Valley Detail (Floating)	36
Bull Nose Eave Detail	37
Half Valley Detail (Fixed)	38
Half Valley Detail (Floating)	39
Head Wall Detail (Floating)	40
Notes	41
Custom Trim	42

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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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.

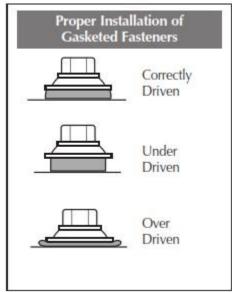
Panels and flashings should never be installed in contact with dissimilar metals. Use only those flashings and accessories designed for use with this panel.

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

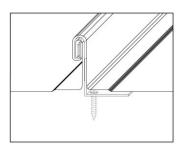
14 x 7/8" Lap Self tap

Used to attach trims.

Used to attach Panel clips.



#10-12 x1" Pancake head Wood #10-12 x 1" SD PH Self Driller Steel



\*Double Seam UL Rated

1/8" Stainless Rivets

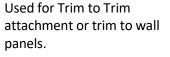
#9 x 1" Woodgrip #9 x 1.5 " Woodgrip #9 x 2" Woodgrip

#12-14 x 1" Self Driller #12-14 x 2" Self Driller

18 ga. Floating Clip

18 ga. Fixed Clip

Used to secure trims to substrates.

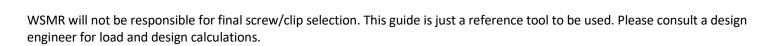


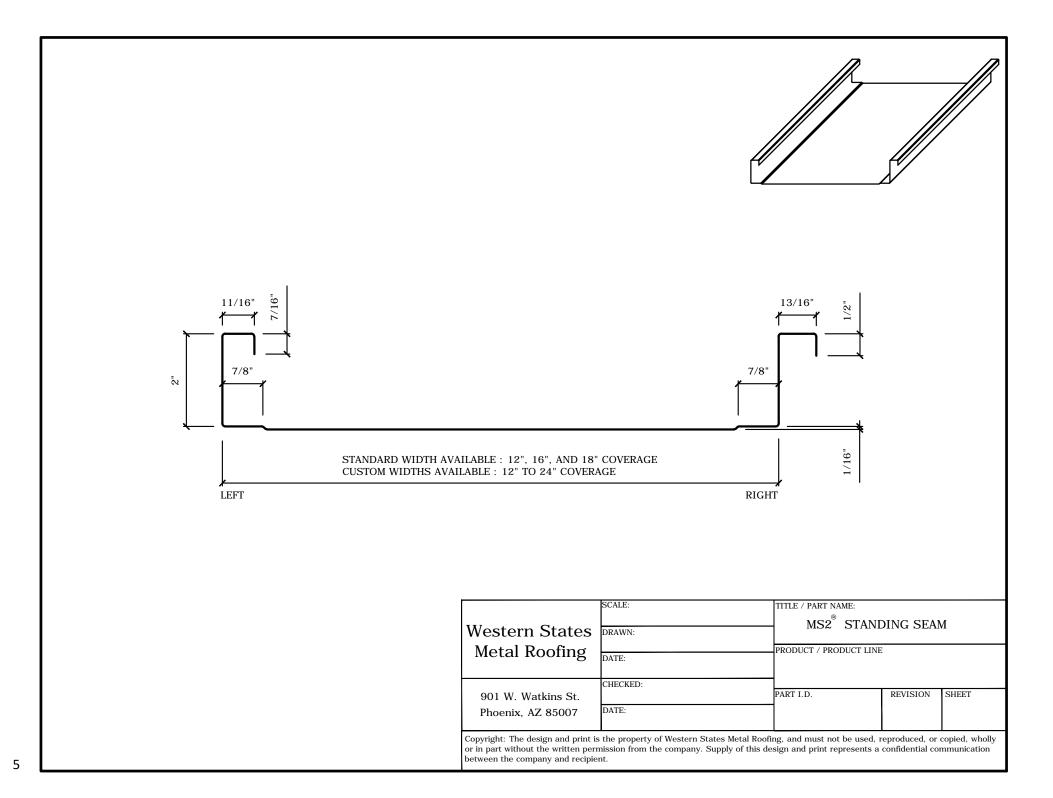
Used for panel attachment

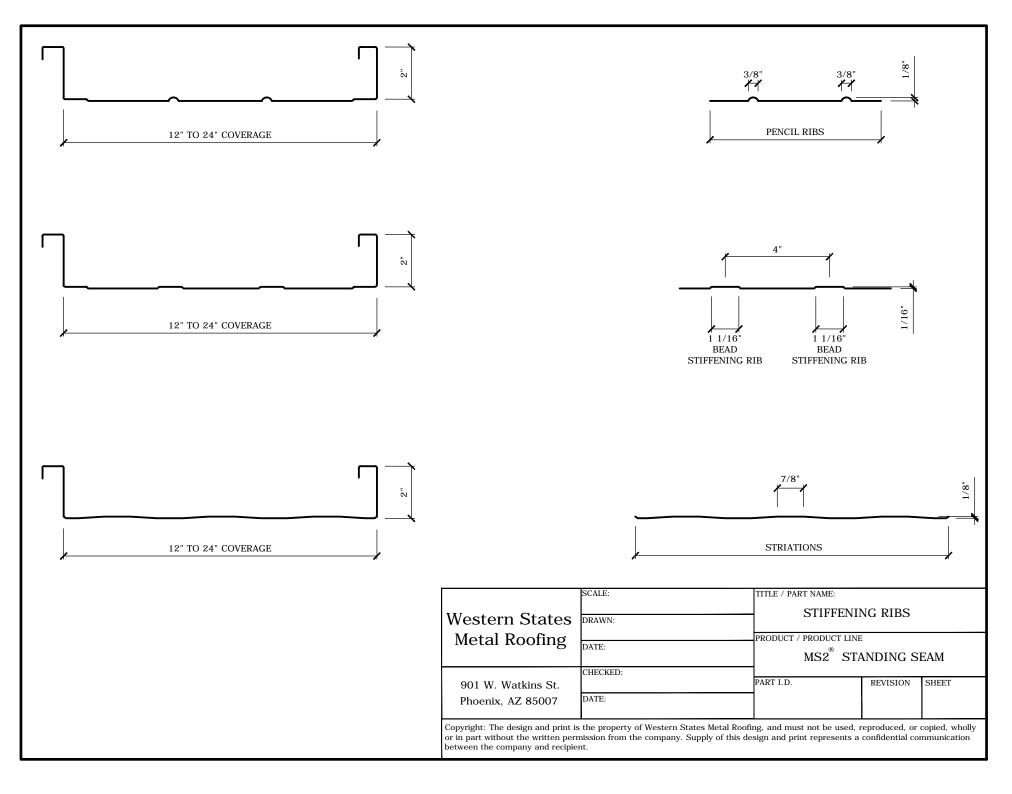
Used for Metal to Metal Used for Metal to Metal

Floating clip allows for thermal movement.

Fixed Clip

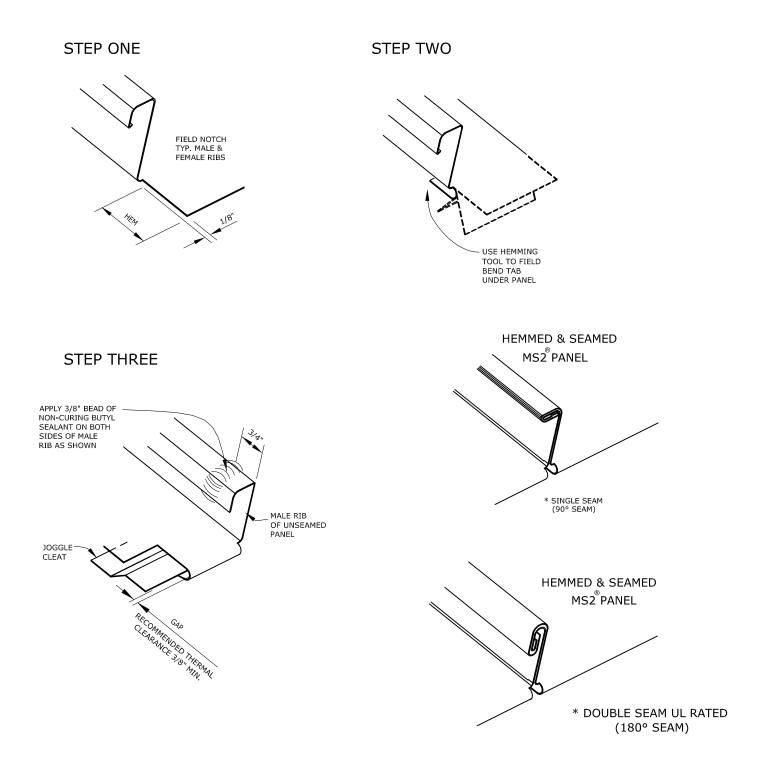






Installation, Flashings & Shop Drawing Detail Guide

## EAVE HEM



GUTTER END CAP WS-100	16 GA. BACKUP PLATE WS-101	EAVE FLASHING WS-102	PANEL CLEAT WS-103
		COLOR SIDE	in the state
GUTTER SPLICE WS-104	JOGGLE CLEAT WS-105	GUTTER WS-106	OPTIONAL EAVE TRIM WS-107
COLOR SIDE	166' 100'	7/8" 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM	COLOR SIDE
OPTIONAL EAVE FLASH WS-108	GUTTER STRAP WS-109	18 GA. PANEL RECEIVER WS-110	ANGLE TRIM WS-111
COLOR SIDE	17" HEM 53 <sup>55</sup>	2" HEM	
Phoenix, AZ 85007 Fa	al Roofing ne: (602) 495-0048 x: (602) 261-7726 PURLINS (787-5467)	PANEI	STANDARD TRIMS A 04-08-19 A 04-08-19 REV: DATE: DETAIL #: MS2-WSD-ST1

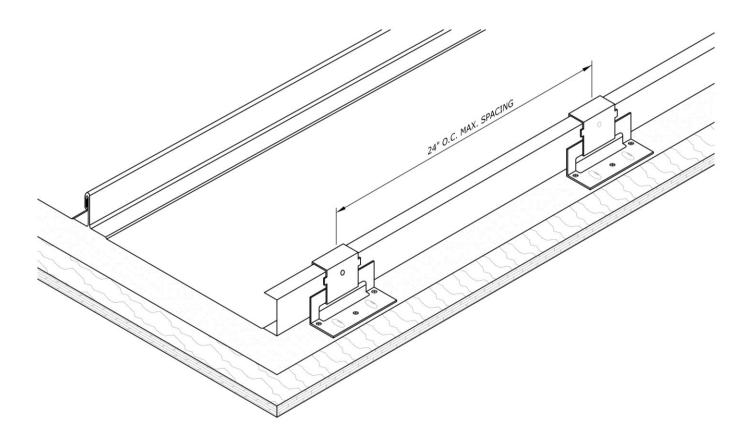
18 GA. CONT. PANEL END SUPPORT WS-112	REGLET FLASHING WS-113	ZEE CLOSURE WS-114	HEAD WALL FLASHING WS-115
	COLOR SIDE	$\begin{bmatrix} 1 \\ 4 \end{bmatrix}$	DOLOG SDE 
TRANSITION TRIM WS-116	TRANSITION TRIM WS-117	TRANSITION TRIM WS-118	TRANSITION TRIM WS-119
COLOR SDE - + HEN	OOLOR SIDE 11" So 2" HEM T	John HEM	7/ 2 <sup>3<sup>1</sup></sup> HEW 30 <sup>10</sup> 5 <sup>1</sup> 14: 14: 14: 14: 14: 14: 14: 14:
HEAD WALL FLASHING WS-120	SILL TRIM WS-121	REGLET FLASHING WS-122	RAKE WALL TRIM WS-123
COLOR SIDE THEM 1 HEM 2 HEM	COLOR SIDE	COLOR SIDE	
Phoenix, AZ 85007 Fa	e: (602) 495-0048 x: (602) 261-7726 URLINS (787-5467)		STANDARD TRIM A 04-08-19 REV: DATE: MS2 <sup>®</sup> STANDING SEAM MS2-WSD-ST2

HEAD WALL FLASHING WS-124	HIGH EAVE FLASH WS-125	HIGH EAVE FLASH WS-126	RIDGE/HIP TRIM WS-127
COLOR SIDE	6" 1" COLOR SIDE COLOR SIDE COLOR SIDE COLOR SIDE	120 COLOR SIDE	
RIDGE/HIP TRIM WS-128	VALLEY TRIM WS-129	BULL NOSE DRIP WS-130	REGLET TRIM WS-131
B. B. S.	The state of the s	COLOR SIDE	to the state
VALLEY TRIM WS-132	DOWNSPOUT STRAP WS-133	STRAIGHT DOWNSPOUT WS-134	DOWNSPOUT W/KICKOUT WS-135
12"	1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM 1/2" HEM	COLOR SIDE	OOLOR SIDE
Phoenix, AZ 85007 Fa	al Roofing ne: (602) 495-0048 x: (602) 261-7726 PURLINS (787-5467)	PANEL TYP	TANDARD TRIM A 04-08-19 E: STANDING SEAM BETAIL #: MS2-WSD-ST3

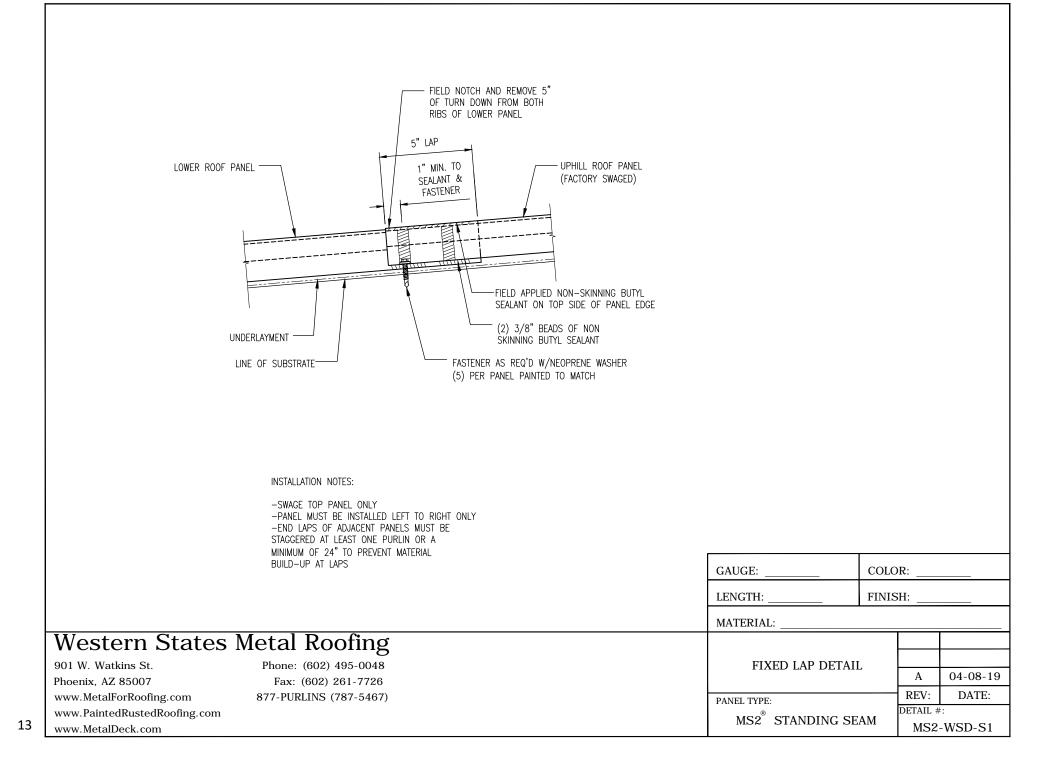
DOWNSPOUT ELBOW WS-136	DOWNSPOUT OUTLET WS-137	GABLE TRIM WS-138	VALLEY TRIM WS-13	9
COLOR SIDE "45 DEG. BEND UNLESS NOTED"	3 3 1/5 	1" HEM	7 - 2	305 0000 16.375
Western States Meta	l Roofing		<u> </u>	
	ne: (602) 495-0048	ST	ANDARD TRIM	
Phoenix, AZ 85007 Fa	x: (602) 261-7726		A	04-08-19 DATE:
www.MetalForRoofing.com877-Fwww.PaintedRustedRoofing.comwww.MetalDeck.com	PURLINS (787-5467)	PANEL TYI MS2 <sup>®</sup>	DETAIL	

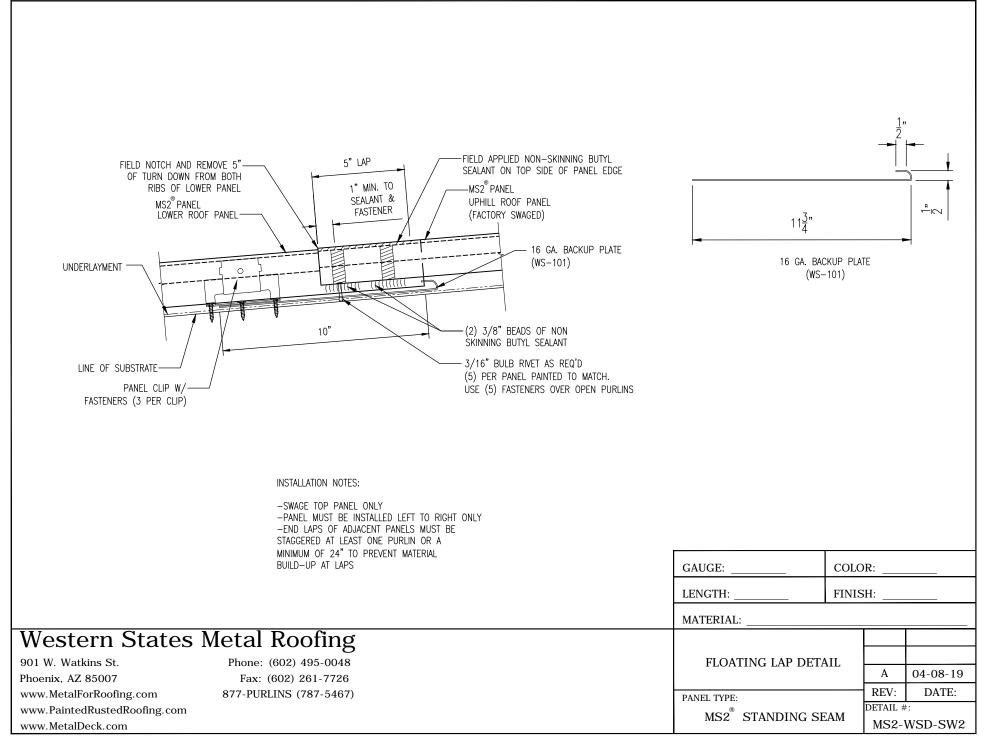
Installation, Flashings & Shop Drawing Detail Guide

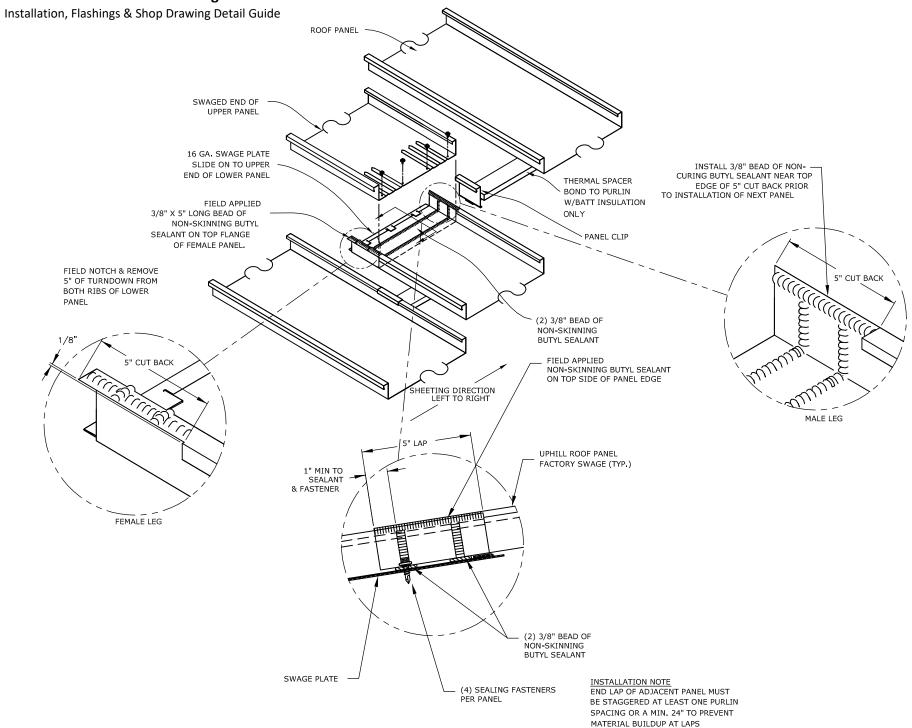
For maximum holding power, it is recommended that the minimum wood penetration be 1 inch. Using pancake head screw fasteners that are designed to be used with fastening clips to the metal roofing panels.

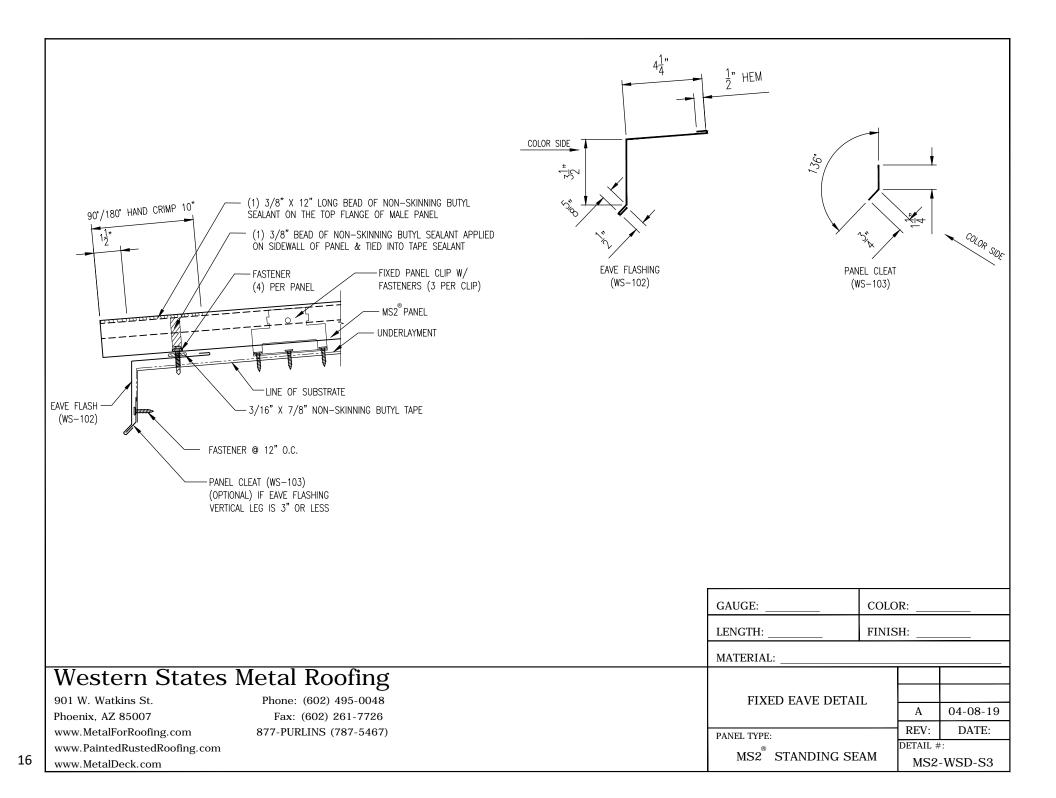


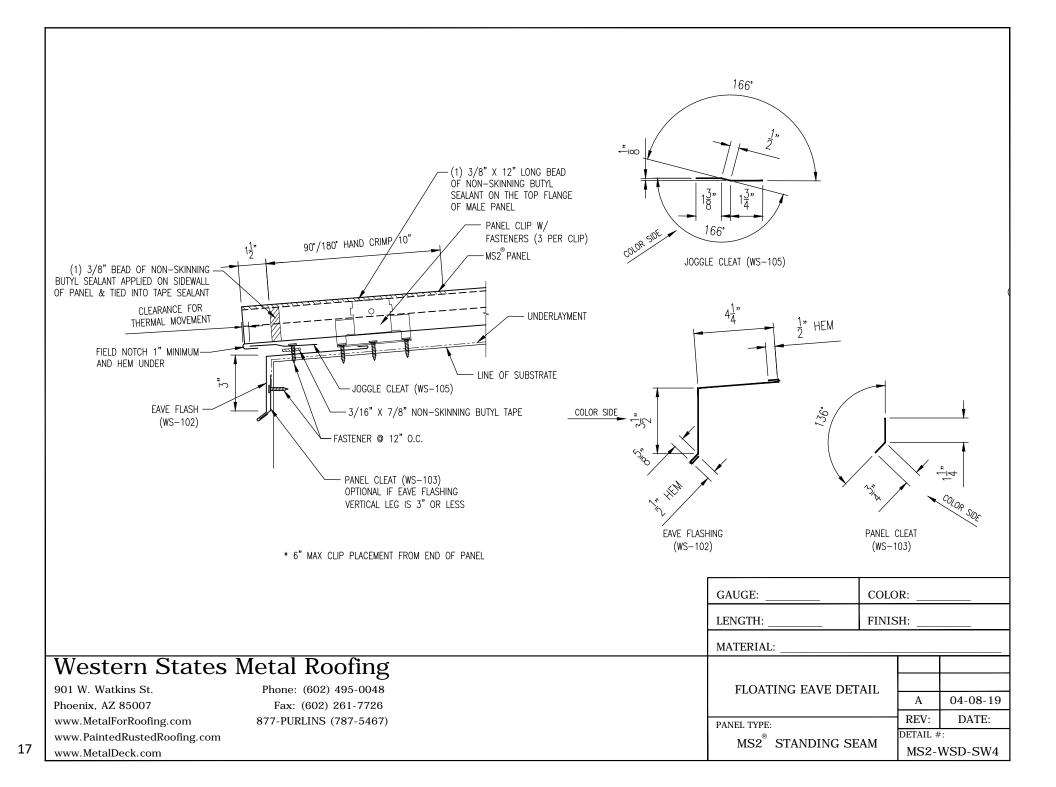
WSMR will not be responsible for final screw/clip selection. This guide is just a reference tool to be used. Please consult a design engineer for load and design calculations.

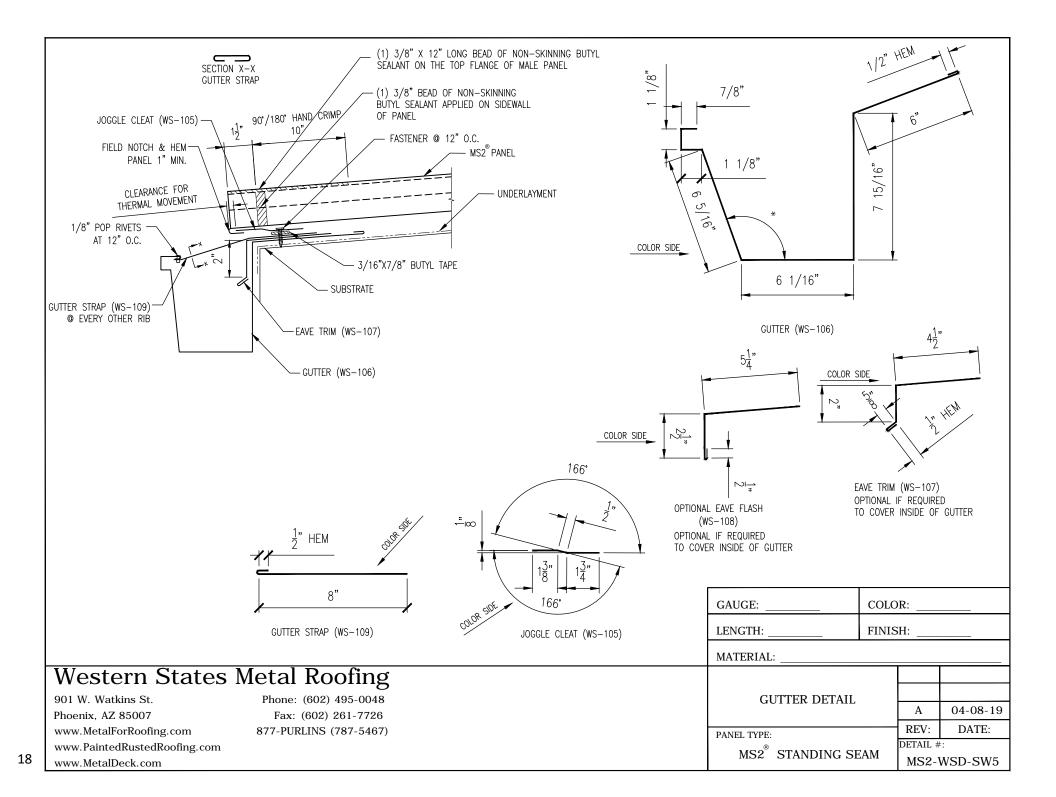


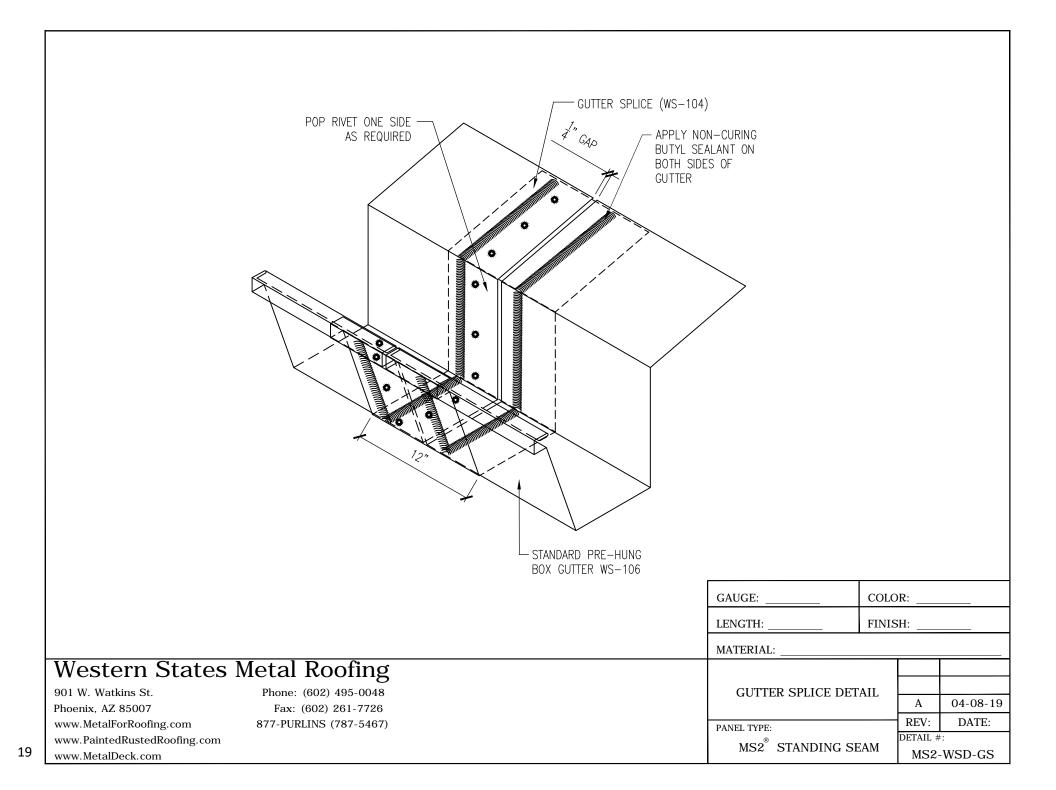


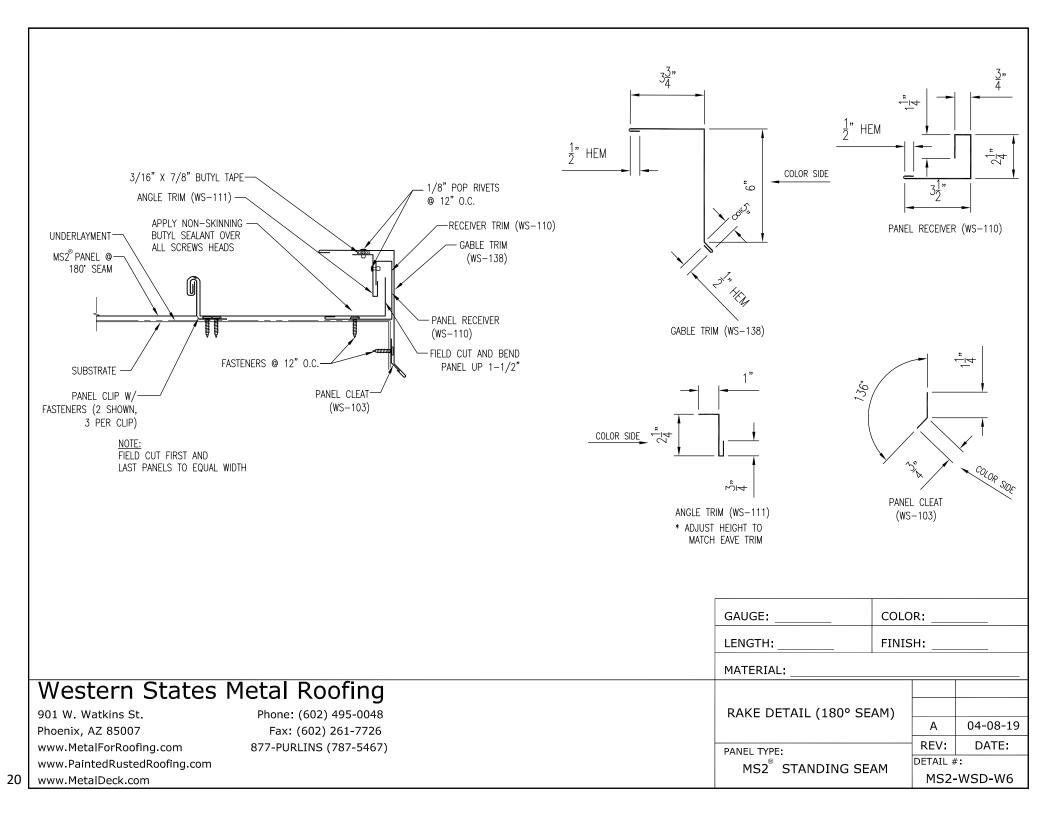


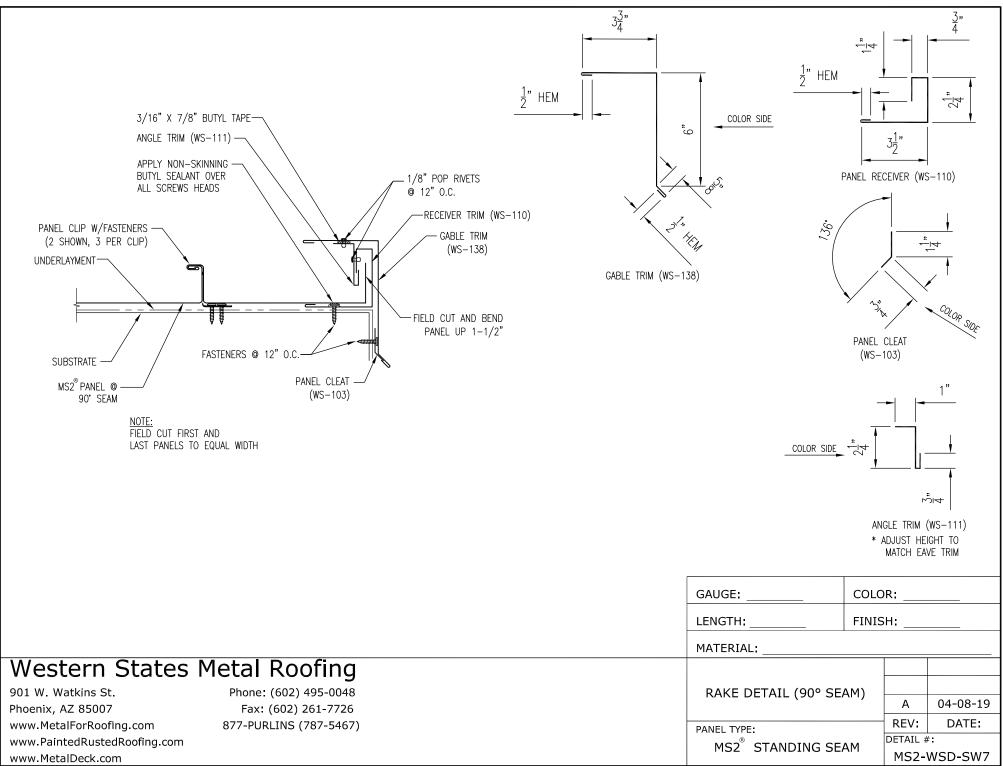


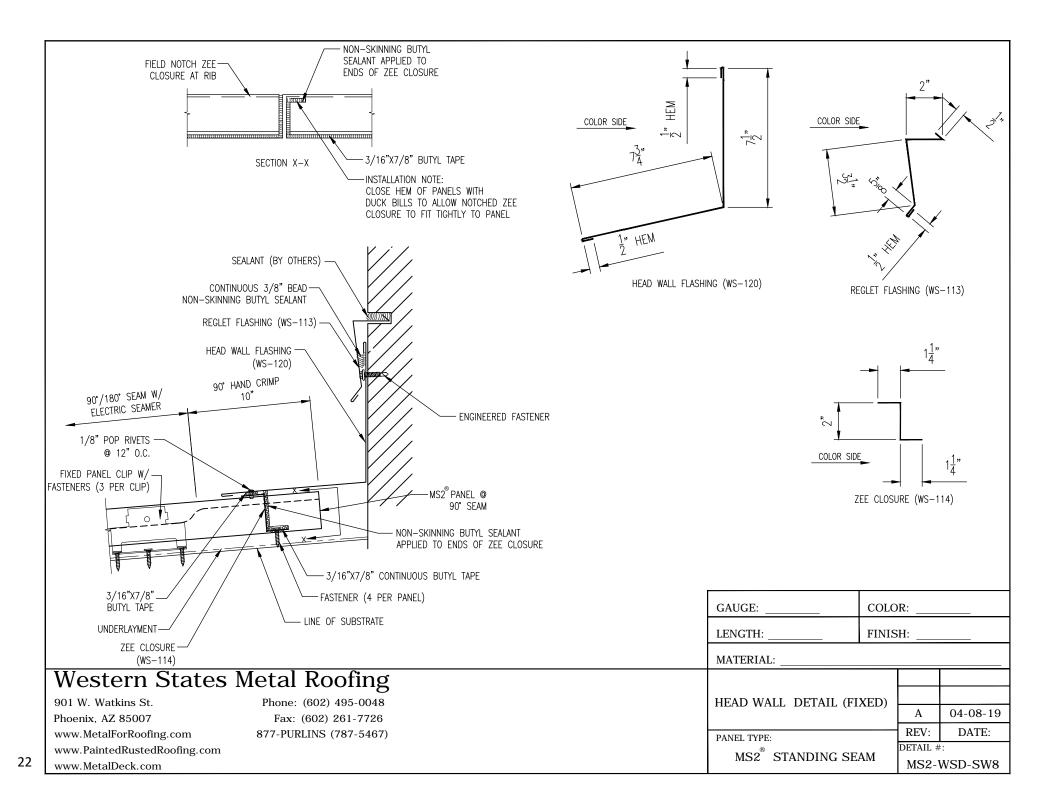


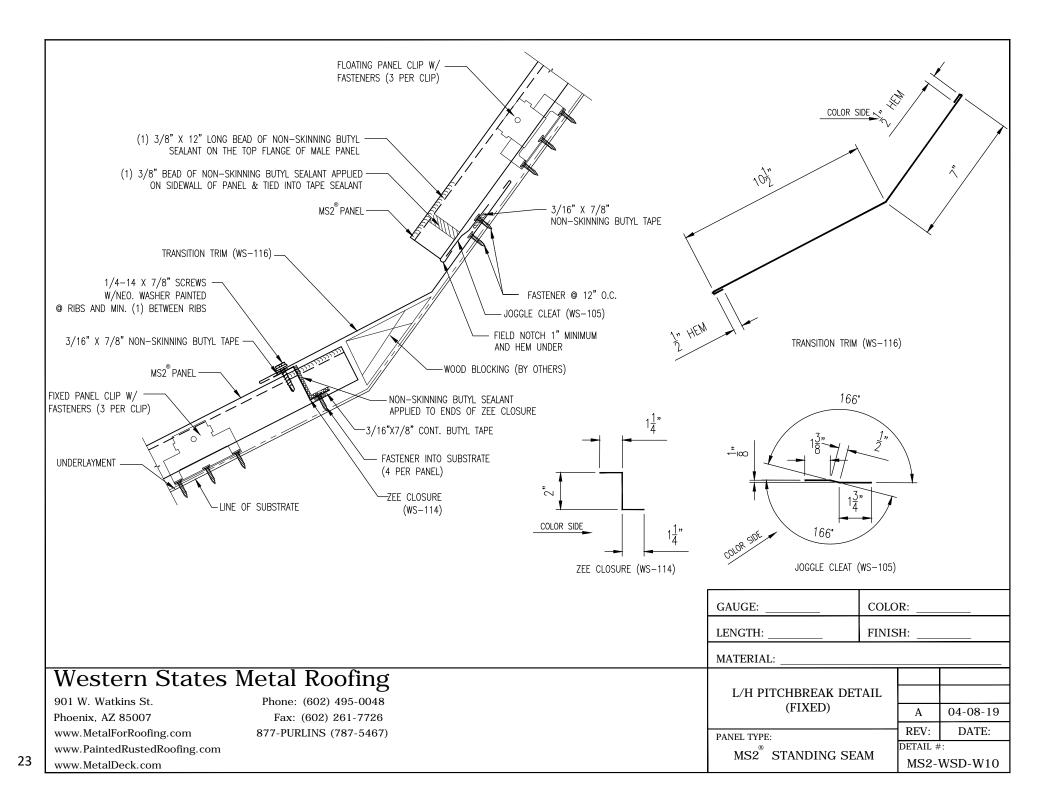


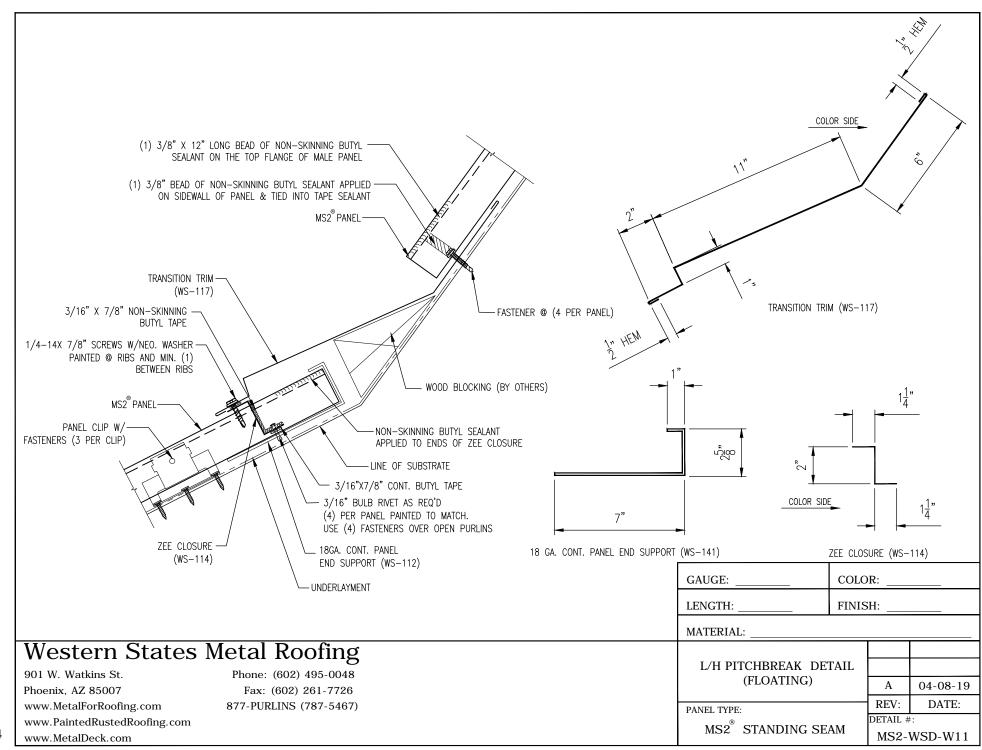


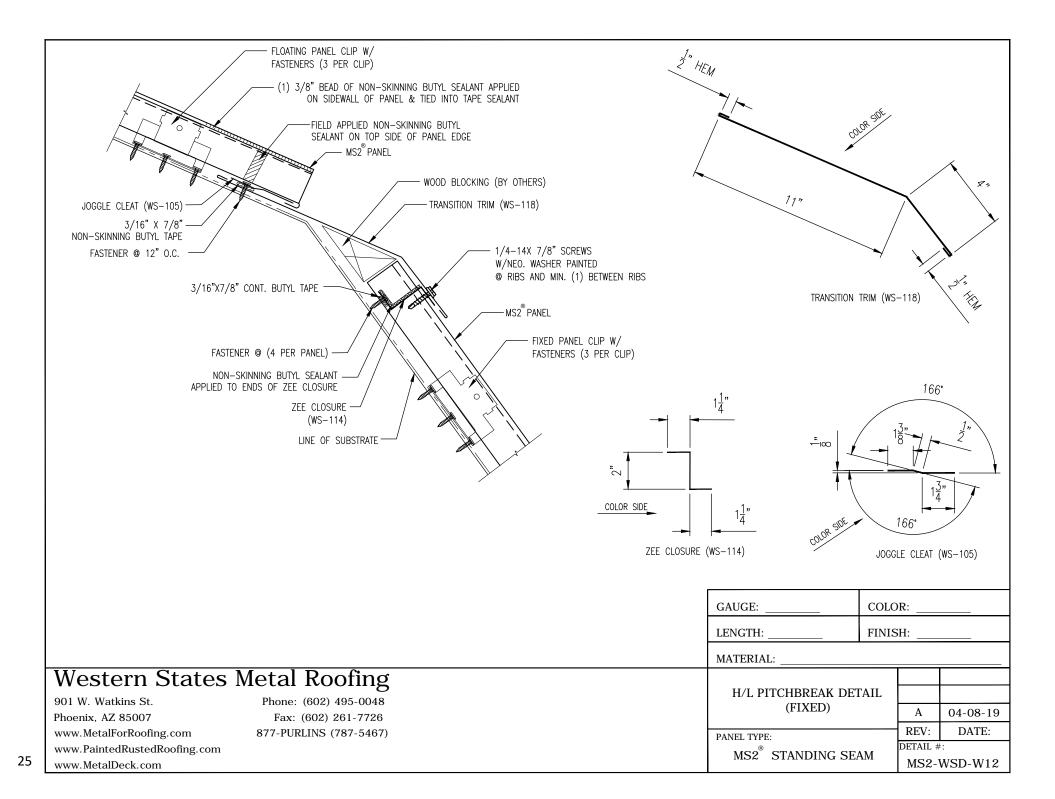


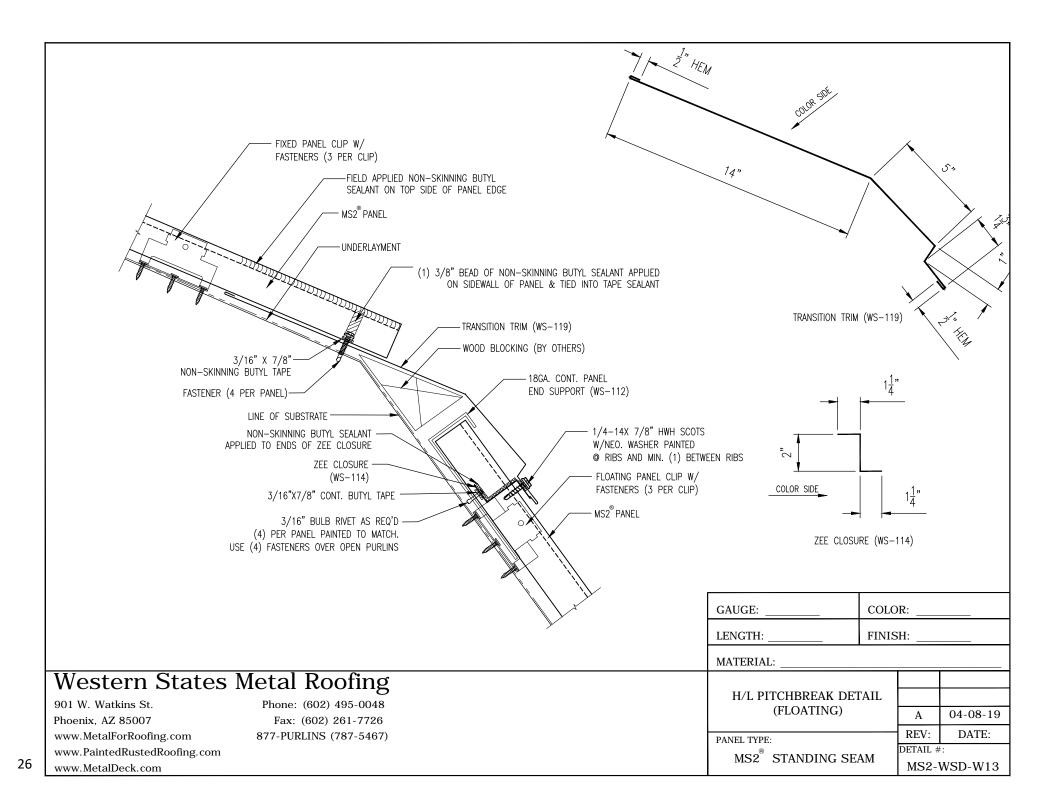


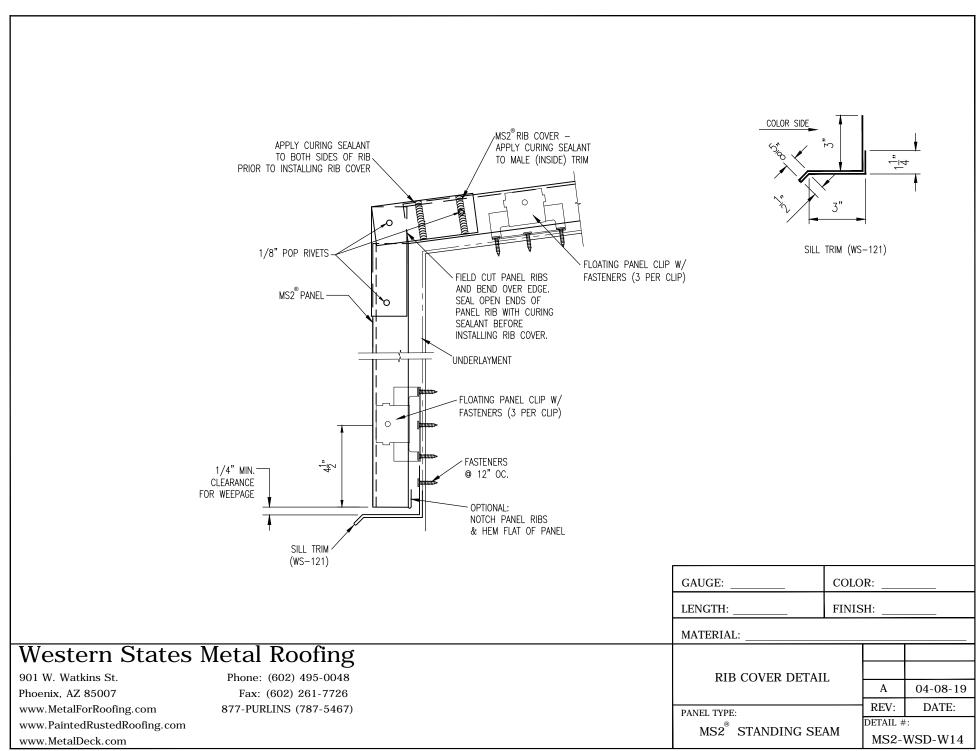




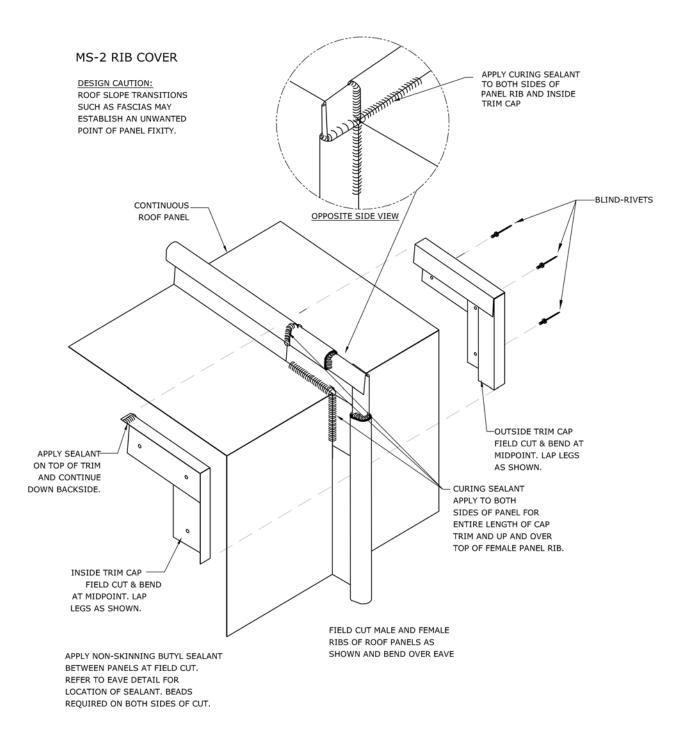


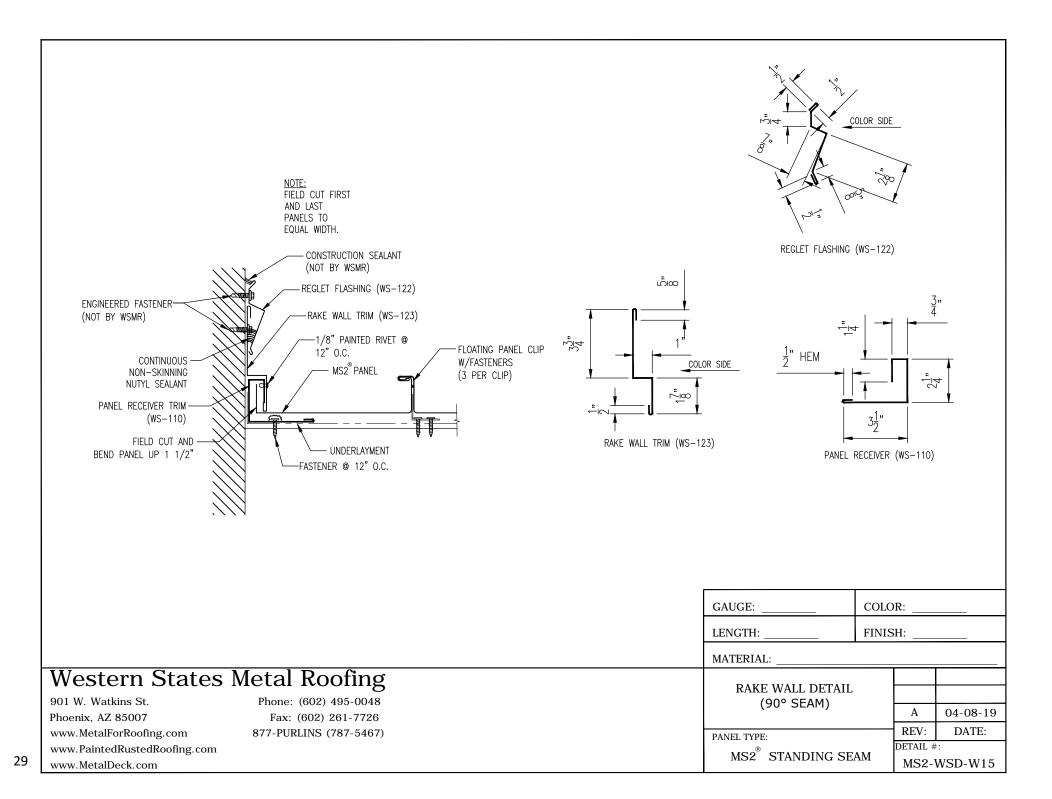


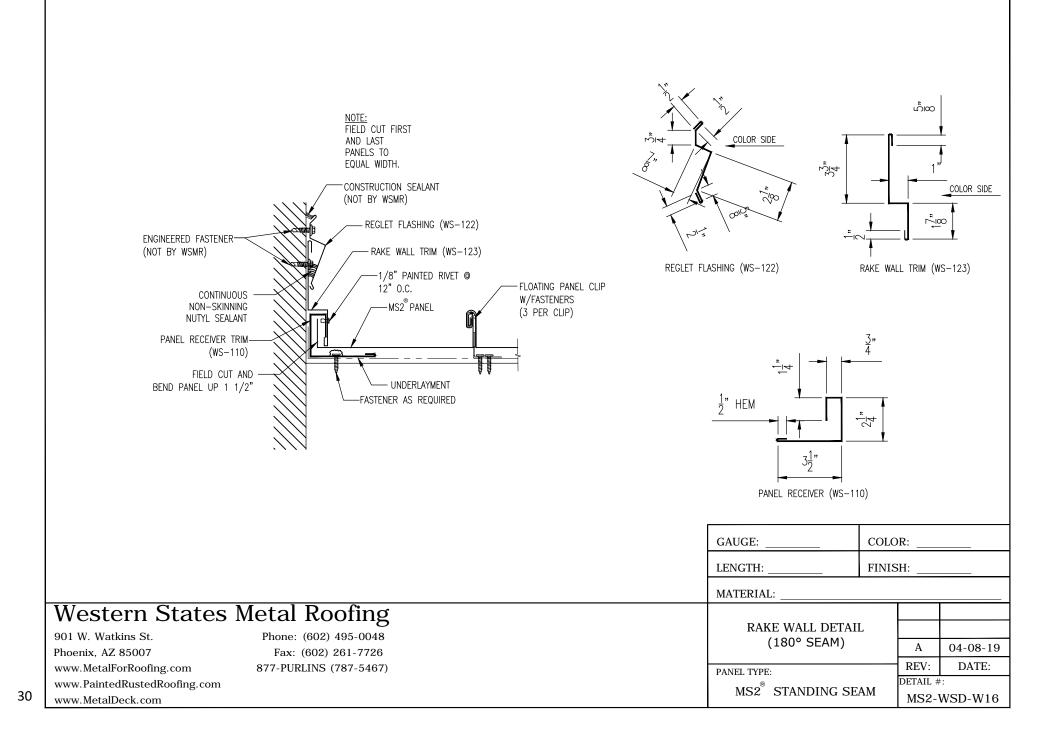


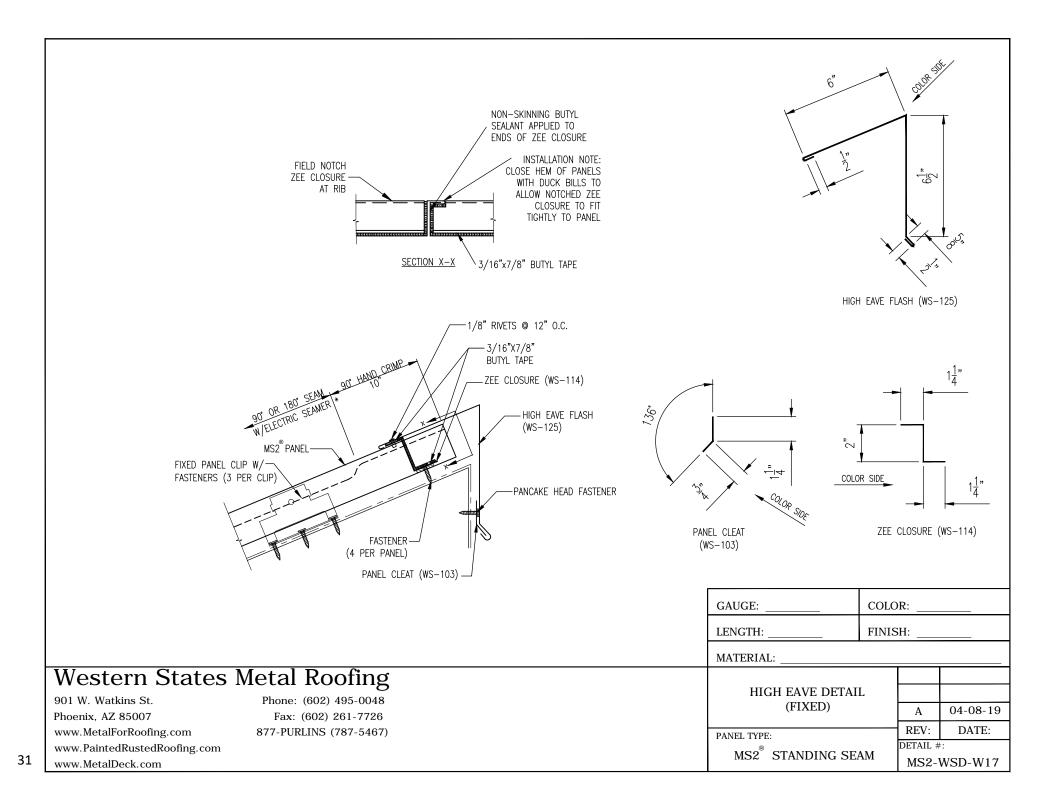


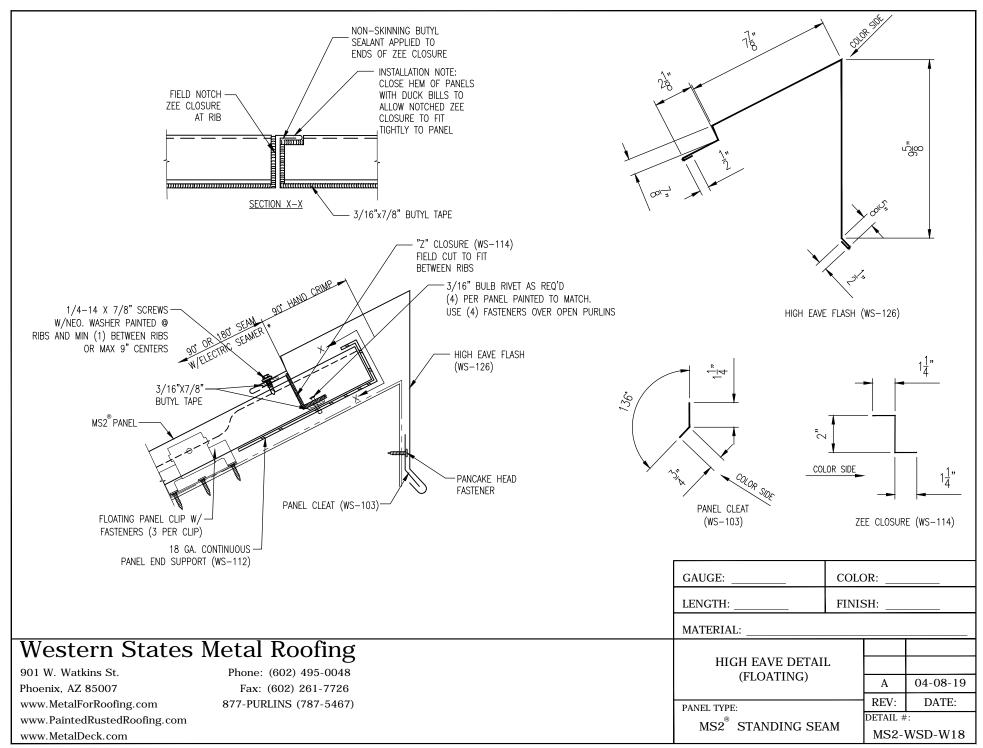
Installation, Flashings & Shop Drawing Detail Guide

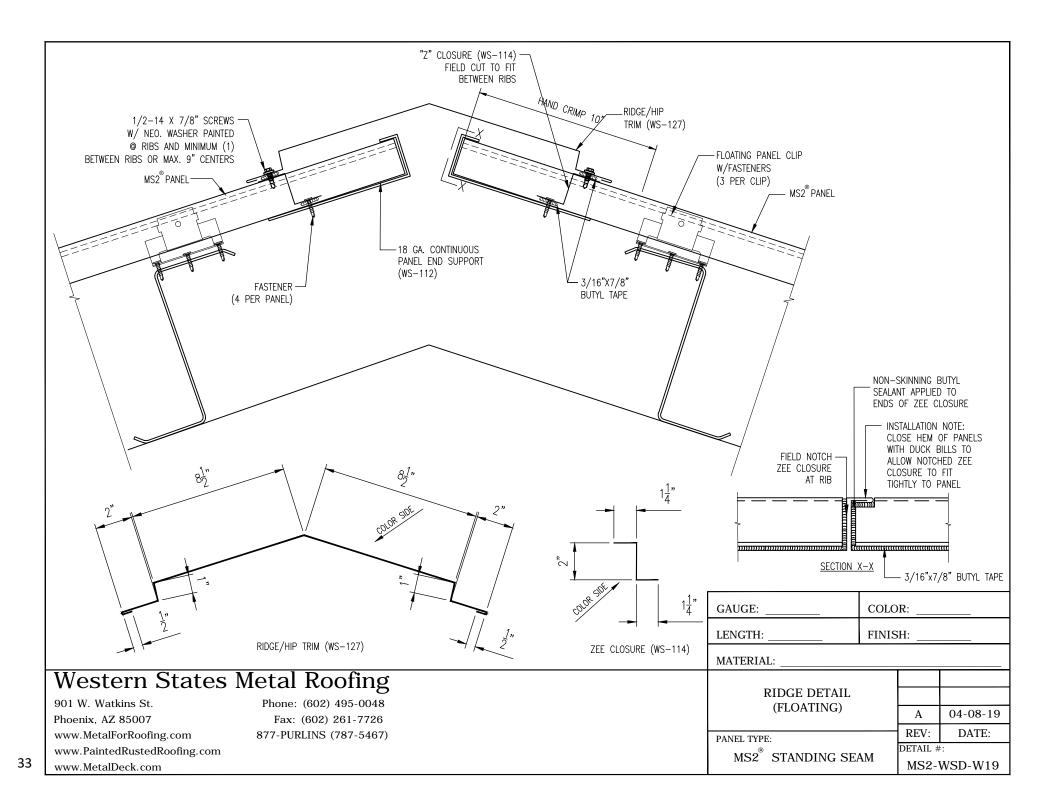


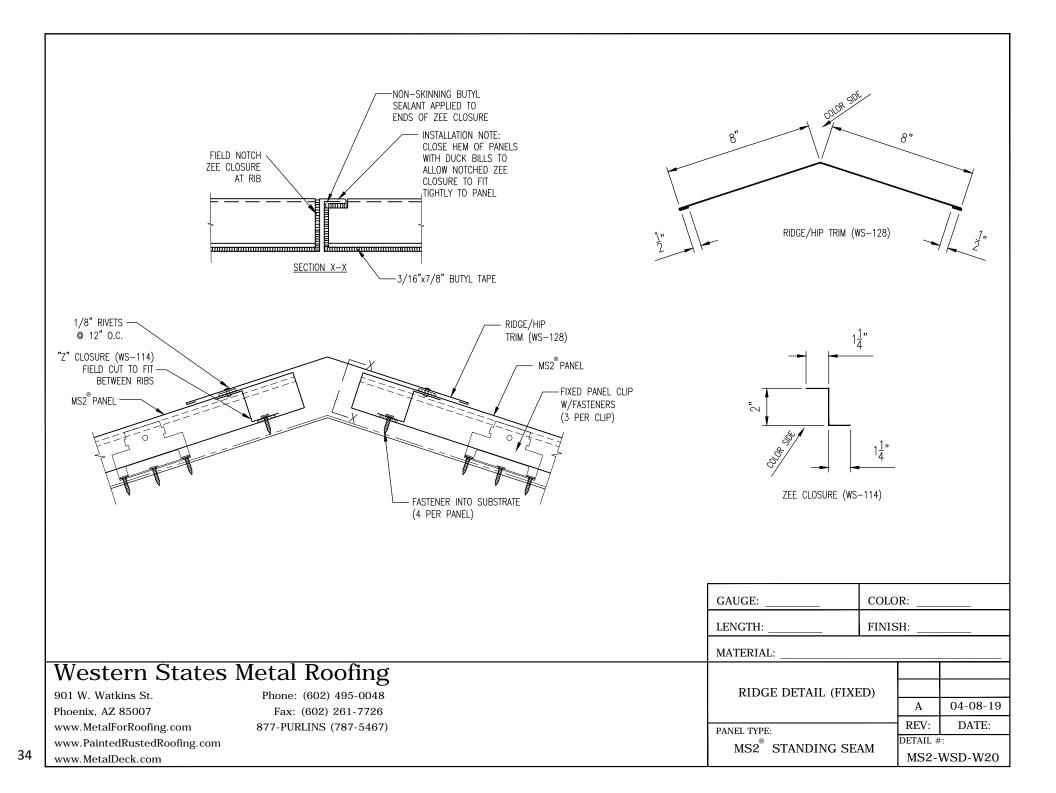


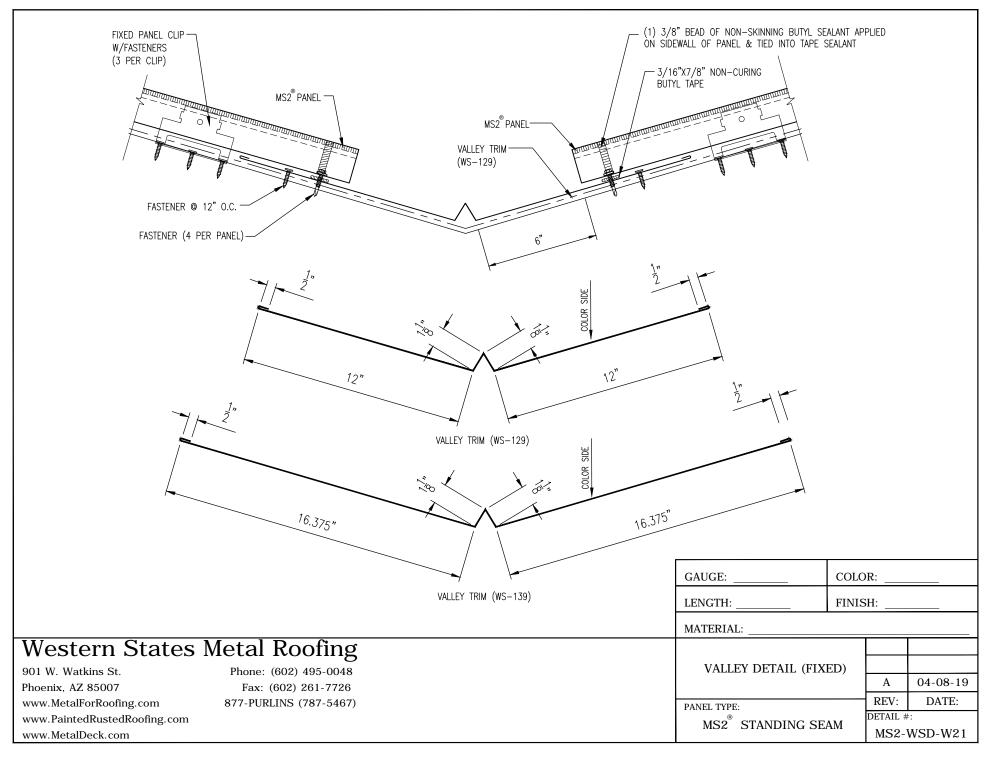


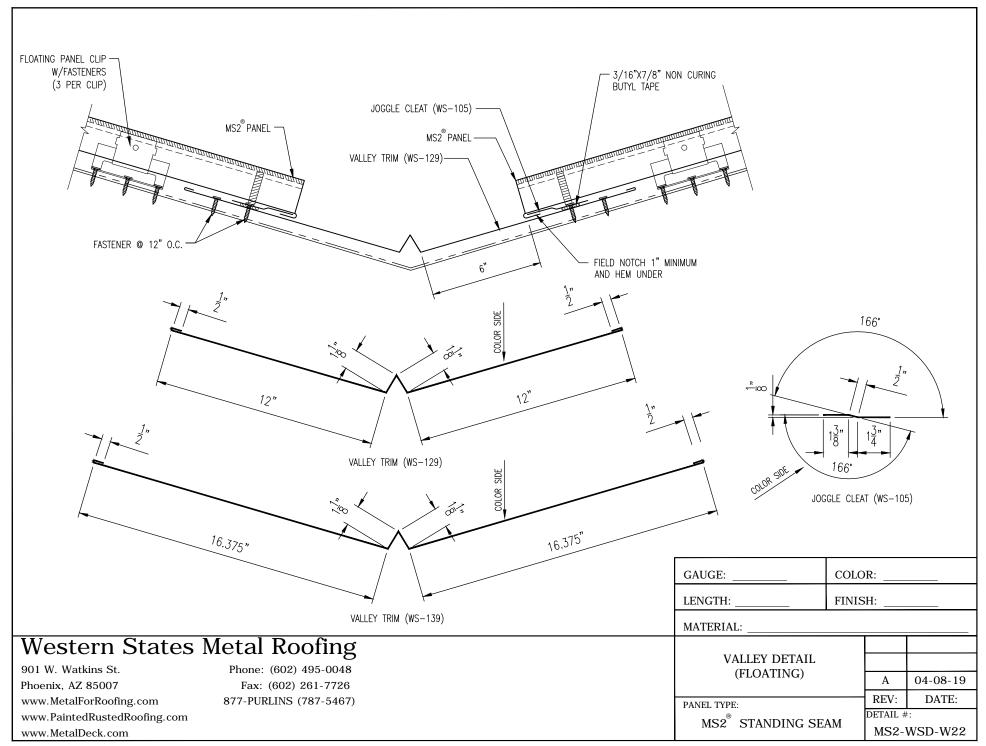


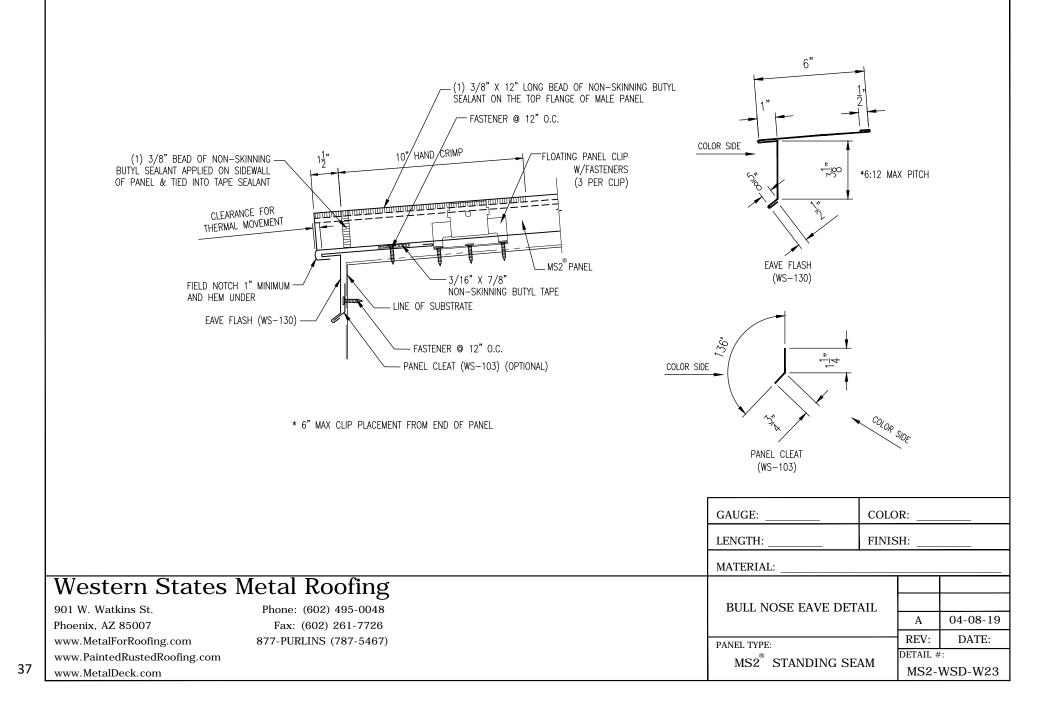


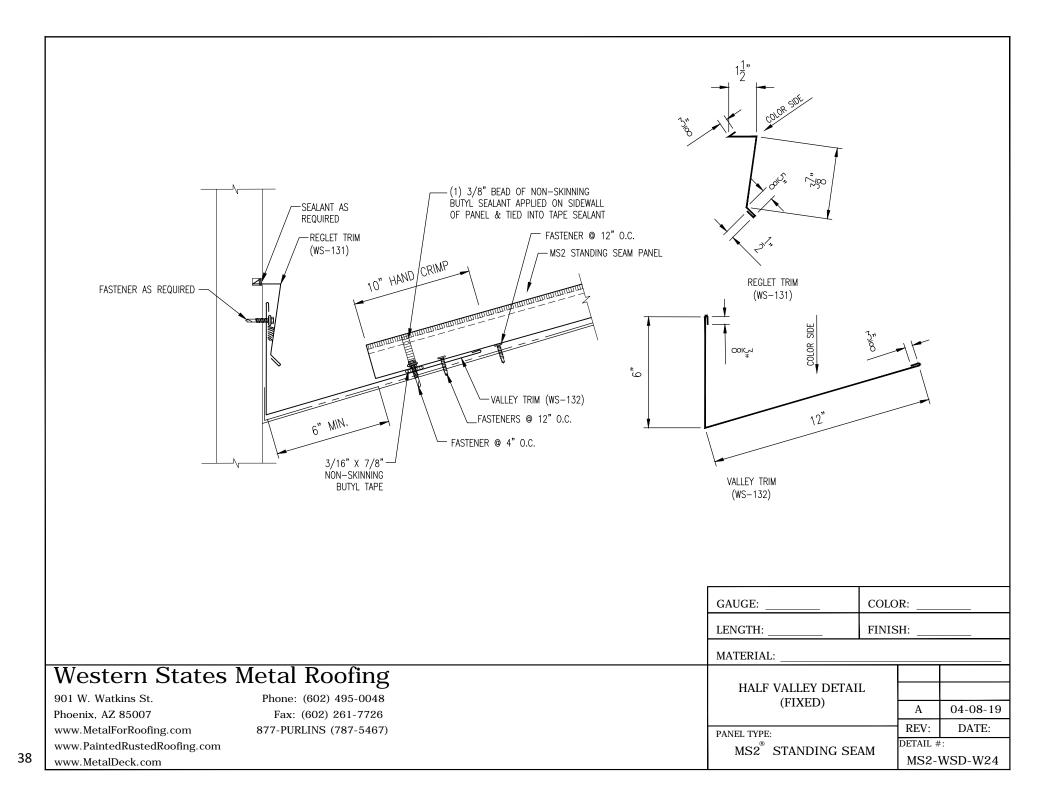


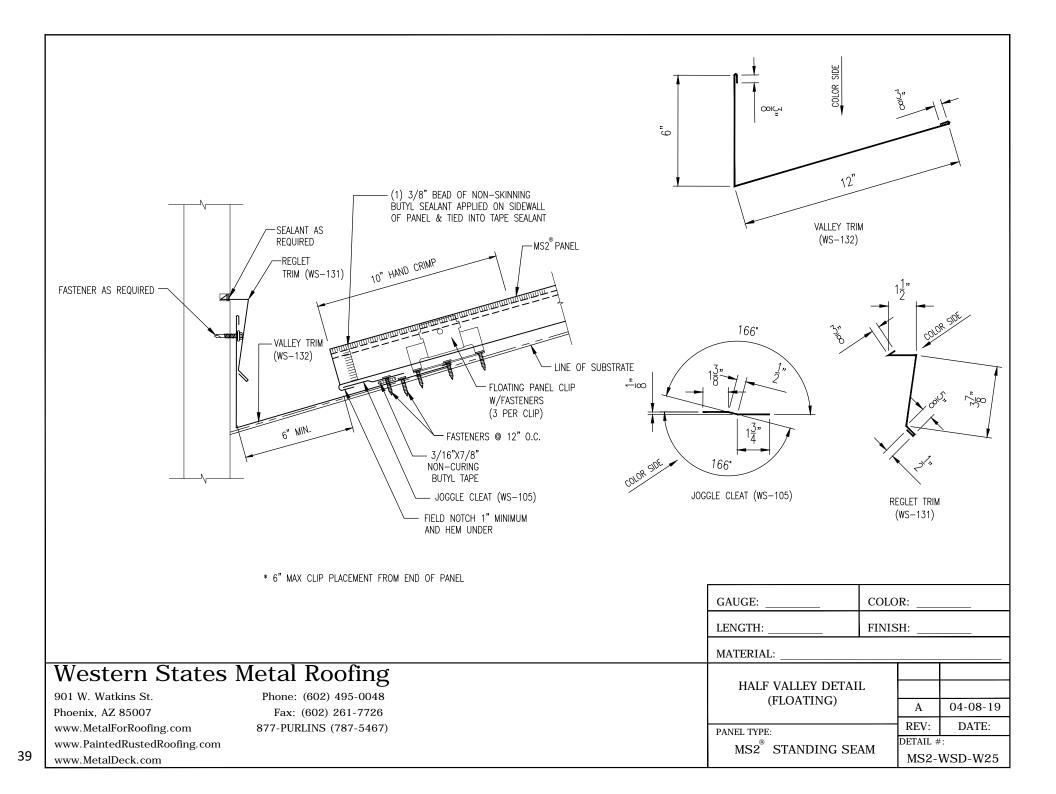


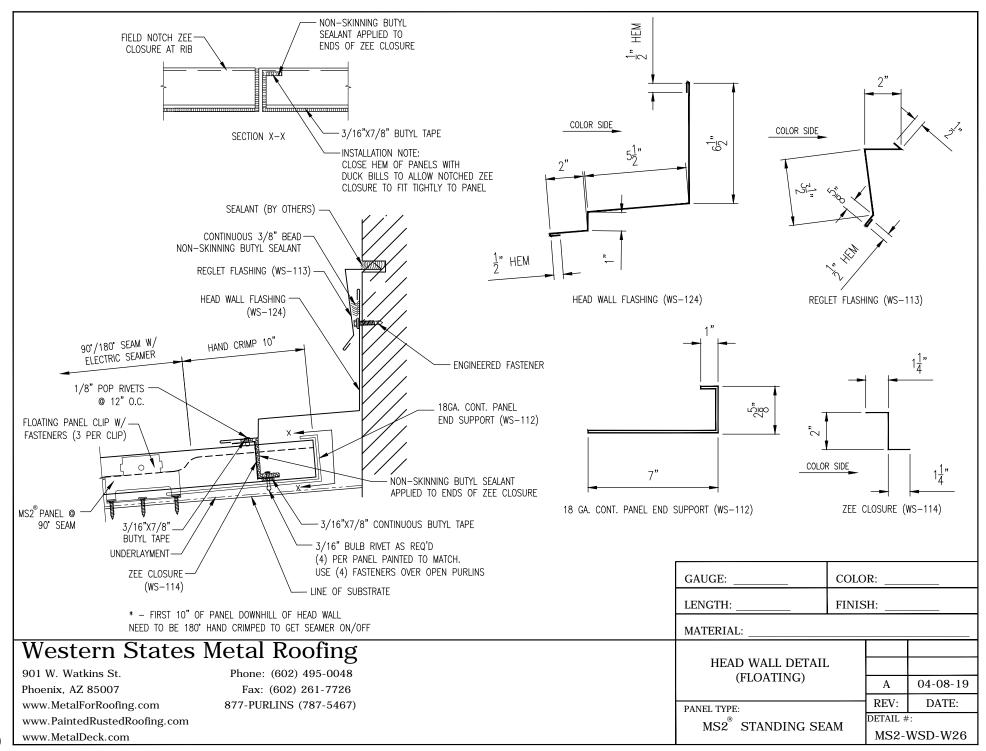












NOTES:			
Western States Metal Roofing	NOTES		
901 W. Watkins St.     Phone: (602) 495-0048       Phoenix, AZ 85007     Fax: (602) 261-7726	NOTES	А	04-08-19
www.MetalForRoofing.com877-PURLINS (787-5467)www.PaintedRustedRoofing.comwww.MetalDeck.com	PANEL TYPE: MS2 <sup>®</sup> STANDING SEAM	REV: DETAIL #	DATE:

## CUSTOM TRIM

	GAUGE:	COL	)R:	
	BREAKS:	BREAKS: FINISH:		
	LENGTH:	STR	ETCH OU	JT:
	MATERIAL:			
Western States Metal Roofing	CUSTOM TRIM NAME:	:		
901 W. Watkins St. Phone: (602) 495-0048				
Phoenix, AZ 85007 Fax: (602) 261-7726			Α	04-08-19
www.MetalForRoofing.com 877-PURLINS (787-5467)	PANEL TYPE:		REV:	DATE:
www.PaintedRustedRoofing.com www.MetalDeck.com	MS2 <sup>®</sup> STANDING	G SEAM	DETAIL #	¥:



### Finishes You've Never Seen Before®

# WESTERN STATES METAL ROOFING

(877) 787-5467 • WESTERNSTATESMETALROOFING.COM

**REQUEST A FREE METAL COLOR SAMPLE** • Affordable Delivery throughout USA, Canada, and Mexico

0)

►

P

Phoenix: 901 W Watkins St., Phoenix, AZ 85007 (602) 495-0048 ⊠ sales@westernstatesmetalroofing.com

Tucson: 4975 E. Drexel Rd., Tucson, AZ 85706 (520) 574-4247 tucsonsales@westernstatesmetalroofing.com

Texas: 15023 County Rd 545, Nevada, TX 75173 🕿 (972) 843-4343 texas-sales@westernstatesmetalroofing.com

Washington: 3610 N. Barker Rd. STE C Spokane Valley, WA 99027 **(509)** 418-2833 washington-wsmr@westernstatesmetalroofing.com

www.facebook.com/westernstatesmetalroofing/ www.instagram.com/westernstatesmetalroofing/ www.twitter.com/weststatesmetal www.youtube.com/westernstatesmetalroofing in www.linkedin.com/company/western-states-metal-roofing www.pinterest.com/westernstatesmetalroofing/ www.houzz.com/pro/raynaann/western-states-metal-roofing