

# CENTRAL STATES

MANUFACTURING, INC.®

## CENTRAL SEAM PLUS™

### Installation Guide

302 Jane Place  
Lowell,  
Arkansas 72745  
800-356-2733

2051 Tryon Road  
Michigan City,  
Indiana 46360  
800-638-2565

660 Grigsby Way  
Cedar Hill,  
Texas 75104  
800-210-8305

3402 Industrial Dr.  
Jasper,  
Alabama 35501  
866-270-6608

***Right, On Time, Every Time.***

# IMPORTANT NOTICE

**READ THIS MANUAL COMPLETELY PRIOR TO BEGINNING THE INSTALLATION OF THE CENTRAL SEAM PLUS<sup>®</sup> ROOFING SYSTEM.**

**IF THERE IS A CONFLICT BETWEEN PROJECT ERECTION DRAWINGS PROVIDED OR APPROVED BY CSMI AND DETAILS IN THIS MANUAL, PROJECT ERECTION DRAWINGS WILL TAKE PRECEDENCE.**

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. In a continuing effort to refine and improve products, CSMI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. **To insure you have the latest information available, please inquire or visit our Web Site at [www.centralstatesmfg.com](http://www.centralstatesmfg.com).** Application details in this manual may not be appropriate for all environmental conditions, building designs, or panel profiles. Projects should be engineered to conform to applicable building codes, regulations, and accepted industry practices. Insulation is not shown in these details for clarity.



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## FEATURES AND BENEFITS

### 1. DESIGN INTEGRITY

The CENTRAL SEAM PLUS<sup>®</sup> mechanically seamed system begins and ends in the high, reducing the risk of leakage at the rake that can occur when finishing in the low. The panel seam is sealed with a factory-applied hot-melt mastic, a superior grade to mastics applied in the field.

### 2. FLOATING ROOF

The CENTRAL SEAM PLUS<sup>®</sup> roof was designed to cope with the forces of expansion and contraction. This is accomplished by allowing the panels to freely move up and down the roof slope.

### 3. FLOATING CLIPS

Two floating clips, the Standard and Articulating, are available for the CENTRAL SEAM PLUS<sup>®</sup> system. The Standard clip allows for a total of two inches of thermal movement and is constructed from 14 gauge material. The articulating clip eliminates the binding and friction during panel expansion and contraction caused by a misformed, misaligned or improperly erected substructure. The clip provides a 3/8" or 1 3/8" clearance at the purlin to reduce water ponding on low pitch roofs. Constructed from 12 gauge material, this clip is an integral part of maintaining panel module.

### 4. UL 90 RATING

The CENTRAL SEAM PLUS<sup>®</sup> roof system has 7 different UL 90 construction numbers, each of which is available with several options.

### 5. FIRE RESISTANCE RATINGS

The roof system qualifies for use in several UL design assemblies and carries a UL "Class A" Fire Rating.

### 6. SIMPLICITY

No troublesome batten cap is needed. The panels simply seam together forming a watertight seal.

### 7. FLEXIBILITY

The CENTRAL SEAM PLUS<sup>®</sup> roof system offers welcome flexibility to the erector. Wall covering can be erected before or after the roof is installed. Panel installation is an uninterrupted procedure.

### 8. EASE OF INSTALLATION

The erector has the option to sheet each side of the roof separately or both sides simultaneously, which greatly increases the speed and convenience of erection. Being reversible end-for-end, sheets do not have to be special ordered for each side of the building. No field notching of panels at endlaps or ridge is required.

### 9. FORGIVING SYSTEM

The CENTRAL SEAM PLUS<sup>®</sup> design allows for the roof to be finished in the high when an out-of-square condition or other factors cause the roof to terminate up to 4" out of module.

### 10. BUILDING LENGTH

Odd, as well as even, footage buildings can be terminated in a major rib with the use of our 12" or 18" panel or by field bending the panel.

### 11. PREPUNCHED PANELS AND COMPONENTS

The prepunched system, combined with self-engaging back-up plates, assures panel module and speeds up roof installation.

### 12. DURABILITY

Every unpainted panel is manufactured from Galvalume Plus<sup>®</sup>, your assurance of the manufacturer's commitment to quality.

### 13. COLOR AND FINISHES

CENTRAL SEAM PLUS<sup>®</sup> is available in a wide variety of popular colors in two different paint systems. Please contact CSMI for color availability and lead times.

**Galvalume Plus<sup>®</sup>** is a registered trademark of BIEC International, Inc.

**Vise-Grip<sup>®</sup>** is a registered trademark of American Tool Companies, Inc.

## IMPORTANT READ THIS FIRST

### CAUTION

Application and design details are for illustration purposes only, and may not be appropriate for all environmental conditions or building designs. Projects should be engineered to conform to applicable building codes, regulations, and accepted industry practices.

### CAUTION

The use of any field seaming machine other than that provided by the manufacturer may damage the panels, void all warranties and will void all engineering data.

**Low Floating System** - With or without 3/8" thermal spacer. **See Insulation/Thermal Spacer Selection Chart below.**

**High Floating System** - With 3/8", 5/8" or 1" thermal spacer. **See Insulation/Thermal Spacer Selection Chart below.**

**Thermal calculations should be performed for each project to ensure that the thermal movement of the roof is not greater than the floating clip's capacity. Various densities of blanket insulation may affect the installation and or the appearance of a metal roof system. The installer is responsible for selecting the proper clip and thermal spacer for their conditions.**

**Insulation/Thermal Spacer Selection Chart**

Insulation Thickness	Low System	High System
No Insulation	3/8" Thermal Spacer	N/A
3" Insulation	N/A	1" Thermal Spacer
4" Insulation	N/A	5/8" Thermal Spacer
6" Insulation	N/A	3/8" Thermal Spacer

### NOTES:

1. As with all standing seam roof systems, sound attenuation (example: blanket insulation) is required between the panel and the substructure to prevent "roof rumble" during windy conditions. **Some composite roof systems may require additional acoustical consideration to ensure that thermal vibration noises are isolated from the building interior. Contact your architect and/or engineer for proper acoustical design.**
2. The following are examples of conditions that may cause condensation: (A) Projects where outside winter temperatures below 40°F are anticipated and where average winter interior relative humidity of 45% or greater is expected. (B) Building usages with high humidity interiors, such as indoor swimming pools, textile manufacturing operations, food paper or other wet-process industrial plants. (C) Construction elements that may release moisture after the roof is installed, such as interior concrete and masonry, plaster finishes and fuel burning heaters. Manufacturer is not responsible for determining if condensation will be an issue on any particular application.

### Thermal Spacer Disclaimer

The above thermal spacer chart is intended to be used as a general guideline only. Because of the various densities of insulation currently available, the manufacturer cannot guarantee that this chart will be accurate in all situations. Further, the manufacturer does not specifically require that the roofing contractor use thermal spacers with it's **CENTRAL SEAM PLUS** roof system. However, please review the following information:

- Although the manufacturer does not require a thermal spacer, the architect or building owner may.
- In certain environments, the compression of the fiberglass insulation, without a thermal spacer, may create a thermal break which can cause condensation to form on the purlins/joists.
- On uninsulated buildings, eliminating the thermal spacer: (1) may cause "roof rumble" and (2) you may encounter problems holding panel module.
- When a high clip is used without a thermal spacer: (1) you may encounter problems holding panel module and (2) foot traffic on the panel ribs may result in bent clips.
- Using a low clip with too much insulation or too thick a thermal spacer: (1) may cause "purlin read" (2) may cause difficulty in properly installing the panel side laps, and (3) you may encounter problems holding panel module.



**UNDERWRITERS LABORATORIES APPROVAL  
CENTRAL SEAM PLUS™**

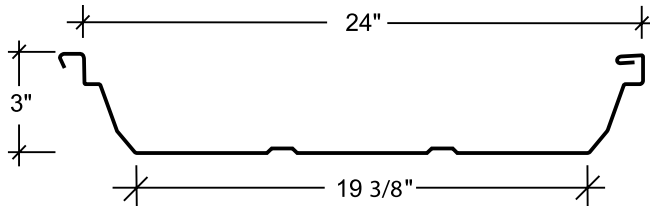
Construction Number	Panel Width (In.)	Gauge	Clip Type	Clip Spacing	Substrate	UL-2218 Impact Resistance	UL-263 Fire Rating	UL-580 Rating
180C	24	24 min.	A,C	5'-0"	Composite System	Class 4	Class A	Class 90
287	24	24 min.	A,C	5'-0"	Open Framing	Class 4	Class A	Class 90
308A	24	24 min.	A,C	5'-0"	Composite System	Class 4	Class A	Class 90
450	24	24 min.	A,C	5'-0"	Open Framing	Class 4	Class A	Class 90
538	24	24 min.	B,C	5'-01/4"	Open Framing	Class 4	Class A	Class 90
539	24	24 min.	B,C	5'-0"	Composite System	Class 4	Class A	Class 90
540	24	24 min.	B,C	5'-0"	Composite System	Class 4	Class A	Class 90

Clip Type: **A** (Articulating); **B** (Floating); **C** (Sliding)

**NOTES:**

1. Tests procedures are in accordance with Underwriters Laboratories Standard UL-580 under "Tests For Uplift Resistance of Roof Assemblies".
2. A detailed installation method is available for each Construction Number above and can be found in the UL Roofing Materials and Systems Directory. The panels must be installed in a certain manner to achieve the published results when installed over a Class A sub structure.
3. The panel qualifies for a Class A fire rating in compliance with Underwriters Laboratories Standard UL-263.
4. The panel system is listed under the following Fire Resistance Design Numbers: P224, P225, P227, P230, P233, P237, P265, P268, P508, P510, P512, P701, P711, P715, P717, P720, P722, P724, P726, P731, P734, P736, P801, P803, P814, P815, P819, P821, and P823. Refer to the UL Fire Resistance Directory for specific construction methods and hourly ratings.
5. Construction Number 450 includes the use of a domed skylight.

## CENTRAL SEAM PLUS<sup>™</sup> PANEL 24" Coverage



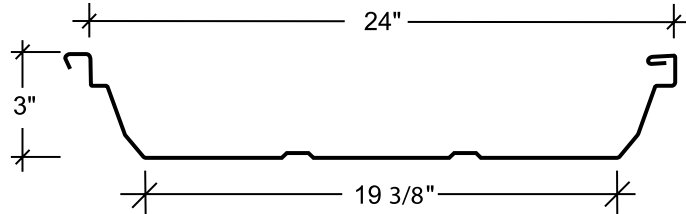
SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	F <sub>y</sub> (KSI)	WEIGHT (PSF)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.23	0.1634	0.1162	3.0278	0.3083	0.1286	3.8498
22	50	1.56	0.2224	0.1643	3.9854	0.4020	0.1681	5.0342

### NOTES:

1. All calculations for the properties of CENTRAL SEAM PLUS<sup>™</sup> panels are calculated in accordance with the 1996 edition of the *COLD-FORMED STEEL Design Manual*, with 1999 supplement - published by the American Iron and Steel Institute (AISI).
2. I<sub>xe</sub> is for deflection determination.
3. S<sub>xe</sub> is for Bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.



**CENTRAL SEAM PLUS™ PANEL**  
**24" Coverage**



**ALLOWABLE UNIFORM LOADS IN POUNDS PER SQUARE FOOT**

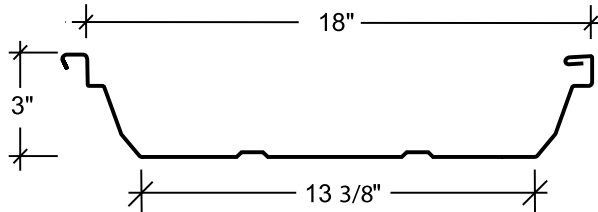
<b>24 Gauge (Fy = 50 KSI)</b>								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	142.3	118.6	101.6	88.9	79.1	71.2	64.7
2-SPAN	LIVE LOAD	128.0	106.7	91.4	80.0	71.1	64.0	58.2
3-SPAN	LIVE LOAD	145.5	121.2	103.9	90.9	80.8	72.7	66.1
4-SPAN	LIVE LOAD	140.0	116.7	100.0	87.5	77.8	70.0	63.6

<b>22 Gauge (Fy = 50 KSI)</b>								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	215.4	179.5	153.8	134.6	119.6	107.7	97.9
2-SPAN	LIVE LOAD	206.8	172.4	147.7	129.3	114.9	103.4	87.8
3-SPAN	LIVE LOAD	235.0	195.9	167.9	146.9	130.6	117.5	106.8
4-SPAN	LIVE LOAD	226.2	188.5	161.6	141.4	125.7	113.1	102.5

**NOTES:**

1. Allowable loads are based on uniform span lengths.
2. LIVE LOAD is limited by bending, shear, combined shear & bending, or web crippling.
3. Above loads consider a maximum deflection ratio of L/180.
4. Panel weight has not been deducted from allowable loads.
5. The use of any field seaming machine other than those provided by the manufacturer will void all engineering data.
6. Contact the manufacturer for wind uplift values.

## CENTRAL SEAM PLUS™ PANEL 18" Coverage

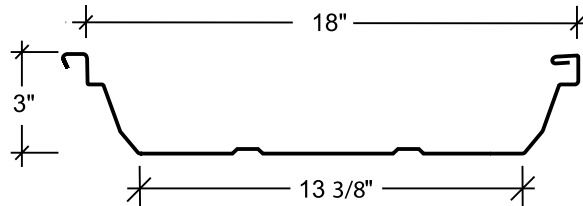


SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	F <sub>y</sub> (KSI)	WEIGHT (PSF)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.32	0.2160	0.1541	3.9814	0.3647	0.1626	4.8673
22	50	1.66	0.2930	0.2172	5.2308	0.4750	0.2122	6.3532

### NOTES:

1. All calculations for the properties of CENTRAL SEAM PLUS™ panels are calculated in accordance with the 1996 edition of the *COLD-FORMED STEEL Design Manual*, with 1999 supplement - published by the American Iron and Steel Institute (AISI).
2. I<sub>xe</sub> is for deflection determination.
3. S<sub>xe</sub> is for Bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.

**CENTRAL SEAM PLUS™ PANEL**  
**18" Coverage**



**ALLOWABLE UNIFORM LOADS IN POUNDS PER SQUARE FOOT**

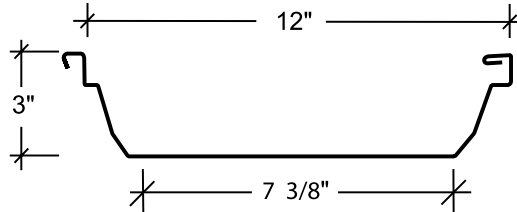
<b>24 Gauge (Fy = 50 KSI)</b>								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	142.3	118.6	101.6	88.9	79.1	71.2	64.7
2-SPAN	LIVE LOAD	128.0	106.7	91.4	80.0	71.1	64.0	58.2
3-SPAN	LIVE LOAD	145.5	121.2	103.9	90.9	80.8	72.7	66.1
4-SPAN	LIVE LOAD	140.0	116.7	100.0	87.5	77.8	70.0	63.6

<b>22 Gauge (Fy = 50 KSI)</b>								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	215.4	179.5	153.8	134.6	119.6	107.7	97.9
2-SPAN	LIVE LOAD	206.8	172.4	147.7	129.3	114.9	103.4	94.0
3-SPAN	LIVE LOAD	235.0	195.9	167.9	146.9	130.6	117.5	106.8
4-SPAN	LIVE LOAD	226.2	188.5	161.6	141.4	125.7	113.1	102.8

**NOTES:**

1. Allowable loads are based on uniform span lengths.
2. LIVE LOAD is limited by bending, shear, combined shear & bending, or web crippling.
3. Above loads consider a maximum deflection ratio of L/180.
4. Panel weight has not been deducted from allowable loads.
5. The use of any field seaming machine other than those provided by the manufacturer will void all engineering data.
6. Contact the manufacturer for wind uplift values.

## CENTRAL SEAM PLUS™ PANEL 12" Coverage



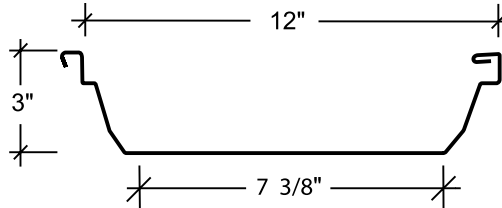
SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	F <sub>y</sub> (KSI)	WEIGHT (PSF)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)	I <sub>xe</sub> (IN.4/FT.)	S <sub>xe</sub> (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.48	0.2489	0.1576	4.7179	0.4548	0.2261	6.7689
22	50	1.86	0.3454	0.2265	6.7802	0.5909	0.2946	8.8208

### NOTES:

1. All calculations for the properties of CENTRAL SEAM PLUS panels are calculated in accordance with the 1996 edition of the *COLD-FORMED STEEL Design Manual*, with 1999 supplement - published by the American Iron and Steel Institute (AISI).
2. I<sub>xe</sub> is for deflection determination.
3. S<sub>xe</sub> is for Bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.



**CENTRAL SEAM PLUS™ PANEL**  
**12" Coverage**



**ALLOWABLE UNIFORM LOADS IN POUNDS PER SQUARE FOOT**

24 Gauge (Fy = 50 KSI)								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	142.3	118.6	101.6	88.9	79.1	71.2	64.7
2-SPAN	LIVE LOAD	128.0	106.7	91.4	80.0	71.1	64.0	58.2
3-SPAN	LIVE LOAD	145.5	121.2	103.9	90.9	80.8	72.7	66.1
4-SPAN	LIVE LOAD	140.0	116.7	100.0	87.5	77.8	70.0	63.6

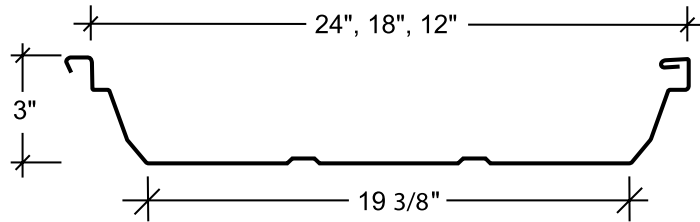
22 Gauge (Fy = 50 KSI)								
SPAN TYPE	LOAD TYPE	SPAN IN FEET						
		2.5	3.0	3.5	4.0	4.5	5.0	5.5
SINGLE	LIVE LOAD	215.4	179.5	153.8	134.6	119.6	107.7	97.9
2-SPAN	LIVE LOAD	206.8	172.4	147.7	129.3	114.9	103.4	94.0
3-SPAN	LIVE LOAD	235.0	195.9	167.9	146.9	130.6	117.5	106.8
4-SPAN	LIVE LOAD	226.2	188.5	161.6	141.4	125.7	113.1	102.8

**NOTES:**

1. Allowable loads are based on uniform span lengths.
2. LIVE LOAD is an allowable live load limited by shear & bending or web crippling.
3. Above loads consider a maximum deflection ratio of L/180.
4. Panel weight has not been deducted from allowable loads.
5. The use of any field seaming machine other than those provided by the manufacturer will void all engineering data.
6. Contact the manufacturer for wind uplift values.

# ROOFING SYSTEM

## GENERAL DESCRIPTION



Coverage Width - 24" with minor ribs - prepunched 6 holes

18" with minor ribs - prepunched 5 holes

12" no minor ribs - no punching

Minimum Slope - 1/4 : 12

Panel Attachment - Low, high (floating, articulating)

Panel Substrate - Galvalume Plus® (standard)

Gauge - Standard: 24 Optional: 22

Finishes - Smooth or embossed with minor ribs

Coatings - CentralGuard™, Kynar 500®/Hylar 5000®

## PRODUCT SELECTION CHART

FINISH	Kynar 500®/Hylar 5000®			CentralGuard™			Galvalume Plus®		
	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.	26 Ga.	24 Ga.	22 Ga.
<b>CENTRAL SEAM PLUS™</b>									
24" Wide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	●	●	<input type="checkbox"/>
18" Wide	<input type="checkbox"/>	●	<input type="checkbox"/>	<input type="checkbox"/>	●	<input type="checkbox"/>	●	●	<input type="checkbox"/>
12" Wide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	●	●	<input type="checkbox"/>

● - Available in any quantity.

☐ - Minimum quantity may be required.

CentralGuard™ White only 24 Ga. is available in all widths, at any quantity.

Other colors, finishes, gauges, and materials available; please inquire.

### CAUTION

Diaphragm capabilities and purlin stability are not provided by the CENTRAL SEAM PLUS Roof system. Therefore, other bracing may be required to conform to A.I.S.C. or A.I.S.I. specifications.

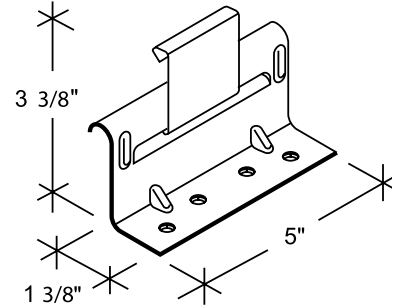
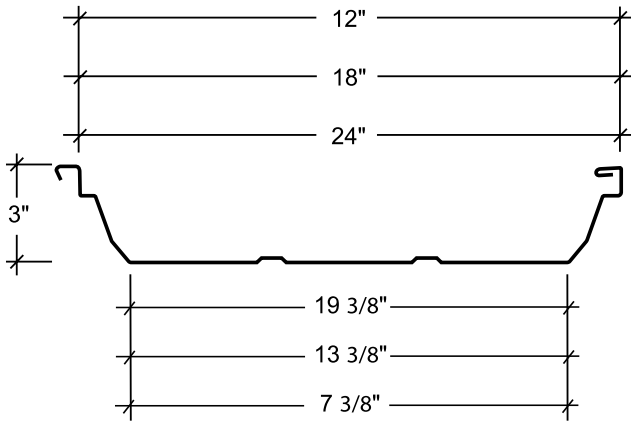


# GENERAL INFORMATION

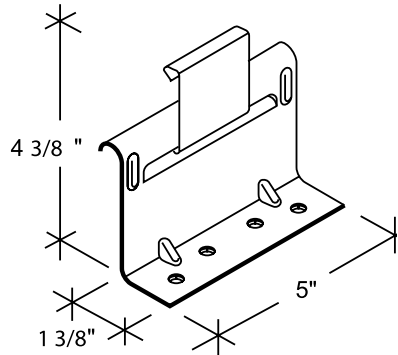
## PRODUCT CHECKLIST

**CENTRAL SEAM PLUS<sup>®</sup>**  
24", 18", or 12" Panel

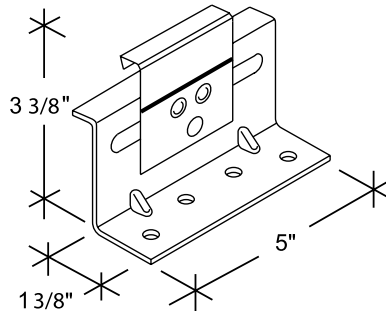
- 24 or 22 gauge
- Factory-applied mastic
- Pre-punched



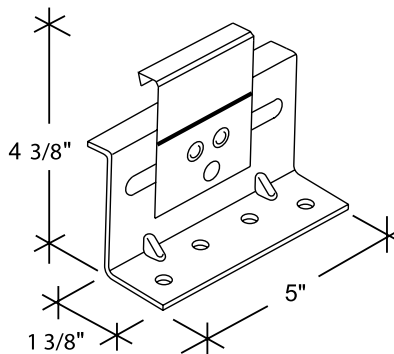
Standard Clip,  
*Low Floating*



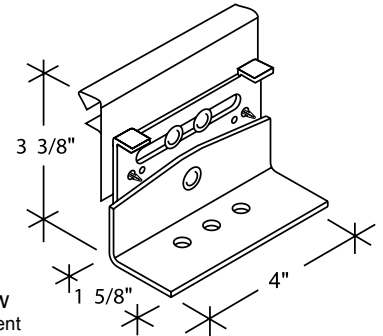
Standard Clip,  
*High Floating*



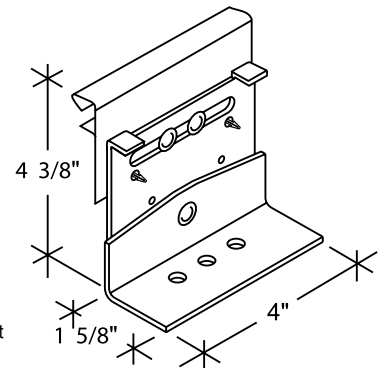
Sliding Clip,  
*Low*



Sliding Clip,  
*High*



Articulating\* Clip-Low  
\*Protected by U.S. Patent  
No. 4,796,403

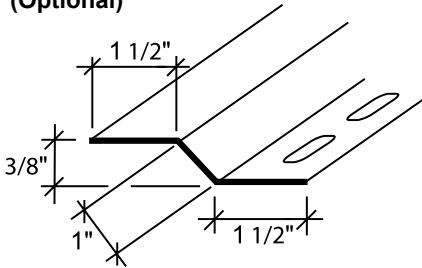


Articulating\* Clip-High  
\*Protected by U.S. Patent  
No. 4,796,403

# GENERAL INFORMATION

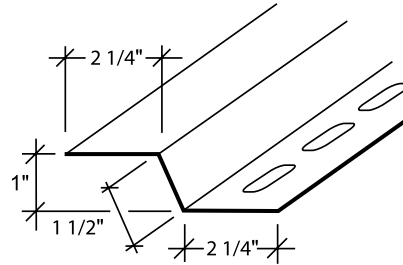
## PRODUCT CHECKLIST

Eave Plate, Low  
(Optional)



- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with low clips

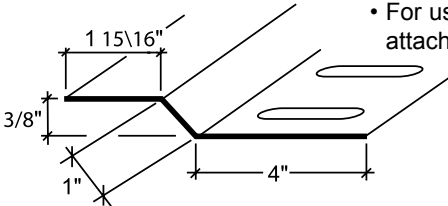
Eave Plate, High



- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with high clips

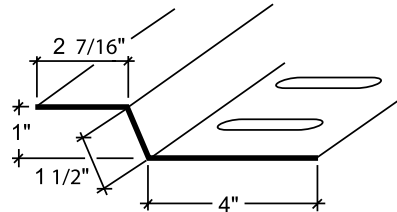
Floating Eave Plate, Low

- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with positive panel attachment at mid-slope



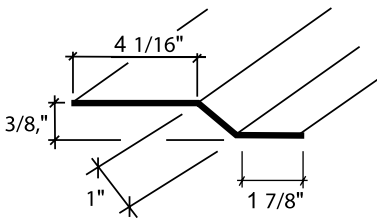
Floating Eave Plate, High

- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with positive panel attachment at mid-slope



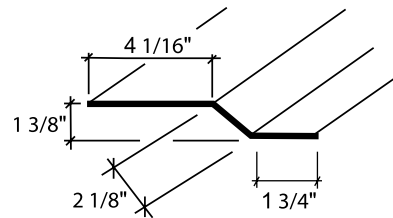
Mid-Slope Fixed Plate, Low

- Positive panel attachment at mid-slope



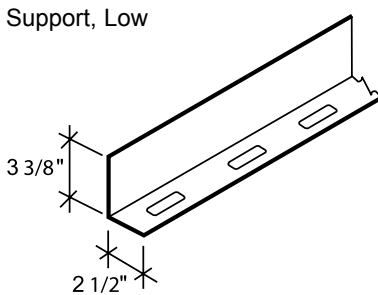
Mid-Slope Fixed Plate, High

- Positive panel attachment at mid-slope



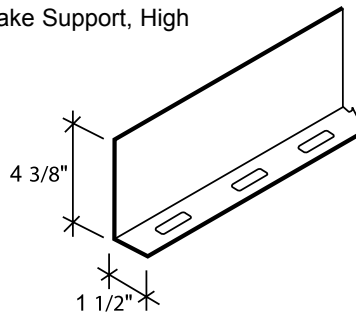
Rake Support, Low

- 20'-0" length
- 14 gauge painted
- Factory slots
- For use with low clips



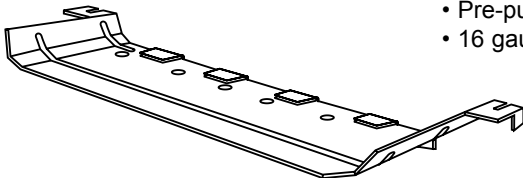
Rake Support, High

- 20'-0" length
- 14 gauge painted
- Factory slots
- For use with high clips



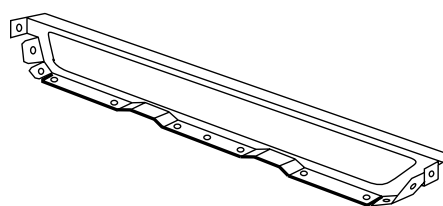
Back-up Plate\*  
(24", 18" or 12")

- For use at endlaps and at the ridge
- Pre-punched
- 16 gauge prepainted



Outside Closure  
(24", 18", or 12")

- For use at ridge or high eave
- 24 gauge



12" Back-up plate is not prepunched.  
\* Protected by U.S. Patent No. 4,655,020

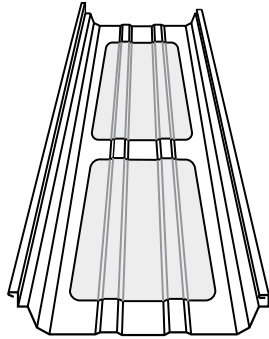
12" Closure has no minor ribs.



# GENERAL INFORMATION

## PRODUCT CHECKLIST

Light Transmitting Panel, UL 90  
CENTRAL SEAM PLUS® (24" wide) Reinforced/UV Resistant Acrylic



10'-3" LONG

### Tape Sealer

- Used at the eave plate, eave strut, outside closures, endlaps and trim connections



Tri-Bead

Tri-Bead  
3/16" x 7/8" x 25'

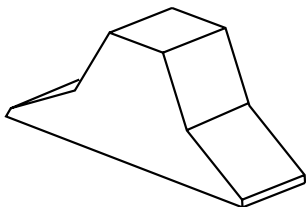
- Used at valleys and roof curbs



Triple Bead

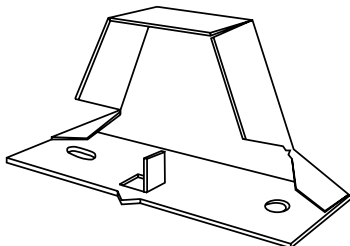
Triple Bead  
3/16" x 2 7/8" x 20'

### Inside Closure



- Special applications

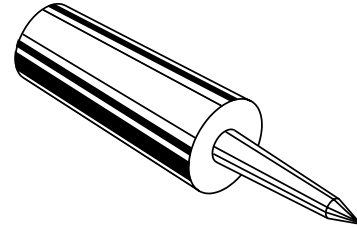
EPDM



- For use at eave

METAL

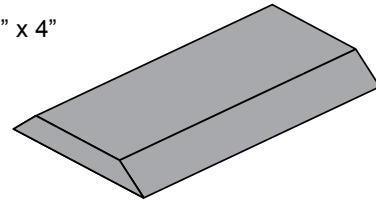
### Urethane Sealant



### Tape Sealer - Minor Rib Pre-Cut Beveled

- Used to fill void at minor ribs of the panel at the eave and valleys

7/32" x 13/8" x 4"



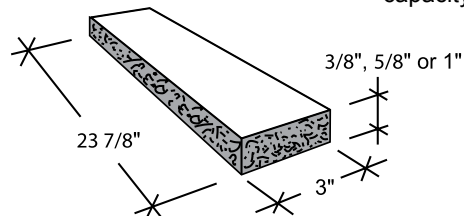
### Double Faced Tape

- 1 1/2"x180' rolls  
Used to hold insulation in place at the rake, eave, and at any insulation end splices



### Thermal Spacer

- Polystyrene block used to increase the insulation capacity along the purlins



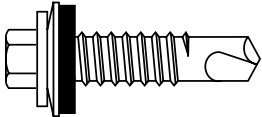
Also available for 18" panels

# GENERAL INFORMATION

## PRODUCT CHECKLIST

Fastener #1

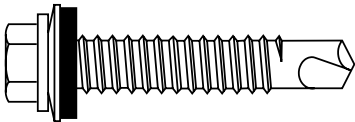
- Clip to purlin with up to 4" insulation thickness
- Eave plate to eave strut
- Inside closure to eave plate or eave strut
- Mid-Slope Fixed Plate to Purlin
- Light Transmitting panel trim



1/4"-14 x 1" Driller  
5/16" Hex Washer Head with 5/8" O.D. washer

Fastener #1F

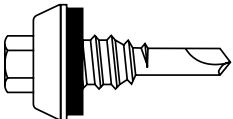
- Clip to Purlin with over 4" insulation thickness



1/4"-14 x 1 1/2" Driller  
5/16" Hex Washer Head with sealing washer

Fastener #4

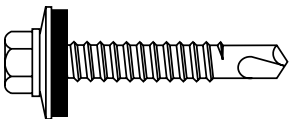
- Ridge and other flashing to outside closure
- Gutter to panel
- Gutter to strap
- Trim to trim connections



1/4"-14 x 7/8" Lap Tek Long Life Self Driller  
5/16" Hex Washer Head with sealing washer  
(Long life exterior fastener)

Fastener #6

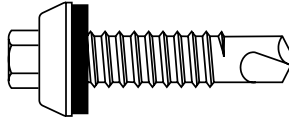
- Clip to joist
- Eave plate to beam



12-24 x 1 1/4" Tek 4.5  
5/16" Hex Washer Head with 5/8" O.D. washer

Fastener #1E

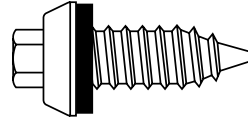
- Panel to eave plate, eave strut, or valley plate
- Rake trim to roof panel
- Outside closure
- Endlap



1/4"-14 x 1 1/4" Long Life Driller  
5/16" Hex Washer Head with sealing washer  
(Long life exterior fastener)

Fastener #2A

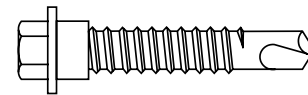
- Use in place of Fasteners #1E and #4 at all stripouts



17 x 1" Type AB Long Life  
5/16" Hex Washer Head with sealing washer  
(Long life exterior fastener)

Fastener #5

- Rake support to purlin
- Floating eave plate to eave strut



1/4"-14 x 1 1/4" Shoulder Tek 2  
5/16" Hex Washer Head, no washer

Fastener #7

- Rake support to joist
- Floating eave plate to joist



1/4"-20 x 1 1/4" Shoulder Tek 4  
5/16" Hex Washer Head, no washer

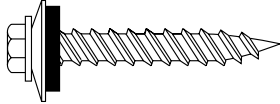


# GENERAL INFORMATION

## PRODUCT CHECKLIST

Fastener #8

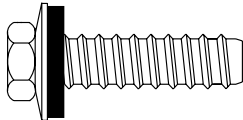
- Special application fastener
- For use on 2 x 4 lath and other solid wood deck (Not for use in plywood)



10 x 1 1/2" Woodgrip  
1/4" Hex Washer Head with 1/2" O.D. washer

Fastener #10

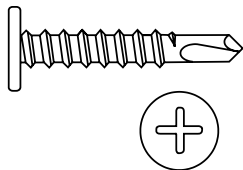
- Special application fastener
- For use on structural steel up to 1/2" thick
- Requires pre-drilled hole



1/4"-14 x 1" Type B  
3/8" Hex Washer Head with 5/8" O.D. washer

Fastener #12

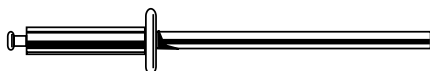
- Support plate to purlins at valley and hip conditions
- Rake angle to purlins



10 x 1"  
#2 Phillips Pancake Head Driller

Fastener #14A

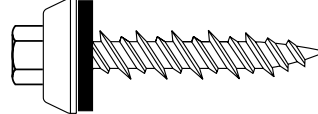
- Snow gutter to eave plate
- Outside closure to back-up angle at hip condition



1/8" x 3/8" Pop Rivet

Fastener #9

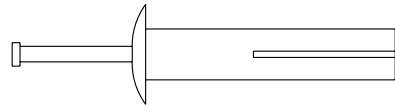
- Special application fastener
- For use on 2 x 4 lath, other solid wood deck, OSB, and plywood



10 x 1 1/2" Long Life Woodgrip  
5/16" Hex Washer Head with sealing washer

Fastener #11

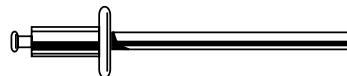
- Special application fastener
- For use on masonry



1/4" x 1 1/4" Nail Drive  
Masonry Anchor

Fastener #14

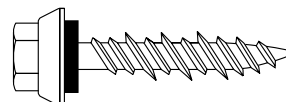
- Gutter strap to snow gutter
- Trim to trim connections



1/8" x 3/16" Pop Rivet

Fastener #45

- Special application fastener
- For use on masonry
- Use 7/32 masonry bit for pilot hole



1/4"-14 X 1 3/8" Long Life masonry anchor  
3/8 Hex washer head with sealing washer  
(Long Life Exterior Fastener)

# GENERAL INFORMATION

## PREPARATORY REQUIREMENTS

1. A single pitch eave strut must be used with the **CENTRAL SEAM PLUS** roof system.
2. Make sure a rake angle or an alternate structural flat surface has been installed on top of the purlins to accept the "Rake Support".
3. The walls do not have to be erected before the roof is installed. However, for the purpose of this manual, we have assumed that the wall panels have been installed.
4. All primary and secondary framing must be erected, plumbed and squared with bolts tightened according to accepted building practices.
5. The substructure (eave to ridge) must be on plane with a tolerance of 1/4" in 20' and 3/8" in 40'.
6. **CENTRAL SEAM PLUS** can be erected on various types of construction. However, for the purpose of this manual, we have assumed that the roof will be installed on a new, pre-engineered metal building.
7. **CENTRAL SEAM PLUS** roof panels can be furnished in 24", 18", and 12" widths. However, for the purpose of this manual, we have assumed that the roof panels will be 24" wide.
8. It is critical that the purlins or joists at the ridge and endlaps be exactly located as detailed in this manual and that they are straight from rafter to rafter. Any mislocation or bowing of these members can cause the fasteners at the endlaps or outside closures to foul the purlin or the back-up plate to foul the clip as the panels expand and contract.
9. Peak purlin spacing (from the centerline of the building) - 12" (For use with Ridge Flash 213 and 214) or 16" (Use with 156) or a 9" or 12" Ridge vent.
10. For the purpose of this manual, we have assumed that this is a standard roof. If your roof is to be UL 90 rated, see special UL 90 requirements on page 5.
11. Read recommended erection practices on pages 44 and 45 before proceeding with roof installation.
12. The manufacturer recommends the use of a screw gun with a speed range of 0 - 2000 RPM to properly install all fasteners referenced in this manual. Tools rated to 4000 RPM should never be used for self drilling fasteners typically supplied with metal building components.
13. Field cutting of the panels should be avoided where possible. If field cutting is required, the panels must be cut with nibblers, snips, or shears to prevent edge rusting. Do not cut the panels with saws, abrasive blades, grinders, or torches.

### NOTE

It is the responsibility of the erector to install this roof using safe construction practices that are in compliance with OSHA regulations. The manufacturer is not responsible for the performance of this roof system if it is not installed in accordance with the instructions shown in this manual. Deviations from these instructions and details must be approved in writing by the manufacturer.

### CAUTION

Diaphragm capabilities and purlin stability are not provided by the **CENTRAL SEAM PLUS** roof system. Therefore, other bracing may be required.

### CAUTION

The minimum recommended slope for the roof system is 1/4 on 12.  
A slope of less than 1/4 on 12 could cause severe ponding and will void material warranties.

### CAUTION

Application and design details are for illustration purposes only, and may not be appropriate for all environmental conditions or building designs. Projects should be engineered to conform to applicable building codes, regulations, and accepted industry practices.

**WARNING: Light transmitting panels are not designed or intended to bear the weight of any person walking, stepping, standing or resting on them. THE MANUFACTURER DISCLAIMS ANY WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, that any person can safely walk, step, stand or rest on or near these light transmitting panels or that they comply with any OSHA regulation.**