



double-lok®

Technical Installation Information

IMPORTANT NOTICE

READ THIS MANUAL COMPLETELY PRIOR TO BEGINNING THE INSTALLATION OF THE *Double-Lok*® ROOFING SYSTEM.

ALWAYS INSPECT EACH AND EVERY PANEL AND ALL ACCESSORIES BEFORE INSTALLATION. NEVER INSTALL ANY PRODUCT IF ITS QUALITY IS IN QUESTION. NOTIFY MBCI IMMEDIATELY IF ANY PRODUCT IS BELIEVED TO BE OUT OF TOLERANCE, SPECIFICATION OR HAS BEEN DAMAGED DURING SHIPMENT.

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

Ice Dam Disclaimer

MBCI designs its standing seam roofs to meet the load requirements dictated by governing codes and project specifications, including applicable snow loads. However, NCI expressly disclaims responsibility for weathertightness or roof point loading issues or other hazards resulting from ice dam situations. Any time ice and snow can melt on the main body of the roof and refreeze at the eave or in the shadow of an adjacent wall, an ice dam situation may develop. In addition to local climate, ice dam formation is affected by many other factors, including but not limited to, roof insulation R value, roof panel color, interior temperature of building, heater location in building, eave overhangs, parapet walls, shading of building roof areas from adjacent trees, parapets, buildings, etc. These factors are design and maintenance issues and are outside the control of NCI. NCI specifically disclaims any liability for damage due to ice dam formation, although the following issues should be taken into consideration concerning standing seam roofs installed in freezing climates:

- Always use field seamed panels. These machine-folded seams are more durable when subjected to occasional icing.
- Eliminate "cold" eave overhangs and parapet walls from the building design. Roof overhangs outside the heated envelope of the building will tend to be colder than the roof areas over the heated envelope. Simple roof designs are preferred. Parapet walls at the eave allow ice and snow to collect due to shading effects and the lower roof temperatures caused thereby.
- Make sure the interior of the building is adequately insulated and the heating is properly distributed. Inadequate insulation in the roof and/or improper heat distribution causes heat flow through the main body of the roof. On days when the temperature is below freezing, this heat gain can cause ice and snow to melt and refreeze at the eave where the roof is colder.
- Lay out the building to prevent the eaves and other roof areas from being shaded during the winter. This may mean eliminating adjacent trees or reconsidering roof geometries.
- Consider using self-regulating heating cables at the eaves to mitigate the effects of ice dams.
- On building designs using attics, over-insulate the attic floor and provide adequate ventilation in the attic. This will reduce heat transfer through the roof resulting in more consistent roof temperatures between eave and field of roof.
- Increase the degree of diligence with respect to underlayment materials at roof areas prone to icing. This may include valleys, eaves, dormers and roof areas near dormers, parapets and the like where shading may occur.

For more information on this subject, please refer to the MCA's Metal Roof Design For Cold Climates manual.

The Engineering data contained herein is for the expressed use of customers and design professionals. Along with this data, it is recommended that the design professional have a copy of the most current version of the North American Specification for the Design of Cold-Formed Steel Structural Members published by the American Iron and Steel Institute to facilitate design. This Specification contains the design criteria for cold-formed steel components. Along with the Specification, the designer should reference the most current building code applicable to the project jobsite in order to determine environmental loads. If further information or guidance regarding cold-formed design practices is desired, please contact the manufacturer.

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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, MBCI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. **To ensure you have the latest information available, please inquire or visit our website at www.mbc.com.** Application details are for illustration purposes only and 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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GENERAL INFORMATION

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ROOFING SYSTEM

double-lok®

FEATURES AND BENEFITS

1. DESIGN INTEGRITY

MBCI's **Double-Lok®** 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 includes factory-applied mastic.

2. FLOATING ROOF

The **Double-Lok®** 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. SLIDING CLIPS

2" and 4" Sliding Clips are available, with the 2" version providing 1-1/4" movement in each direction while the 4" version provides for 2" of movement in each direction. Both clips are also available in high and low versions, which provides a 3/8" clearance or a 1-3/8" clearance, allowing for a variety of thermal spacer and insulation thickness combinations.

4. UL 90 RATING

The **Double-Lok®** roof system has 7 different UL 90 construction numbers, each of which is available with several options.

5. FACTORY MUTUAL APPROVAL

The **Double-Lok®** roof has been tested by Factory Mutual Research Corporation for wind uplift, fire and hail damage under Standard 4471 achieving various ratings. Refer to page DL-4 for summary information.

6. FIRE RESISTANCE RATINGS

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

7. SIMPLICITY

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

8. FLEXIBILITY

MBCI's **Double-Lok®** 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.

9. 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.

10. FORGIVING SYSTEM

The **Double-Lok®** 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.

11. 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 in the low by field bending the panel.

12. PREPUNCHED PANELS AND COMPONENTS

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

13. DURABILITY

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

14. COLOR AND FINISHES

Double-Lok® is available in a wide variety of popular colors in three different paint systems.

Double-Lok® is a registered trademark of NCI Group, Inc.

Galvalume Plus® is a registered trademark of BIEC International, Inc.

Vise-Grip® is a registered trademark of American Tool Companies, Inc.

S-5!™ is a trademark of Metal Roof Innovations.

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ENGINEERING

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 - Double slope buildings over 200' wide or single slope buildings over 100' wide, with or without $\frac{3}{8}$ " thermal spacer. **See Insulation/Thermal Spacer Selection Chart below.**

High Floating System - Double slope buildings over 200' wide or single slope buildings over 100' wide, with $\frac{3}{8}$ ", $\frac{5}{8}$ " 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	$\frac{3}{8}$ " Thermal Spacer	High System Not Recommended
3" Insulation	Thermal Spacer Not Recommended	1" Thermal Spacer Recommended
4" Insulation	Thermal Spacer Not Recommended	$\frac{5}{8}$ " Thermal Spacer Recommended
6" Insulation	Low System Not Recommended	$\frac{3}{8}$ " Thermal Spacer Recommended

NOTES:

- 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.**
- A vapor retarder may be necessary to protect roofing components when high interior humidity is a factor. The need for a vapor retarder, as well as the type, placement and location should be determined by a architect or engineer. The following are examples of conditions that may require a vapor retarder: (A) Probject 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 my release moisture after the roof is installed, such as interior concrete and masonry, plaster finishes ad fuel burning heaters

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 *Double-Lok®* 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.



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ENGINEERING

double-lok®

Construction Number	Panel Width (In.)	Gauge	Clip Type	Substrate	UL-2218 Impact Resistance	UL-263 Fire Rating	UL-580 Rating
165	24	24 min.	Sliding	Open Framing	Class 4	Class A	Class 90
180C	24	24 min.	Sliding	Composite System	Class 4	Class A	Class 90
287	24	24 min.	Sliding	Open Framing	Class 4	Class A	Class 90
308A	24	24 min.	Sliding	Composite System	Class 4	Class A	Class 90
450	24	24 min.	Sliding	Open Framing	Class 4	Class A	Class 90
538	24	24 min.	Sliding	Open Framing	Class 4	Class A	Class 90
539	24	24 min.	Sliding	Composite System	Class 4	Class A	Class 90
540	24	24 min.	Sliding	Composite System	Class 4	Class A	Class 90

NOTES:

- Tests procedures are in accordance with Underwriters Laboratories Standard UL-580 under "Tests For Uplift Resistance of Roof Assemblies".
- 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.
- The panel qualifies for a Class A fire rating in compliance with Underwriters Laboratories Standard UL-263.
- The panel system is listed under the following Fire Resistance Design Numbers: P225, P227, P230, P237, P265, P268, P508, P510, P512, P701, P711, P717, P720, P722, P726, P731, P734, P736, P801, P803, P814, P815, and P819. Refer to the UL Fire Resistance Directory for specific construction methods and hourly ratings.
- Construction Number 450 includes the use of a domed skylight.

FACTORY MUTUAL APPROVAL

Double-Lok®

Panel Width	Gauge	Clip Type	Clip Spacing	Substrate	# of Fasteners per Clip	Wind Clamp per Clip	Hail Damage Rating	ASTM E108 Fire Rating	FM Windstorm Rating
24	24	2" Slidling	5'-0"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-60
24	24	2" Slidling	5'-0"	Open Framing	2	1	Class 1-SH	Class A	Class 1-75
24	22	2" Slidling	5'-0"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-75
24	24	2" Slidling	5'-0"	Open Framing	2	1	Class 1-SH	Class A	Class 1-90
24	22	2" Slidling	4'-0"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-90
18	24	2" Slidling	5'-0"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-90
24	22	2" Slidling	4'-0"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-105
24	22	2" Slidling	3'-6"	Open Framing	2	n/a	Class 1-SH	Class A	Class 1-105
24	22	4" Slidling	5'-0"	Open Framing	3	1	Class 1-SH	Class A	Class 1-120
18	24	2" Slidling	5'-0"	Open Framing	3	1	Class 1-SH	Class A	Class 1-135
24	22	4" Slidling	5'-0"	Open Framing	3	2	Class 1-SH	Class A	Class 1-150

**Floating or Articulating

NOTES:

- Tests procedures are in accordance with Factory Mutual Research Corporation (FMRC) Standard 4471.
- A detailed test report is available for each product above. The panels must be installed in a specific manner to achieve the published results. Contact the manufacturer for more information.

ICBO APPROVAL

Double-Lok® Roofing System details, engineering calculations, computer printouts, and data have been examined by the ICBO Evaluation Service, Inc. and have been found to comply with the 1997 Uniform Building Code.

FLORIDA BUILDING CODE PRODUCT APPROVAL

Double-Lok® Roofing System details and engineering load tables have been examined by the State of Florida and comply with

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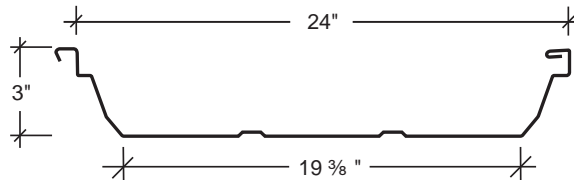


Metal Roof and Wall Systems

double-lok®

ENGINEERING

Double-Lok® PANEL
 24" Coverage



SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	I _{xe} (IN.4/FT.)	S _{xe} (IN.3/FT.)	Maxo (KIP-IN.)	I _{xe} (IN.4/FT.)	S _{xe} (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.23	0.1507	0.0989	2.9619	0.3224	0.1307	3.9132
22	50	1.56	0.2059	0.1394	4.1741	0.4205	0.1708	5.1122

NOTES:

1. All calculations for the properties of *Double-Lok®* panels are calculated in accordance with the 2001 edition of the *North American Specification For Design Of Cold-Formed Steel Structural Members*.
2. I_{xe} is for deflection determination.
3. S_{xe} is for bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.

The Engineering data contained herein is for the expressed use of customers and design professionals. Along with this data, it is recommended that the design professional have a copy of the most current version of the *North American Specification for the Design of Cold-Formed Steel Structural Members* published by the American Iron and Steel Institute to facilitate design. This Specification contains the design criteria for cold-formed steel components. Along with the Specification, the designer should reference the most current building code applicable to the project jobsite in order to determine environmental loads. If further information or guidance regarding cold-formed design practices is desired, please contact the manufacturer.



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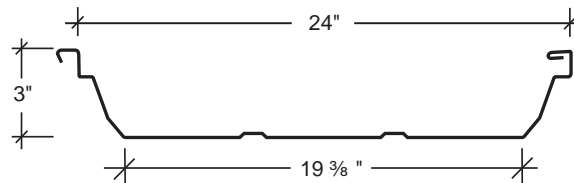
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ENGINEERING

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Double-Lok® PANEL 24" 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	204.0	170.0	145.7	127.5	113.3	102.0	86.2
2-SPAN	LIVE	204.0	170.0	145.7	123.4	97.5	79.0	65.3
3-SPAN	LIVE	204.0	170.0	145.7	127.5	113.3	98.7	81.6
4-SPAN	LIVE	204.0	170.0	145.7	127.5	113.3	92.2	76.2

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	296.9	247.5	212.1	185.6	165.0	136.3	112.7
2-SPAN	LIVE	296.9	247.5	212.1	173.9	137.4	111.3	92.0
3-SPAN	LIVE	296.9	247.5	212.1	185.6	165.0	139.1	115.0
4-SPAN	LIVE	296.9	247.5	212.1	185.6	160.4	129.9	107.4

1. Allowable loads are based on uniform span lengths and Fy = 50 ksi.
2. LIVE LOAD is limited by bending, shear, combined shear & bending.
3. Above loads consider a maximum deflection ratio of L/180.
4. The weight of the panel has not been deducted from the allowable loads.
5. **THE ABOVE LOADS ARE NOT FOR USE WHEN DESIGNING PANELS TO RESIST WIND UPLIFT.**
6. Please contact MBCI or visit www.mbc.com for most current allowable wind uplift loads.
7. The use of any field seaming equipment or accessories including but not limited to clips, fasteners, and support plates (eave, back-up, rake, etc) other than those provided by the manufacturer may damage panels, void all warranties, and will void all engineering data.
8. This material is subject to change without notice. Please contact manufacturer for most current data.

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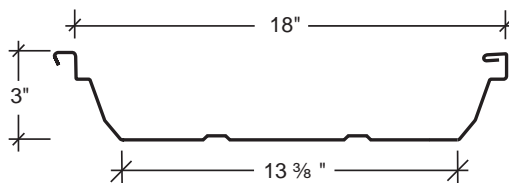
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double-lok®

ENGINEERING

Double-Lok® PANEL 18" Coverage



SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	Ixe (IN.4/FT.)	Sxe (IN.3/FT.)	Maxo (KIP-IN.)	Ixe (IN.4/FT.)	Sxe (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.32	0.1994	0.1313	3.9306	0.3814	0.1650	4.9397
22	50	1.66	0.2718	0.1846	5.5274	0.4962	0.2153	6.4449

NOTES:

1. All calculations for the properties of Double-Lok® panels are calculated in accordance with the 2001 edition of the *North American Specification For Design Of Cold-Formed Steel Structural Members*.
2. Ixe is for deflection determination.
3. Sxe is for bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.



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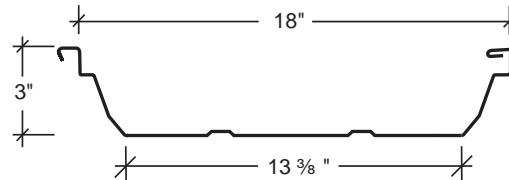
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ENGINEERING

double-lok®

Double-Lok® PANEL

18" 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	272.0	226.7	194.3	170.0	151.1	131.7	108.9
2-SPAN	LIVE	272.0	226.7	194.3	163.8	129.4	104.8	86.6
3-SPAN	LIVE	272.0	226.7	194.3	170.0	151.1	131.0	108.3
4-SPAN	LIVE	272.0	226.7	194.3	170.0	151.0	122.3	101.1

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	395.9	329.9	282.8	247.5	212.2	171.9	142.0
2-SPAN	LIVE	395.9	329.9	282.8	230.3	182.0	147.4	121.8
3-SPAN	LIVE	395.9	329.9	282.8	247.5	220.0	184.2	152.3
4-SPAN	LIVE	395.9	329.9	282.8	247.5	212.4	172.0	142.2

1. Allowable loads are based on uniform span lengths and Fy = 50 ksi.
2. LIVE LOAD is limited by bending, shear, combined shear & bending.
3. Above loads consider a maximum deflection ratio of L/180.
4. The weight of the panel has not been deducted from the allowable loads.
5. **THE ABOVE LOADS ARE NOT FOR USE WHEN DESIGNING PANELS TO RESIST WIND UPLIFT.**
6. Please contact MBCI or visit www.mbc.com for most current allowable wind uplift loads.
7. The use of any field seaming equipment or accessories including but not limited to clips, fasteners, and support plates (eave, back-up, rake, etc) other than those provided by the manufacturer may damage panels, void all warranties, and will void all engineering data.
8. This material is subject to change without notice. Please contact manufacturer for most current data.

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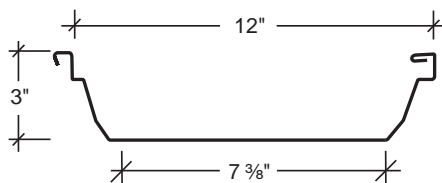
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ENGINEERING

Double-Lok® PANEL
 12" Coverage



SECTION PROPERTIES								
			NEGATIVE BENDING			POSITIVE BENDING		
PANEL GAUGE	Fy (KSI)	WEIGHT (PSF)	Ixe (IN.4/FT.)	Sxe (IN.3/FT.)	Maxo (KIP-IN.)	Ixe (IN.4/FT.)	Sxe (IN.3/FT.)	Maxo (KIP-IN.)
24	50	1.48	0.2590	0.1612	4.8271	0.4750	0.2290	6.8566
22	50	1.86	0.3594	0.2317	6.9371	0.6163	0.2979	8.9189

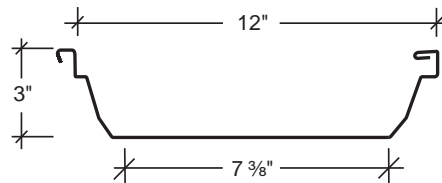
NOTES:

1. All calculations for the properties of *Double-Lok®* panels are calculated in accordance with the 2001 edition of the *North American Specification For Design Of Cold-Formed Steel Structural Members*.
2. Ixe is for deflection determination.
3. Sxe is for bending.
4. Maxo is allowable bending moment.
5. All values are for the one foot of panel width.

ENGINEERING

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Double-Lok® 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	408.0	340.0	291.4	255.0	225.7	182.8	151.1
2-SPAN	LIVE	408.0	340.0	262.7	201.1	158.9	128.7	106.4
3-SPAN	LIVE	408.0	340.0	291.4	251.4	198.6	160.9	133.0
4-SPAN	LIVE	408.0	340.0	291.4	234.7	185.5	150.2	124.2

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	593.9	494.9	424.2	371.2	293.6	237.8	196.6
2-SPAN	LIVE	593.9	494.9	377.5	289.0	228.4	185.0	152.9
3-SPAN	LIVE	593.9	494.9	424.2	361.3	285.5	231.2	191.1
4-SPAN	LIVE	593.9	494.9	424.2	337.4	266.6	215.9	178.4

NOTES:

1. Allowable loads are based on uniform span lengths and Fy = 50 ksi.
2. LIVE LOAD is limited by bending, shear, combined shear & bending.
3. Above loads consider a maximum deflection ratio of L/180.
4. The weight of the panel has not been deducted from the allowable loads.
5. **THE ABOVE LOADS ARE NOT FOR USE WHEN DESIGNING PANELS TO RESIST WIND UPLIFT.**
6. Please contact MBCI or visit www.mbc.com for most current allowable wind uplift loads.
7. The use of any field seaming equipment or accessories including but not limited to clips, fasteners, and support plates (eave, back-up, rake, etc) other than those provided by the manufacturer may damage panels, void all warranties, and will void all engineering data.
8. This material is subject to change without notice. Please contact manufacturer for most current data.

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SPECIFICATIONS

SECTION 07610

Metal Roofing

Specifier: Notation [#] means that text following is a specifier's note or sample.

PART 1 - GENERAL

1.01 DESCRIPTION

Specifier: Do not alter paragraph A. except by adding section title in brackets.

A. General:

1. Furnish all labor, material, tools, equipment and services for all preformed roofing as indicated, in accord with provisions of Contract Documents.
2. Completely coordinate with work of all other trades.
3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
4. See Division 1 for General Requirements.

B. Related work specified elsewhere:

1. Structural steel: Section 05100.
2. Steel joists: Section 05200 or 05400.
3. Flashing and sheet metal: Section 07600.

Specifier: Delete references to sections not used and add any references which become pertinent.

1.02 QUALITY ASSURANCE

A. Applicable standards:

1. SMACNA: "Architectural Sheet Metal Manual" Sheet Metal and Air Conditioning Contractors National Association, Inc.
2. AISC: "Steel Construction Manual" American Institute of Steel Construction.
3. AISI: "Cold Form Steel Design Manual," American Iron and Steel Institute.
4. ASTM A792-83-AZ50: Specifications for steel sheet, aluminum-zinc alloy coated (galvanized) by the hot dip process, general requirements (Galvalume®).
5. ASTM E 1514-93: "Standard Specification for Structural Standing Seam Steel Roof Panel Systems", American Society for Testing and Materials.
6. UL580: "Tests for Uplift Resistance of Roof Assemblies", Underwriters Laboratories, Inc.
7. UL2218: "Test Standard For Impact Resistance", Underwriters Laboratories, Inc.
8. ASTM E 1592-95: "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference", American Society for Testing and Materials.
9. ICBO: Evaluation Report No. ER-5409. ICBO Evaluation Service, Inc.

10. ASTM E 1680-95: "Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems", American Society for Testing and Materials.
11. ASTM E 1646-95: "Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference", American Society for Testing and Materials.

B. Manufacturer's qualifications:

1. Manufacturer has a minimum of three years experience in manufacturing metal roof systems of this nature. Panels specified in this section shall be produced in a factory environment (not job site roll formed) with fixed-base roll forming equipment assuring the highest level of quality control. A letter from the manufacturer certifying compliance will accompany the product material submittals.

C. Installation contractor's qualifications:

1. Installer of the system shall be an approved installer, certified by the manufacturer, before beginning of installation of the metal roof system, specifically for MBCI's **Double-Lok®** roof system and meet the following minimum criteria:
 - a. Maintain a \$250,000 general liability coverage for each loss.
 - b. Maintain sufficient worker's compensation coverage as mandated by law.
 - c. Has no viable claims pending regarding negligent acts or defective workmanship on previously performed or current projects.
 - d. Has not filed for protection from creditors under any state or federal insolvency or debtor relief statutes or codes.
 - e. Project foreman is the person having received specific training in the proper installation of the specified system and will be present to supervise whenever material is being installed. Specific training program shall include the following:
 1. The instructor must have a minimum of 10 years' experience.
 2. A formal curriculum.
 3. Classroom instruction with review and thorough understanding of the specific product's technical manual.
 4. Hands-on mock-up instruction with a review and thorough understanding of the specific product's details.
 5. The installer must pass a written and oral exam.
 - f. Provide five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installer.



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SPECIFICATIONS

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- g. Provide certification letter that installer has a minimum of three years' of metal product installation experience immediately preceding the date upon which work is to commence.

D. Pre-installation Conference:

1. Prior to installation of roofing system, conduct a pre-installation conference at the project site.
2. Attendance: Owner, Architect, Contractor, Project Superintendent, and Roof Applicator
3. Agenda:
 - a. Roofing details and agenda
 - b. Critical work sequencing and review of phasing plan
 - c. Inspection sequencing

1.03 SYSTEM PERFORMANCE REQUIREMENTS

A. Performance Testing:

1. Metal roof system must be tested in accordance with Underwriters Laboratories, Inc. (UL) Test Method 580 "Tests for Uplift Resistance of Roof Assemblies".
2. Metal roof system must be installed in accordance with UL Construction method [# choose one:
 - ☐ **180C** (min. 14 gauge purlin, 5'-0" on center max., min. 1" thick rigid insulation and 29 gauge ⁹/₁₆" deep deck with articulating clips at 5'-0" max.) or
 - ☐ **287** (min. 16 gauge purlin, 5'-0" on center max. with low/high articulating clips at 5'-0" on center max. with Light Transmitting Panels) or
 - ☐ **308A** min. 14 gauge purlin, 5'-0" on center max., min. 1" thick rigid insulation and 22 gauge 1¹/₂" deep metal deck with articulating clips at 5'-0" on center max.) or
 - ☐ **450** (min. 16 gauge purlin, 5'-0" on center max. with low/high floating/articulating clips with domed Light Transmitting Panels) or
 - ☐ **518** (min. 16 gauge purlin, 5'-0¹/₄" on center max. with low/high floating/articulating clips with Light Transmitting Panels) or
 - ☐ **519** (min. 22 gauge 1¹/₂" deck with max 6" rigid insulation with low/high floating/articulating clips 5'-0" on center max.) or
 - ☐ **520** (min. 29 gauge ⁹/₁₆" deck with max 6" rigid insulation with low/high floating/articulating clips 5'-0¹/₄" on center max with Light Transmitting Panels)] See the current UL Roofing Materials and Systems Directory for requirements of each Construction Method.
3. Metal roof system must be tested in accordance with ASTM E 1592-95 for negative loading when AISI specifications do not apply. Determine panel bending and clip-to-panel strength by testing in accordance with ASTM E 1592-95 procedures. Capacity for gauge, span or loading other than thodse tested may be determined by interpolating between test values only.

4. Metal roof system must have details, engineering calculations, computer printouts, and data examined by the ICBO Evaluation Service, Inc. and have been found to comply with the 1997 Uniform Building Code.
5. Metal roof system must qualify for a Class 4 rating when tested in accordance with Underwriters Laboratories, Inc. UL-2218 "Test Standard For Impact Resistance".
6. Metal roof system must meet the air infiltration requirements of ASTM E 1680-95 when tested with a 6.24 PSF pressure differential with resulting air infiltration of 0.0071 cfm/sq ft.
7. Metal roof system must meet the water penetration requirements of ASTM E 1646-95 when tested with a 12.00 PSF pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot of roof area.

Specifier: Select construction method for paragraph A.1. and applicable building code for paragraph A.2.

1.04 DESIGN REQUIREMENTS

A. Roof Design Loads:

1. Design criteria shall be in accordance with [# choose one: MBMA, SBBICI, UBC, BOCA, ASCE or an applicable national or local building code.]
2. Dead Loads
 - a. The dead load shall be the weight of the SSSMR system. Collateral loads, such as sprinklers, mechanical and electrical systems, and ceilings shall not be attached to the panels.
3. Live Loads
 - a. The panels and concealed anchor clips shall be capable of supporting a minimum uniform live load of -20 psf.
4. Roof Snow Loads
 - a. The design roof snow loads shall be as shown on the contract drawings.
5. Wind Loads
 - a. The design wind uplift for the roof system shall be as shown on the contract drawings. The design uplift force for each connection assembly shall be that pressure given for the area under consideration, multiplied by the tributary load area of the connection assembly. The safety factor listed below shall be applied to the design force and compared against the ultimate capacity. Prying shall be considered when calculating fastener design loads.
 - aa. Single fastener in each connection3.0
 - bb. Two or more fasteners in each connection ...2.25

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SPECIFICATIONS

6. Thermal Loads

- a. Roof panels shall be free to move in response to the expansion and contraction forces resulting from a total temperature range of ____ degrees F during the life of the structure. [#Choose temperature differential based on Max. and Min. for specific area IAW MBMA Climatological Data]

Specifier: Select applicable building code for paragraph A.1
Select Temperature differential for paragraph A.6.

B. Framing Members Supporting the SSSMR System

1. Any additions/revisions to framing members supporting the SSSMR system to accommodate the manufacturer/fabricator's design shall be submitted for review and approval. New or revised framing members and their connections shall be designed in accordance with [AISC] [AISI] [SJI] design specifications. Maximum deflection under applied live load, snow, or wind load shall not exceed [# choose one: L/180, L/240] of the span length.

1.05 SUBMITTALS

A. Shop drawings:

1. Submit complete shop drawings and erection details, approved by the metal roofing manufacturer, to the architect (owner) for review. Do not proceed with manufacture of roofing materials prior to review of shop drawings and field verification of all dimensions. Do not use drawings prepared by the architect (owner) for shop or erection drawings.
2. Shop drawings show methods of erection, elevations and plans of roof and wall panels, sections and details, anticipated loads, flashings, roof curbs, vents, sealants, interfaces with all materials not supplied and proposed identification of component parts and their finishes.

B. Performance Tests:

1. Submit certified test results by a recognized testing laboratory or manufacturer's lab (witnessed by a professional engineer) in accordance with specified test methods for each panel system.

C. Calculations:

1. Submit engineering calculations defining cladding loads for all roof areas based on specified building codes, allowable clip loads and required number of fasteners to secure the panel clips to the designated substructure.
2. Compute uplift loads on clip fasteners with full recognition of prying forces and eccentric clip loading.
3. Calculate holding strength of fasteners in accordance with submitted test data provided by Fastener Manufacturer based on length of embedment and properties of materials.

4. Submit drainage calculations for valley, gutter, and downspout designs for a rainfall intensity (inches per hour) of [# choose one: 5 year or 25 year recurrence] for a 5 minute duration. (See MBMA Low Rise Building Systems Design Manual Section A22 for Wind, Snow, Seismic, and Rain Data by County)
5. Submit thermal calculations and details of floating clip, flashing attachments, and accessories certifying the free movement in response to the expansion/contraction forces resulting from a total temperature differential of 110 degrees F.

D. Samples:

1. Submit samples and color chips for all proposed finishes.
 - a. Submit one 8 inch long sample of panel, including clips.
 - b. Submit two 3 inch x 5 inch color chip samples in color selected by the architect (owner).

E. Warranty(s):

Metal roof system manufacturer, upon final acceptance for project, furnish a warranty [#choose one:

1. Covering bare metal against rupture, structural failure and perforation due to normal atmospheric corrosion exposure for a period of 20 years.
2. Covering paint finish against cracking, checking, blistering, peeling, flaking, chipping, chalking and fading for a period of # choose one: twenty (20) years for roof panels (premium thermoset silicone polyester) or twenty (20) years for wall panels and twenty (20) years for roof panels (premium fluorocarbon coating produced with Kynar 500 or Hylar 5000 resin)].
3. Submit specimen copy of manufacturer's Weathertightness Warranty, including evidence of application for warranty and manufacturer's acceptance of the applicator and warranty conditions.

F. Test Reports:

1. Submit Test Reports showing that metal panels meet the air infiltration requirements of ASTM E 1680-95 when tested with a 6.24 PSF pressure differential with resulting air infiltration of 0.0071 cfm/sq ft.
2. Submit Test Reports showing that metal panels meet the water penetration requirements of ASTM E 1646-95 when tested with a 12.00 PSF pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot of roof area.

G. Metal roof system fabrication certification:

1. Submit a letter from the metal panel manufacturer certifying the **Double-Lok**[®] panels have been produced in a factory environment (not job site) with fixed-base roll forming equipment.

H. Installation contractor's qualifications:

1. Submit certificate from manufacturer certifying that installer of the metal roof system has met all of the criteria outlined in "1.02 C. Installer's



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qualifications" and is an authorized installer certified by the manufacturer within one year of the beginning of installation of the metal roof system.

2. Submit the formal syllabus for the classroom and hands-on training.
3. Submit five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installation contractor.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver metal roof system to job site properly packaged to provide protection against transportation damage.

B. Handling:

1. Exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.

C. Storage:

1. Store all material and accessories above ground on well skidded platforms. Store under waterproof covering. Provide proper ventilation of metal roof system to prevent condensation build-up between each panel or trim/flashing component.

1.07 WEATHERTIGHTNESS WARRANTY

- A. The Contractor shall provide to the Owner, a single source warranty signed by the roofing manufacturer of the Standing Seam Roof System as outlined below:
 1. For a period of [#choose one: twenty (20), fifteen (15), ten (10), or five (5)] years from the date of substantial completion, the roofing manufacturer WARRANTS to the Building Owner ("Owner"): that the roofing manufacturer's furnished roof panels, flashing, and related items used to fasten the roof panels and flashing to the roof structure ("Roof System") will not allow intrusion of water from the exterior of the roofing manufacturer's Roof System into the building envelope, when exposed to ordinary weather conditions and ordinary wear and usage. The Date of substantial completion is the date that is certified by the Architect, Owner, or Owner's Representative, when the roofing manufacturer's Roofing System is completed and accepted by or on behalf of the Owner.
 2. The roofing manufacturer shall have the SOLE AND EXCLUSIVE obligation for all warranty work commencing on the date of substantial completion and under all circumstances, terminates on the [# insert appropriate number of years] year anniversary of the date certified as Substantial Completion of the roofing manufacturer's Roof System. During the

period in which the roofing manufacturer has any warranty obligation, the roofing manufacturer shall take appropriate actions necessary to cause the non-performing portions of the Roof System to perform their proper functions.

B. Roofing Manufacturer's Liability

1. The total liability of the roofing manufacturer under this warranty is [# choose one: limited solely to two (2) times the cost of the roofing manufacturer's Roof System as invoiced to the roofing manufacturer's customer, or limited solely to four (4) times the cost of the roofing manufacturer's Roof System as invoiced to the roofing manufacturer's customer, or unlimited]. The roofing manufacturer shall have the right to charge to the liability account, all reasonable expenses (including, but not limited to, investigation expenses) incurred in satisfying the requirements of this warranty.

C. FIELD QUALITY CONTROL

1. During installation, provide for two on-site inspections of roof application by qualified technical representative of the manufacturer.
2. Upon completion of installation, provide final inspection by a technical representative of roofing manufacturer to confirm that roofing system has been installed in accordance with manufacturer's requirements.
3. At completion of project, submit manufacturer's quality report of field inspections, including final inspection punch list.

PART 2 - PRODUCTS

[# Double-Lok® structural standing seam metal roof system; minimum slope of 1/4:12]

2.01 MATERIALS

A. Metal roof system profile:

1. 3 inch high rib x [# choose one: 24 inch, 18 inch or 12 inch] wide panel.

B. Metal roof system style:

1. Trapezoidal rib, field seamed, standing seam, utilizing male and female rib configurations, with factory applied mastic in female rib.

C. Gauge: [# choose one]

1. 22 gauge (UL-90 rated - Underwriters Laboratories).
2. 24 gauge (UL-90 rated - Underwriters Laboratories).

D. Substrate:

1. Galvalume® steel sheet, minimum yield of 50,000 PSI.

E. Clip:

1. Two piece sliding clip providing thermal expansion or contraction (UL-90 rated - Underwriters Laboratories).

F. Texture: [# choose one]

1. Smooth.
2. Embossed (reduces oil canning effect).

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G. Finish: [# choose one]

1. Premium thermoset silicone polyester (20 year warranty).
2. Premium fluorocarbon coating produced with Kynar 500 or Hylar 5000 resin (20 year warranty).
3. Bare Galvalume Plus[®] (20 year warranty).

H. Color:

1. Selected from metal roof system manufacturer's standard offering.

I. Acceptable manufacturer:

1. MBCI - Houston, TX - (281) 445-8555.

Insert: Architect's (owner's) method of approval of "or equals".

J. **Other manufacturers desiring approval**, comply with Section 01630.

K. Acceptable Curb and Equipment Support units:

1. LM Curbs - Longview, TX.
2. Kentuckiana Curbs - Louisville, KY.

L. Prefabricated Roof Jacks:

1. Construction Fasteners - Wyomissing, PA.
2. ITW Buildex - Itasca, IL.

M. Rooftop Walkways:

1. Unistrut Corporation - Wayne, MI.

2.02 Miscellaneous Materials

A. Fasteners:

1. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be designed to withstand specified design loads.
 - a. Use long life fasteners for all exposed fastener applications.
 - b. Provide fasteners with a factory applied coating in a color to match metal roof system application.
 - c. Provide neoprene washers under heads of exposed fasteners.
 - d. Locate and space all exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.

B. Closures:

1. Metal roof system must be installed with die cast metal closures at all ridge and high eave transitions. These die cast metal closures must be installed with Tri-Bead tape sealant and fasteners that stitch the panel to a 16 gauge preformed backer plate to ensure a positive compression of the tape sealant. The use of a continuous angle butted to the panel ends to form a closure is not an acceptable installation method.

C. Accessories:

1. Provide all components required per the metal roof system manufacturer's approved shop drawings for a complete metal roof system to include panels, panel clips, trim/flashing, fascias, ridge, closures, sealants, fillers and any other required items.

- a. All outside closures will be fabricated from Galvalume Plus[®] sheet steel of the same gauge, finish and color as the panels.
- b. All tape seal is to be a pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with a release paper backing. Provide permanently elastic, non-sagging, non-toxic, non-staining tape seal approved by the metal roof system manufacturer.
- c. All joint sealant is to be a one-part elastomeric polyurethane sealant approved by the metal roof system manufacturer.

2.03 FABRICATION

- A. Standard panel length shall be no more than 55 feet long (for longer length availability, contact manufacturer).
- B. Fabricate trim, flashing and accessories to detailed profiles.
- C. Fabricate trim and flashing from same material as panel.

2.04 PREFABRICATED CURBS AND EQUIPMENT SUPPORTS

- A. General: Comply with loading and strength requirements as indicated where units support other work. Coordinate dimensions of curbs and supports with equipment supplier/manufacturer.
- B. Fabricate curbs of structural aluminum (Min. .080 in. thickness for mechanical gear up to 1000 lbs.; .125 in. thickness for mechanical gear between 1000 lbs.; use a two curb system per the manufacturer above 2000 lbs.), factory primed and prepared for painting with mitered and welded corner joints. Provide integral base plates and water diverter crickets. The upper flange of the curb must be a minimum of 15" above the water diverter. (This allows 12" of free area after the panel is lapped over the flange on the high side.). Curbs shall be designed to install under metal roof system on the high side and over the metal roof system on the low side.
- C. Minimum height of curb shall be 8" above finished metal roof system.
- D. Curbs shall be constructed to match slope of roof and provide a level top surface for mounting equipment.
- E. Curb flanges shall be constructed to match configuration of roof panels.
- F. Curb manufacturer will provide their own curb structural support system that can be installed between the purlins that will allow proper thermal movement of the curb with the roofing system.
- G. Submit roof curb manufacturer's shop drawings to metal roof system manufacturer for approval before fabrication of curbs.



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double-lok®

2.05 PREFABRICATED ROOF JACKS

- A. Pipe flashings shall be a one piece [# choose one: EPDM (ethylene propylene diene monomer) molded rubber boot having a serviceable temperature range of -60°F to 270°F (for standard applications) or neoprene molded rubber boot having a serviceable temperature range of -45°F to 250°F (for exposure to petrochemicals) or silicone molded rubber boot having a serviceable temperature range of -100°F to 450°F (for high temperature applications)] and shall be resistant to ozone and ultraviolet rays. Units shall have an aluminum flanged base ring. Do not install pipe flashings through any panel seams - install ONLY in the flat portion of the panel.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. **Examination:**
1. Inspect installed work of other trades and verify that such work is complete to a point where this work may continue.
 2. Verify that installation may be made in accordance with approved shop drawings and manufacturer's instructions. This specifically includes verifying that secondary structurals and/or decking are installed to meet UL and building code requirements. Coordinate with metal roof system manufacturer to insure that reduced clip spacings at eave, rake, ridge and corner areas are accommodated.
- B. **Discrepancies:**
1. In event of discrepancy, notify the architect (owner).
 2. Do not proceed with installation until discrepancies have been resolved.

3.02 INSTALLATION

- A. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
- B. Install metal roof system in accordance with manufacturer's instructions and shop drawings.
- C. Provide concealed anchors at all panel attachment locations.
- D. Install panels plumb, level and straight with seams and ribs parallel, conforming to design as indicated.

3.03 ROOF CURB INSTALLATION

- A. Comply with metal roof system manufacturer's approved shop drawings, instructions and recommendations for installation of roof curbs. Refer to metal roof system manufacturer's standard installation details. Anchor curbs securely in place with provisions for thermal and structural movement.

3.04 CLEANING, PROTECTION

- A. Dispose of excess materials and remove debris from site.
- B. Clean work in accordance with manufacturer's recommendations.
- C. Protect work against damage until final acceptance. Replace or repair to the satisfaction of the architect (owner), any work that becomes damaged prior to final acceptance.
- D. Touch up minor scratches and abrasions.
- E. Do not allow panels or trim to come into contact with dissimilar metals such as copper, lead, graphite or cast iron. Water run-off from these materials is also prohibited. This specifically includes condensate from roof top A/C units.

END OF SECTION

DISCLAIMER: *MBCI makes no warranty, express or implied, as to the merchantability or fitness for any particular purpose of any product manufactured by an optional manufacturer. If you choose to use a product manufactured by an optional manufacturer, as defined herein, you take the product as is and at your own risk.*

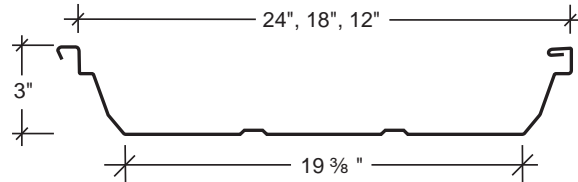
Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. MBCI reserves the right to discontinue products at any time or change specifications and/or designs without notice and without incurring obligation.

To insure you have the latest information available, please contact MBCI or visit our web site at <http://www.mbc.com>

double-lok®

GENERAL INFORMATION

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 (sliding)

Panel Substrate - Galvalume Plus® (standard)

Gauge - Standard: 24 Optional: 22

Finishes - Smooth or embossed with minor ribs

Coatings - Signature® 200, Signature® 300, Signature® 300 Metallic

PRODUCT SELECTION CHART

FINISH	Signature® 300		Signature® 300 Metallic		Signature® 200		Galvalume Plus®	
	24	22	24	22	24	22	24	22
PRODUCT	Ga.	Ga.	Ga.	Ga.	Ga.	Ga.	Ga.	Ga.
<i>Double-Lok®</i>								
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"/>

Signature® is a registered trademark of MBCI. Galvalume Plus® is a registered trademark of BIEC International

● - Available in any quantity.

☐ - Minimum quantity may be required.

Signature® 200 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 *Double-Lok®* roof system. Therefore, other bracing may be required to conform to A.I.S.C. or A.I.S.I. specifications.



Metal Roof and Wall Systems

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 Rome, NY 800-559-6224
 Salt Lake City, UT 800-874-2404
 San Antonio, TX 800-598-6224

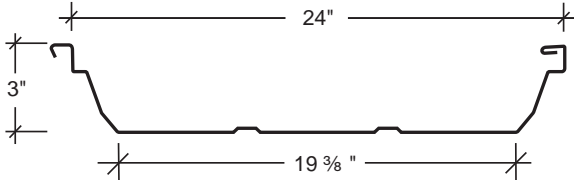
GENERAL INFORMATION

double-lok®

PRODUCT CHECKLIST

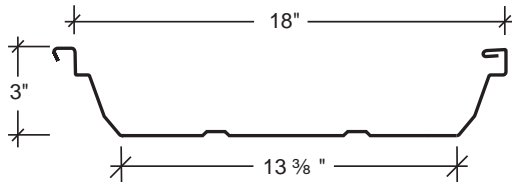
Double-Lok® 24" Panel

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



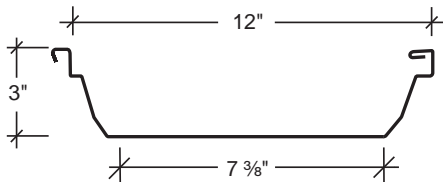
Double-Lok® 18" Panel

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

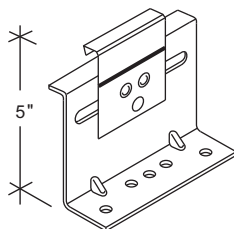


Double-Lok® 12" Panel

- Termination panel for odd footage buildings

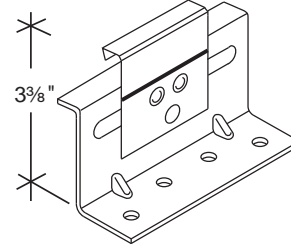


2" Standoff, Sliding Clip (Hi-Thermal)



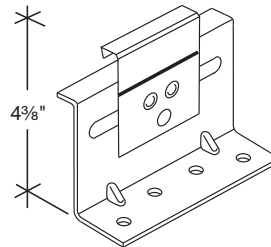
HW-2129 ☐

2" Sliding Clip, Low



HW-2122 ☐

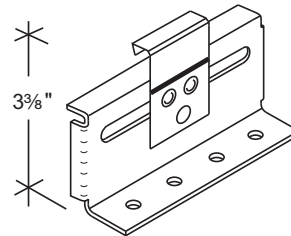
2" Sliding Clip, High



* 1 1/4" Travel in each direction

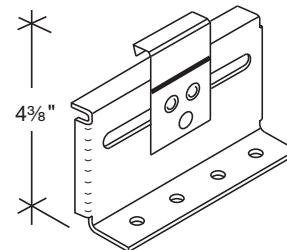
HW-2124 ☐

4" Sliding Clip, Low



HW-2126 ☐

4" Sliding Clip, High



* 2" Travel in each direction

HW-2128 ☐

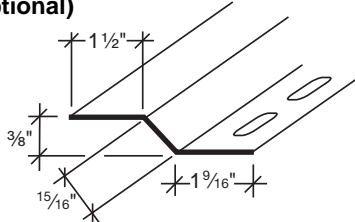
*Total clip movement should be calculated for each project based on the anticipated temperature differential of the area in which the project is located.

double-lok®

GENERAL INFORMATION

PRODUCT CHECKLIST

Eave Plate, Low (Optional)

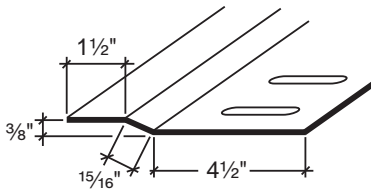


- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with low clips

HW-7600



Floating Eave Plate, Low

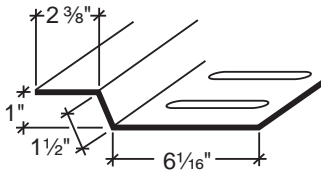


- 8'-0" length
- 14 gauge painted
- Use at eave when attaching panels to substructure at mid-point

HW-7617



4" Floating Eave Plate, High

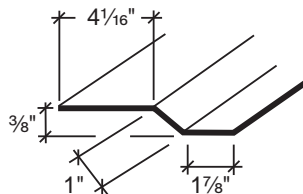


- 8'-0" length
- 14 gauge painted
- Use at eave when attaching panels to substructure at mid-point

HW-7629



Mid-Slope Fixed Plate, Low

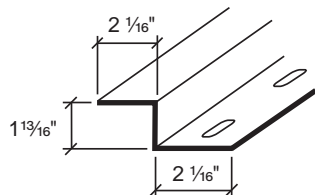


- 6'-0" length
- 14 gauge painted
- Use as mid-point endlap when attaching panels to substructure at mid-point

HW-7632



2" Standoff Eave Plate

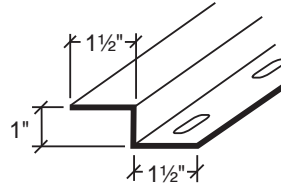


- 8'-0" length
- 14 gauge painted
- Use with Double-Lok® roof system only
- Use with 2" sliding Hi-Thermal clips only

HW-7661



Eave Plate, High

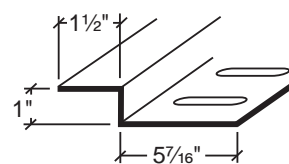


- 8'-0" length
- 14 gauge painted
- Factory slots
- For use with high clips

HW-7616



Floating Eave Plate, High

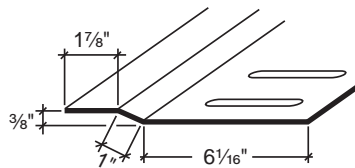


- 8'-0" length
- 14 gauge painted
- Use at eave when attaching panels to substructure at mid-point

HW-7618



4" Floating Eave Plate, Low

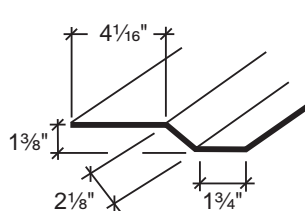


- 8'-0" length
- 14 gauge painted
- Use at eave when attaching panels to substructure at mid-point

HW-7628



Mid-Slope Fixed Plate, High

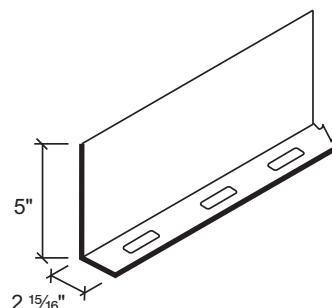


- 6'-0" length
- 14 gauge painted
- Use as mid-point endlap when attaching panels to substructure at mid-point

HW-7636



2" Standoff Rake Support



- 20'-0" length
- 14 gauge painted
- Use with Double-Lok® roof system only
- Use with 2" sliding Hi-Thermal clips only

HW-7664





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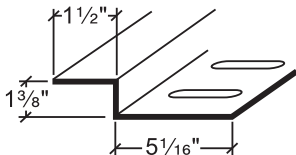
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GENERAL INFORMATION

double-lok®

PRODUCT CHECKLIST

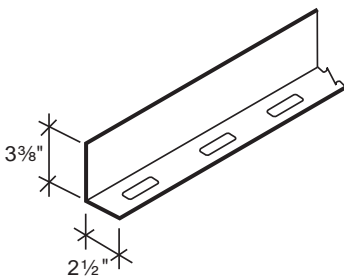
Floating Eave Plate, High



- 8'-0" length
- 14 gauge painted
- Use at high side of roof curb to provide floating support

HW-7655 ☐

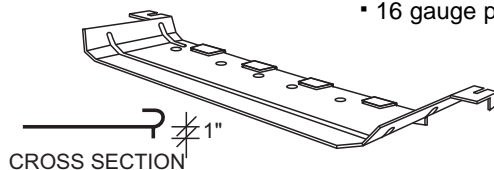
Rake Support, Low



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

HW-7710 ☐

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



- For use at endlaps and at the ridge
- Pre-punched*
- 16 gauge pre-painted

HW-7740 (24") ☐

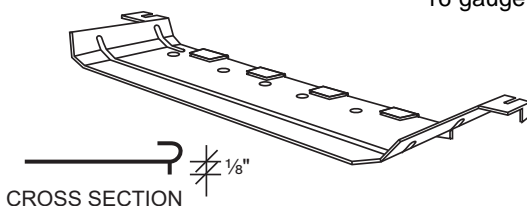
HW-7742 (18") ☐

HW-7744 (12") ☐

* 12" Back-up plate is not pre-punched.

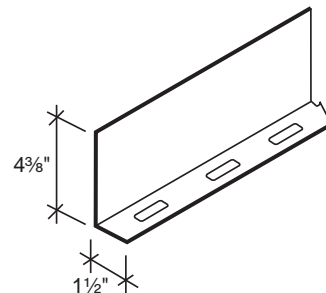
Back-up Plate - Modified (24")

- For use at endlaps and at the ridge with solid substrate
- Pre-punched
- 16 gauge pre-painted



HW-7760 ☐

Rake Support, High

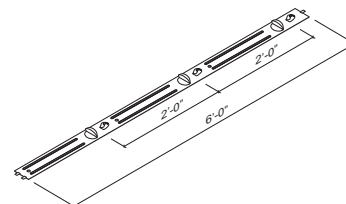


- 20'-0" length
- 14 gauge painted
- Factory slots
- For use with high clips

HW-7720 ☐

Ultra-Dek® AND Double-Lok® CLIP ALIGNMENT STRAP

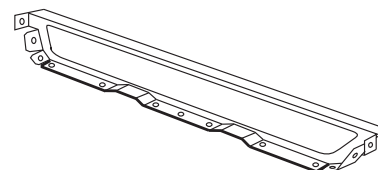
- Use with 24" panel widths only



HW-213 ☐

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

- For use at ridge, or high eave
- 24 gauge
- Painted to match roof color



HW-430 (24") ☐

HW-432 (18") ☐

HW-442 (12") ☐

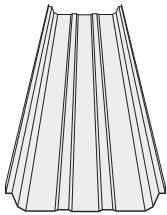
12" Closure has no minor ribs.

double-lok®

GENERAL INFORMATION

PRODUCT CHECKLIST

Light Transmitting Panel, UL 90 ‡
Double-Lok® (24" wide) Reinforced/UV Resistant Acrylit

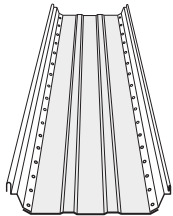


10'-3" LONG

Field Installed LTP Kit

Uninsulated - HW-1472 ☐
 Insulated - HW-1473 ☐

Light Transmitting Panel, UL 90 ‡
Double-Lok® (24" wide) Reinforced/UV Resistant Acrylit



10'-3" LONG

Riveted Rail LTP

Uninsulated - HW-1446D ☐
 Insulated - HW-1445D ☐

Tape Sealer

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



Tri-Bead

Tri-Bead
 $\frac{3}{16}$ " x $\frac{7}{8}$ " x 25'
 HW-504 ☐

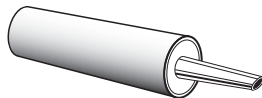
- Used at valleys and roof curbs



Triple Bead

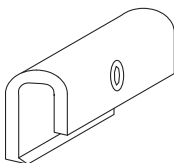
Triple Bead
 $\frac{3}{16}$ " x 2 $\frac{7}{8}$ " x 20'
 HW-502 ☐

Urethane Sealant



HW-540 White ☐
 HW-541 Gray ☐
 HW-542 Bronze ☐

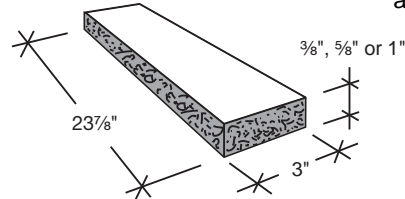
S-5!™ *Double-Lok®* Wind Clamp



- Use at clip locations to provide additional panel uplift capacity.
- **Clamp usage to be determined by a registered professional engineer.**

HW-568 ☐

Thermal Spacer



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

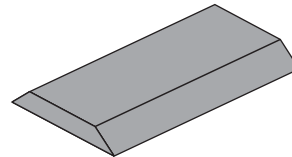
HW-575 (1") ☐
 HW-576 ($\frac{5}{8}$ ") ☐
 HW-577 ($\frac{3}{8}$ ") ☐

Also available for 18" panels

Tape Sealer - Minor Rib Pre-Cut Beveled

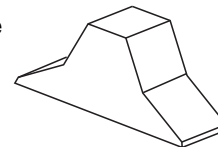
$\frac{7}{32}$ " x $1\frac{3}{8}$ " x 4"

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



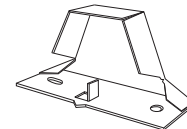
HW-512 ☐

Inside Closure



EPDM

- Special applications
- HW-428 ☐

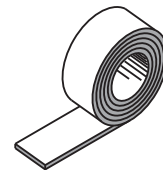


METAL

- 18 gauge Galvalume
- For use at eave

HW-426 ☐

Double Faced Tape



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

HW-522 ☐

‡ It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



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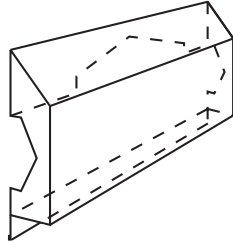
Phoenix, AZ 888-533-6224
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GENERAL INFORMATION

double-lok®

PRODUCT CHECKLIST

Floating Peak Box



FL-125* ☐

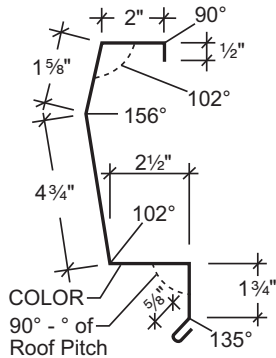
Note: For use with Ridge Flash FL-200, FL-202, FL-213, FL-214, FL-300, FL-540, or FL-541

FL-126* ☐

Note: For use with Ridge Flash FL-200, FL-202, FL-213, FL-214, FL-300, FL-540, or FL-541

*Includes cinch angles and flexible membrane.

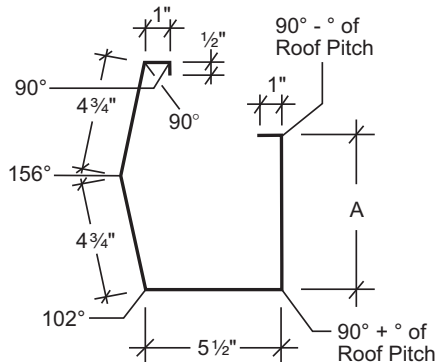
Sculptured Eave Trim



Specify Roof Pitch

(10'-2") FL-250 ☐

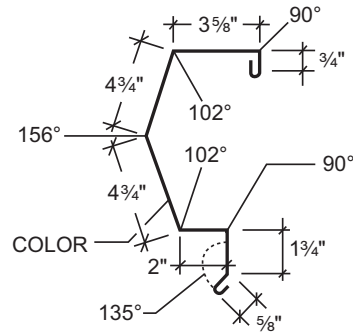
Gutter



Specify Roof Pitch

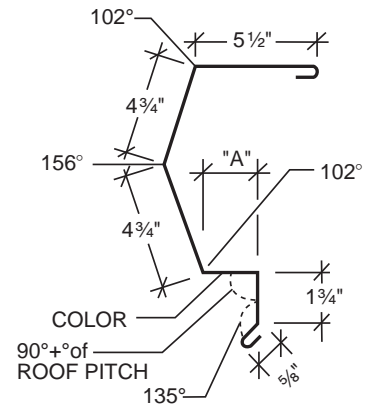
ROOF PITCH	DIM. A	PART NO
1/4-4:12	6 5/16"	FL-240A <input type="checkbox"/>
1/4-4:12	6 5/16"	FL-241A <input type="checkbox"/>
4 1/4-6:12	6 15/16"	FL-240B <input type="checkbox"/>
4 1/4-6:12	6 15/16"	FL-241B <input type="checkbox"/>

Rake Trim



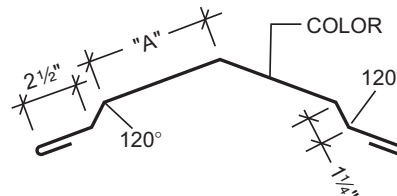
FL-110 ☐

High Side Eave Trim



ROOF PITCH	DIM. A	PART NO
1/4-1 3/4:12	2"	FL-265 <input type="checkbox"/>
2-4:12	3 1/16"	FL-265B <input type="checkbox"/>

Ridge Flashing



ROOF PITCH	DIM. A	NOTE	PART NO
1/4-2 1/2:12	6 1/2"	For use without ventilator	FL-213 <input type="checkbox"/>
2 9/16-4:12	7 1/2"	24" Peak purlin spacing	FL-214 <input type="checkbox"/>
1/4-2 1/2:12	10 1/4"	For use with 9" ventilator	FL-205 <input type="checkbox"/>
2 9/16-4:12	11"	32" Peak purlin spacing	FL-207 <input type="checkbox"/>

Specify Roof Pitch

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 San Antonio, TX 800-598-6224



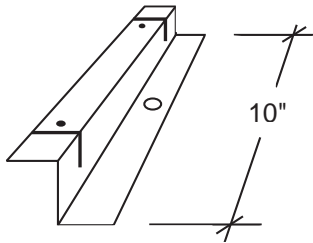
Metal Roof and Wall Systems

double-lok®

GENERAL INFORMATION

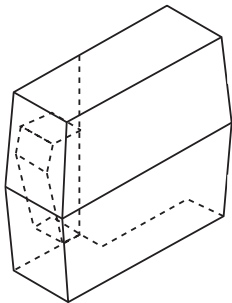
PRODUCT CHECKLIST

Gutter Strap



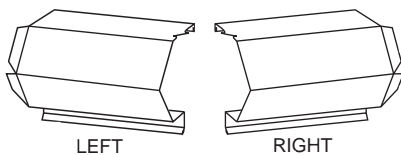
FL-246 ☐

Sculptured Eave Corner Box



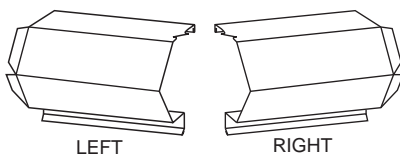
FL-132 ☐

Mitered Sculptured Rake
(Left or Right)



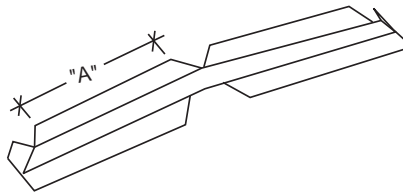
FL-110 ☐

Mitered Sculptured High Side Eave
(Right or Left)



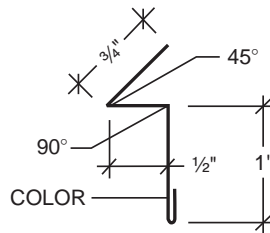
Specify Roof Pitch FL-265 ☐

Ridge End Cap



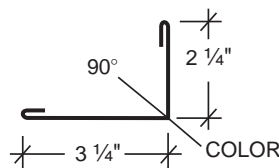
Specify Roof Pitch FL-204 ☐

Rake Slide



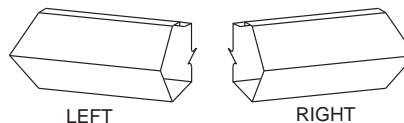
FL-115 ☐

Light Transmitting Panel Trim



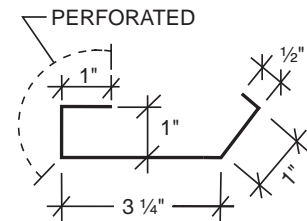
FL-568 ☐

Mitered Sculptured Gutter
(Right or Left)



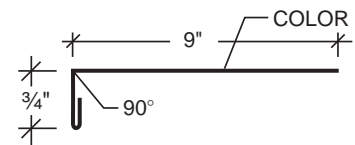
Specify Roof Pitch FL-240 ☐

Perforated Vent Drip



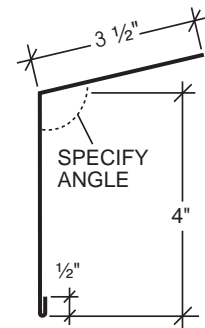
FL-254 ☐

Variable Termination



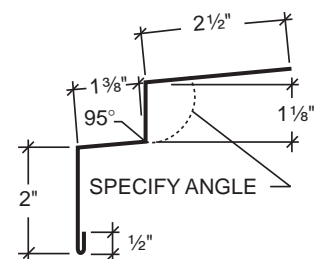
FL-117 ☐

Box Panel Cap Trim



FL-272 ☐

Offset Panel Cap Trim



Specify Roof Pitch FL-271 ☐



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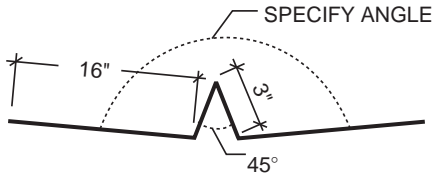
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GENERAL INFORMATION

double-lok®

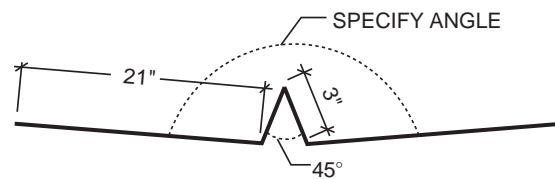
PRODUCT CHECKLIST

Standard Valley — Low and Utility Systems



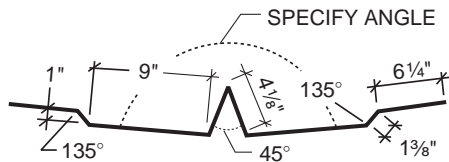
FL-700 ☐

Extended Valley — Low and Utility Systems



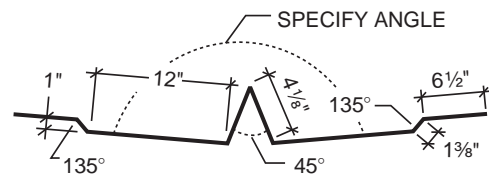
FL-708 ☐

Standard Valley — High System



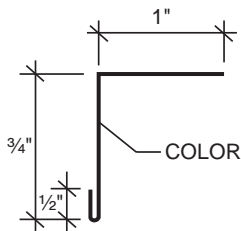
FL-712 ☐

Extended Valley — High System



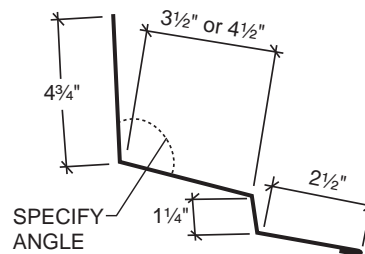
FL-714 ☐

Parapet Rake Cleat



FL-290 ☐

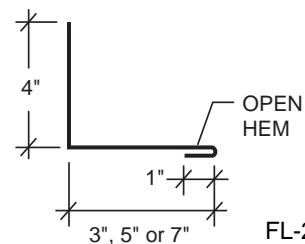
Parapet High Side Eave Flash



FL-274 (4 1/2") ☐

FL-275 (3 1/2") ☐

Parapet Rake Flash

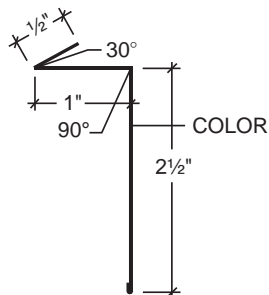


FL-285 (3") ☐

FL-286 (5") ☐

FL-287 (7") ☐

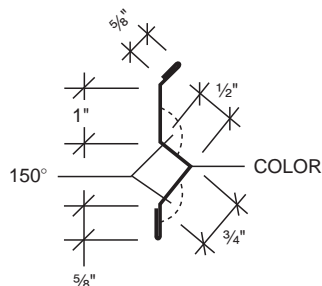
Counter Flash



24 Gauge Material

FL-341 ☐

Alternate Counter Flash



24 Gauge Material

FL-343 ☐

double-lok[®]

GENERAL INFORMATION

PRODUCT CHECKLIST

Fastener #1



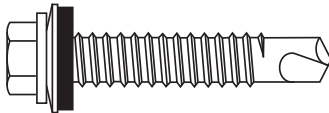
- Clip to purlin with up to 4" insulation thickness
- Eave plate to eave strut
- Inside closure to eave plate or eave strut
- Rake support to purlin (Fixed System Only)

1/4"-14x1" Driller
 5/16" Hex Washer Head with 5/8" O. D. washer



Fastener #1F

- Clip to purlin with over 4" insulation thickness

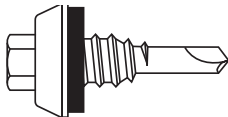


1/4"-14x1 1/2" Driller
 5/16" Hex Washer Head with 5/8" O.D. washer



Fastener #4

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

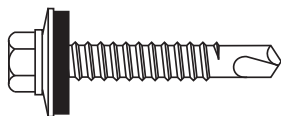


1/4"-14x7/8" Lap Tek Long Life Self Driller
 5/16" Hex Washer Head with sealing washer (Long life exterior fastener)



Fastener #6

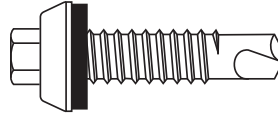
- Clip to joist
- Eave plate to beam
- Rake support to joist
- (Fixed System Only)



12-24x1 1/4" TEK 4.5
 5/16" Hex Washer Head with 5/8" O.D. washer



Fastener #1E

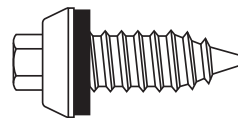


1/4"-14x1 1/4" Long Life Self Driller
 5/16" Hex Washer Head with sealing washer (Long life exterior fastener)



Fastener #2A

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

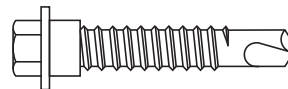


17x1" Type AB Long Life
 5/16" Hex Washer Head with sealing washer (Long life exterior fastener)



Fastener #5

- Rake support to purlin (Floating System Only)
- Floating eave plate to eave strut



1/4"-14x1 1/4" Shoulder Tek 2
 5/16" Hex Washer Head, no washer



Fastener #7

- Rake support to joist (Floating System Only)
- Floating eave plate to joist



1/4"-20x1 1/4" Shoulder Tek 4
 5/16" Hex Washer Head, no washer





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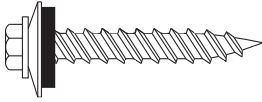
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GENERAL INFORMATION

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PRODUCT CHECKLIST

Fastener #8

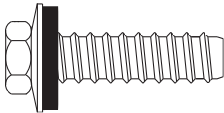


- Special application fastener
- For use on 2x4 lath and other solid wood deck (Not for use in plywood)

10x1 1/2" Woodgrip
1/4" Hex Washer Head with
1/2" O.D. washer



Fastener #10

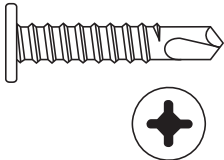


- Special application fastener
- For use on structural steel up to 1/2" thick
- Requires pre-drilled hole

1/4"-14x1" Type B
3/8" Hex Washer Head with
5/8" O.D. washer



Fastener #12A



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

12 x 1" Pancake Head Driller
#2 Quadrex Drive



Fastener #14A



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

1/8" x 3/8" Stainless Steel Pop Rivet



Fastener #226

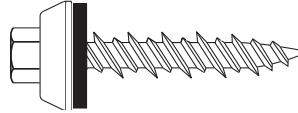


- Dekstrip to expansion ridge/expansion lap

3/16" x 9/16" Aluminum Closed End Rivet



Fastener #9

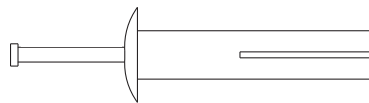


- Special application fastener
- For use on 2x4 lath and other solid wood deck (Not for use in plywood)

10-x1 1/2" Long Life Woodgrip
5/16" Hex Washer Head with
sealing washer
(Long life exterior fastener)



Fastener #11



- Special application fastener
- For use on masonry

1/4"x1 1/4" Nail Drive
Masonry Anchor



Fastener #14

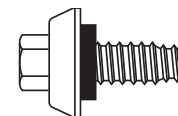


- Gutter strap to snow gutter

1/8" x 3/16" Stainless Steel Pop Rivet



Fastener #46



- Special Application Fastener
- Endlap over solid deck or rigid insulation

1/4" - 14 x 5/8" Long Life Type B
5/16" Hex Washer Head with Sealing Washer



Fastener #228



- Dekstrip to expansion ridge/expansion lap
- Used with Fastener #226

10 x 1/2" Aluminum Washer



double-lok®

GENERAL INFORMATION

PREPARATORY REQUIREMENTS

1. A single pitch eave strut must be used with the **Double-Lok®** 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 ($\frac{1}{4}$ " in 20' or $\frac{3}{8}$ " in 40' tolerance).
6. **Double-Lok®** 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. **Double-Lok®** 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 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 as the panels expand and contract. Oil canning is not a cause for rejection.
9. Peak purlin spacing - 24" (12" from the centerline of the building).
10. **If your roof is to be UL 90 rated, see special UL 90 requirements on page DL-4.**
11. Read recommended erection practices on pages DL-53 – DL-55 before proceeding with roof installation.
12. **MBCI 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. MBCI 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 MBCI.

CAUTION

Diaphragm capabilities and purlin stability are not provided by MBCI's **Double-Lok®** roof system. Therefore, other bracing may be required.

CAUTION

The minimum recommended slope for the roof system is $\frac{1}{4}$ on 12. A slope of less than $\frac{1}{4}$ 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. MBCI 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.



Metal Roof and Wall Systems

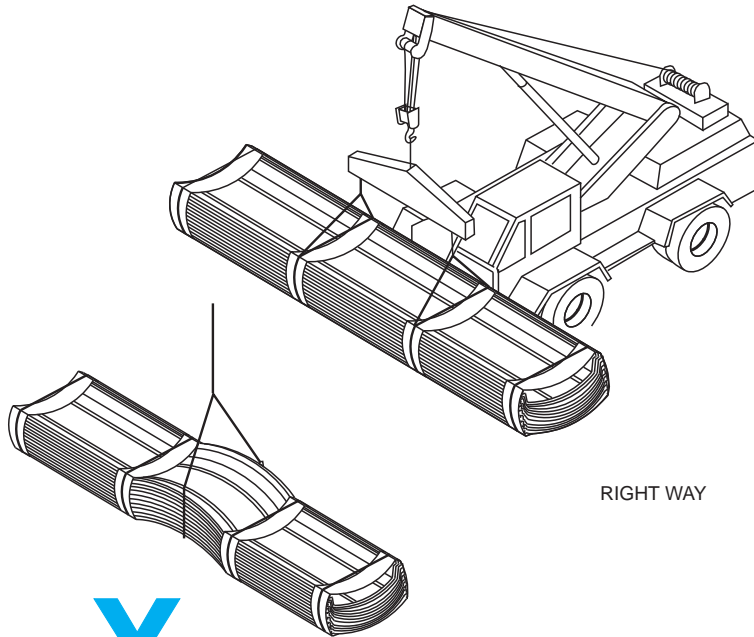
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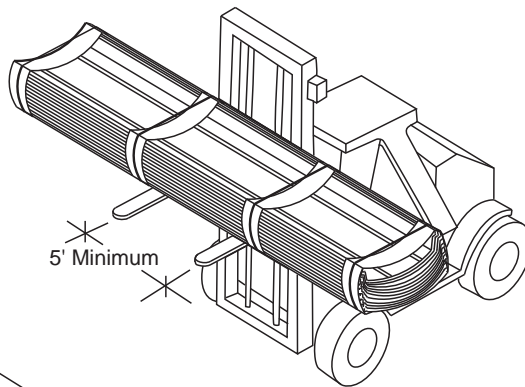
GENERAL INFORMATION

double-lok®



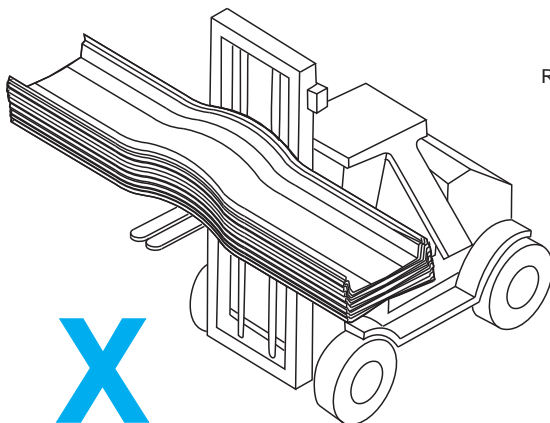
RIGHT WAY

X
WRONG WAY



5' Minimum

RIGHT WAY



X
WRONG WAY

UNLOADING

Upon receiving material, check shipment against shipping list for shortages and damages. MBCI will not be responsible for shortages or damages unless they are noted on the shipping list.

Each bundle should be lifted at its center of gravity. Where possible, bundles should remain banded until final placement on roof. If bundles must be opened, they should be retied before lifting.

When lifting bundles with a crane, a spreader bar and nylon straps should be used. **NEVER USE WIRE ROPE OR CHAIN SLINGS. THEY WILL DAMAGE THE PANELS.**

When lifting bundles with a forklift, forks must be a minimum of five feet apart. Do not transport open bundles. Drive slowly when crossing rough terrain to prevent panel buckling.

CAUTION

Improper unloading and handling of bundles and crates may cause bodily injury or material damage. The manufacturer is not responsible for bodily injuries or material damages during unloading and storage.

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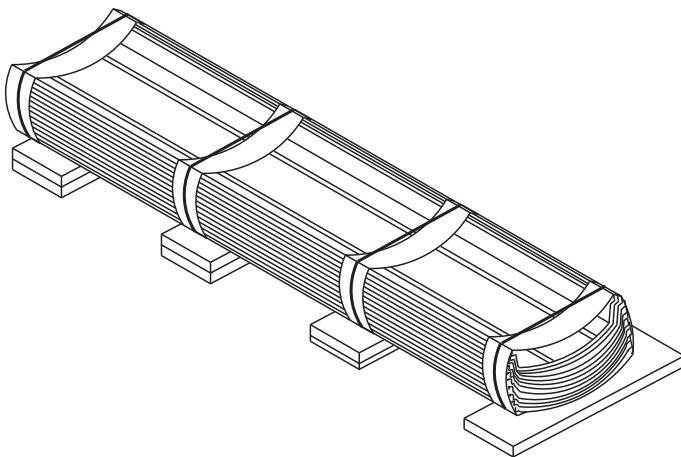
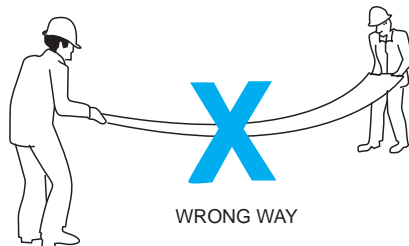
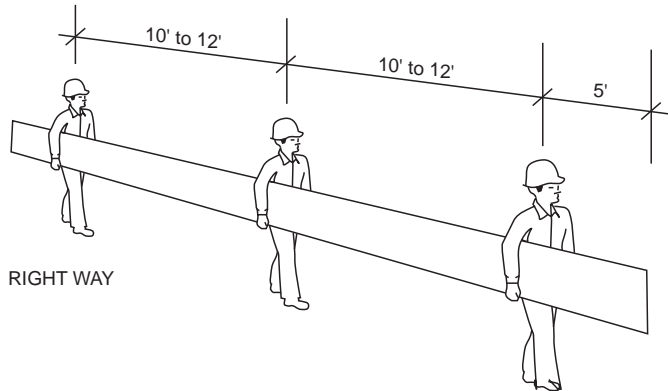
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Metal Roof and Wall Systems

double-lok®

GENERAL INFORMATION



HANDLING/ PANEL STORAGE

Standing on one side of the panel, lift it by the seam. If the panel is over 10' long, lift it with two or more people on one side of the panel to prevent buckling.

Do not pick panels up by the ends.

NOTE

Protective gloves should always be used while handling panels. OSHA safety regulations must be followed at all times.

Store bundled sheets off the ground sufficiently high to allow air circulation beneath bundle and to prevent rising water from entering bundle. Slightly elevate one end of bundle. Prevent rain from entering bundle by covering with tarpaulin, making provision for air circulation between draped edges of tarpaulin and the ground.

PROLONGED STORAGE OF SHEETS IN A BUNDLE IS NOT RECOMMENDED. If conditions do not permit immediate erection, extra care should be taken to protect sheets from white rust or water marks.

Check to see that moisture has not formed inside the bundles during shipment. If moisture is present, panels should be uncrated and wiped dry, then restacked and loosely covered so that air can circulate between the panels.

BAND ONLY

This method is used on all orders, unless otherwise specified by customer. The panels are banded together, causing them to curl up. This enhances the strength of the bundles. Panels banded in this manner may be handled by a forklift in lengths to 30'. The forklift should have at least 5' between forks. Lengths in excess of 30' must be lifted utilizing a spreader bar. Special care must be given during handling to avoid damage to the locking edges of the panels.



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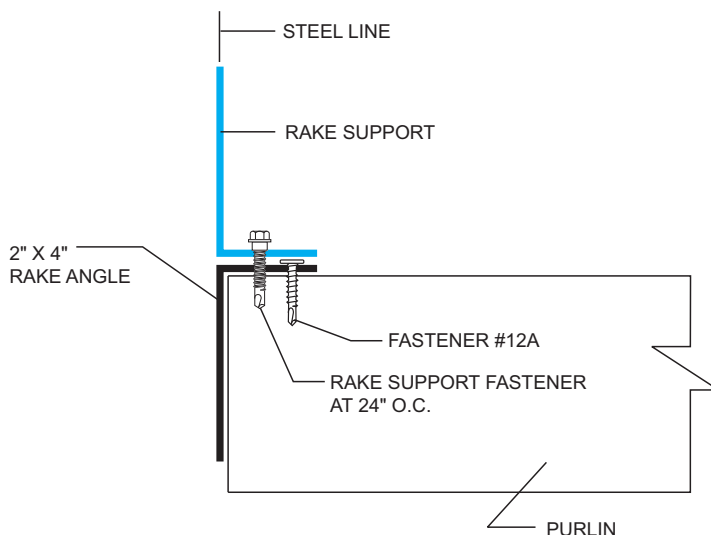
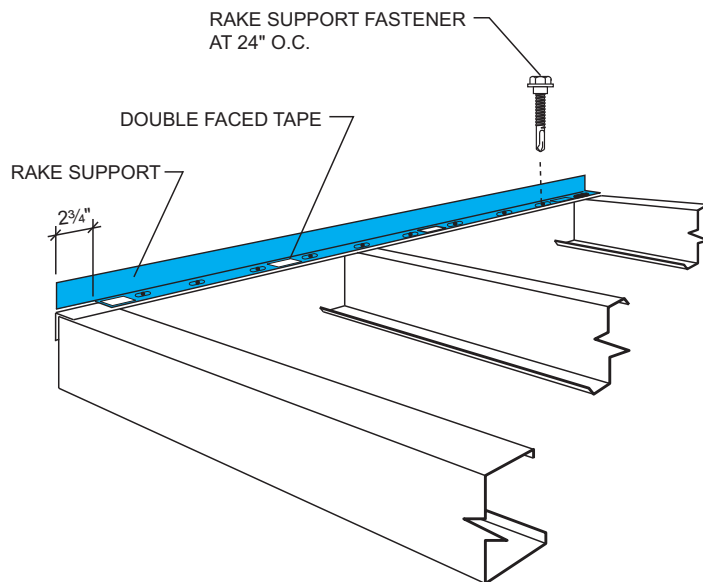
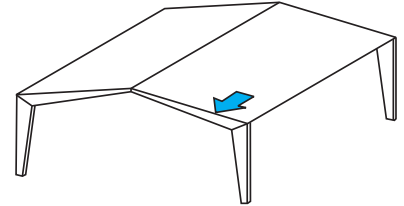
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ERECTION SEQUENCE

double-lok®

STEP
1



RAKE SUPPORT

Attach the rake support on top of the rake angle with the proper self-drilling fasteners on 2'-0" centers with a fastener in the first and last prepunched slot. The vertical leg is to be installed flush with the steel line. Center fasteners in slots.

FASTENER REQUIREMENTS

- **Floating System**
Purlins- Fastener #5
Joists- Fastener #7

IT IS IMPORTANT THAT THE RAKE SUPPORT IS INSTALLED STRAIGHT AND SQUARE WITH THE EAVE AS IT CONTROLS THE ALIGNMENT OF THE ROOF SYSTEM.

Install 6" long pieces of double faced tape on 3'-0" centers to the top of the horizontal leg of the rake support. This will help hold the insulation in place at the rake.

CAUTION

It is important that shoulder fasteners are installed through the **CENTER** of the slotted holes of the rake support to allow for expansion and contraction.

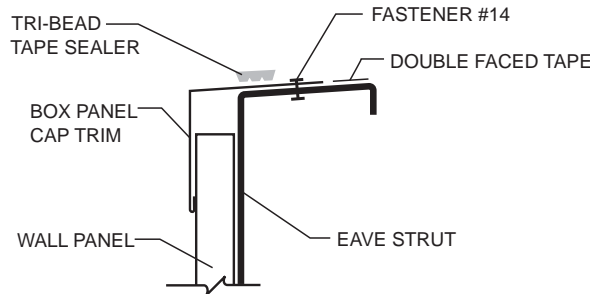
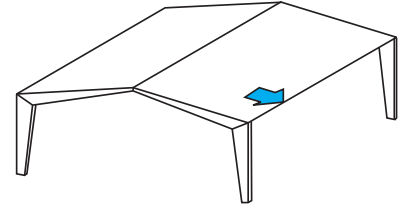
CAUTION!

ALL PRIMARY AND SECONDARY FRAMING SHOULD BE ERECTED, PLUMBED, AND BOLTS TIGHTENED PRIOR TO SHEETING.

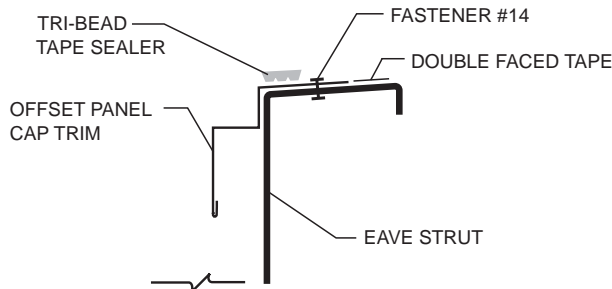
double-lok[®]

ERECTION SEQUENCE

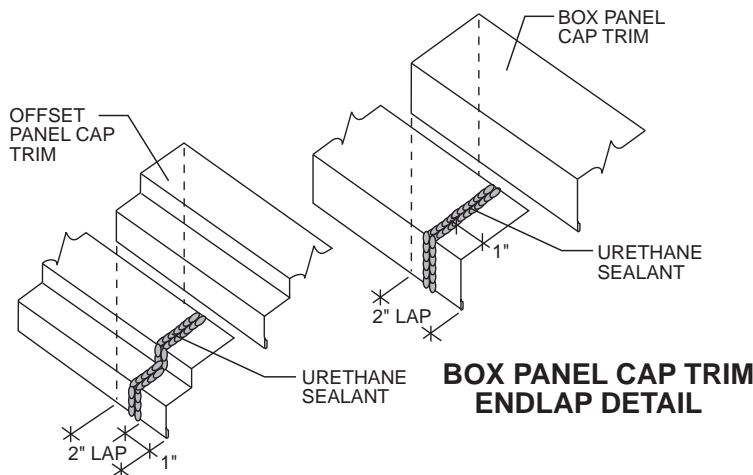
STEP 2



WALL PANEL INSTALLED BEFORE ROOF



WALL PANEL INSTALLED BEFORE OR AFTER ROOF



OFFSET PANEL CAP TRIM ENDLAP DETAIL

LOW SYSTEM EAVE

For applications in which the wall panels have already been erected, install box panel cap trim to the eave strut with Fastener #14. Trim must be pulled tight to wall panels before fastening to eave strut. Use two fasteners per 10' piece or 3 fasteners per 20' piece. **For applications in which the wall panels have not been erected, use offset panel cap trim.**

Lay Tri-bead tape sealer on top of the panel cap trim (box or offset).

Install double faced tape along the length of the top leg of the panel cap trim (box or offset). Double faced tape must be upslope from Tri-Bead tape sealer.

Lap box or offset panel cap trim 2". Apply two beads of urethane sealant between the trim pieces, approximately 1" from the end of the bottom piece.



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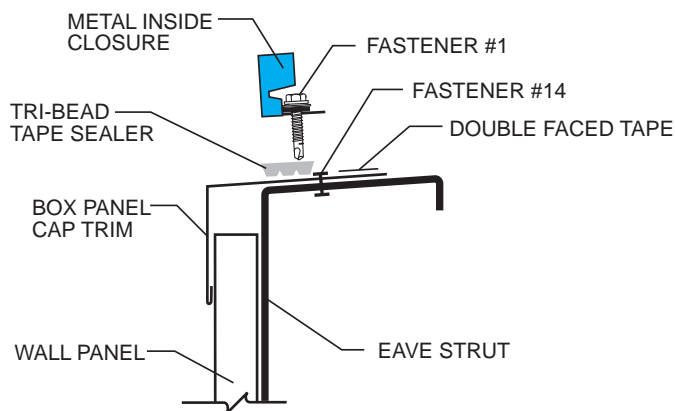
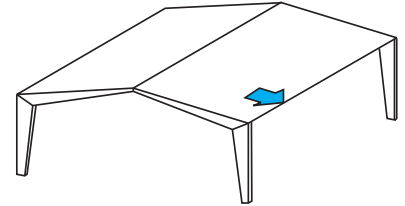
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ERECTION SEQUENCE

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STEP
2A



LOW SYSTEM EAVE/METAL INSIDE CLOSURE

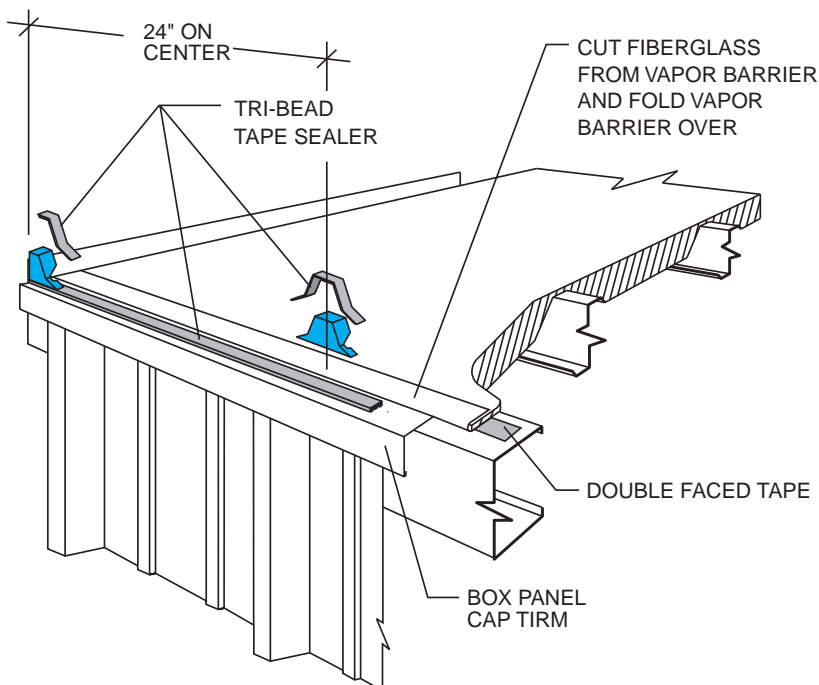
Using Fastener #1, attach the first inside closure to the eave strut, locating the face of the inside closure with the steel line. **Note that the first inside closure must be field cut in half to fill the void under the partial rib.**

Locate additional closures on 24" centers from the first closure to maintain panel module, attaching each with Fastener #1. Install two fasteners per closure. The first fastener should be installed through the slotted hole to allow for any adjustment that may be required. Place Tri-Bead tape sealer on the top and side of each closure to complete the seal at the eave. These may be pre-taped before installation. **To maintain panel module, metal inside closures must be installed on 24" centers. Measure from tab to tab located on the metal inside closure.**

Roll out insulation from eave to peak, laying the side of the insulation on top of the rake support. The first roll should be 3' wide. This will keep insulation sidelaps 1' from panel sidelaps. Allow approximately 4" of insulation to hang past the double faced tape (downslope) before sticking the insulation to the double faced tape. Cut and remove the fiberglass approximately 4" and fold the vapor barrier back over the insulation (upslope).

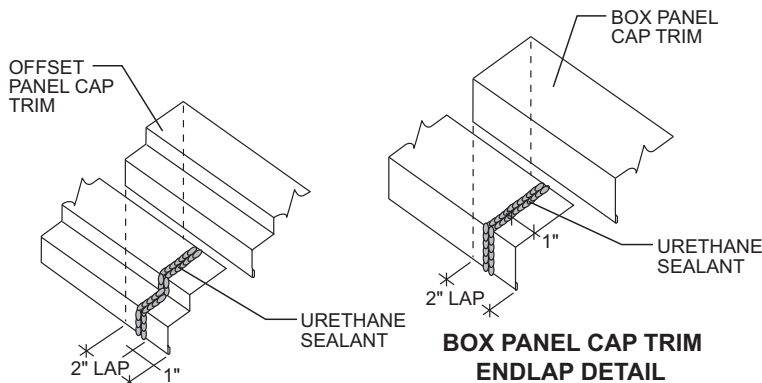
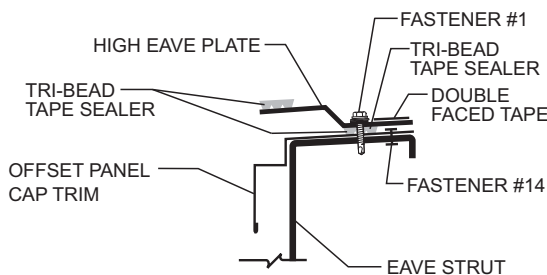
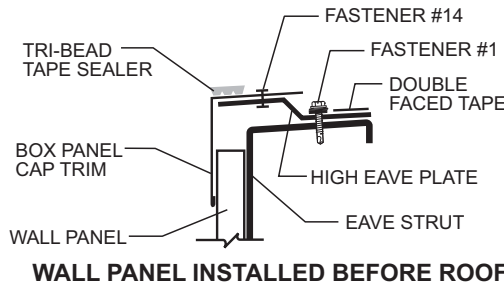
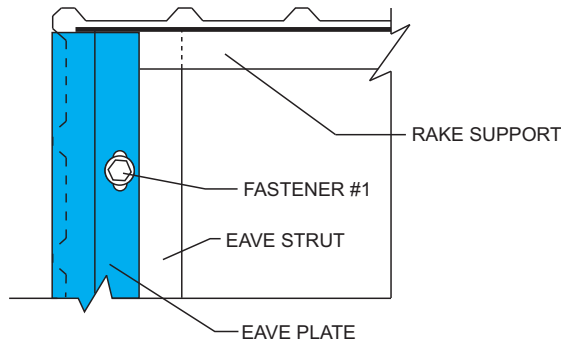
CAUTION:

The fiberglass insulation must not interfere with the Tri-Bead tape sealer which provides a positive seal at the eave.



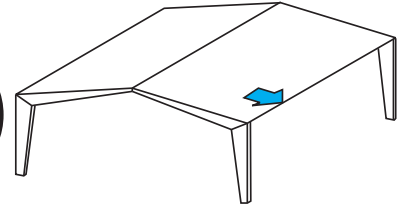
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ERECTION SEQUENCE



OFFSET PANEL CAP TRIM ENDLAP DETAIL

STEP 2B



HIGH SYSTEM EAVE WALL PANELS INSTALLED BEFORE ROOF

Install high eave plates flush with the outside of the high crowns of the wall panels. Install Fastener #1 in prepunched slot (1'-0" on center) of the eave plate. **The first eave plate will butt against the rake support.** You may install all of the eave plates at this time.

Install box panel cap trim to the top of the eave plates with Fastener #14. Use two fasteners per 10' piece and three fasteners per 20' piece. Trim must be pulled tight to wall panels before fastening to eave plates.

Lay Tri-Bead tape sealer across the top of the box panel cap trim, flush with the outside edge. Install double faced tape along the length of the top leg of the box panel cap trim. Double faced tape must be upslope from the Tri-Bead tape sealer.

WALL PANELS INSTALLED AFTER ROOF

Install offset panel cap trim to eave strut with Fastener #14. Use two fasteners per 10' piece and three fasteners per 20' piece.

Install high eave plates flush with the outside of the offset panel cap trim. Install Fastener # 1 in each prepunched slot (1'-0" on center) of the eave plate. **The first eave plate will butt against the rake support.** You may install all of the eave plates at this time.

Lay Tri-Bead tape sealer across the top of the eave plates, flush with the outside edge. Install double faced tape along the length of the bottom leg of the eave plate.

TRIM LAPS

Lap box or offset panel cap trim 2". Apply two beads of urethane sealant between the trim pieces, approximately 1" from the end of the bottom piece.



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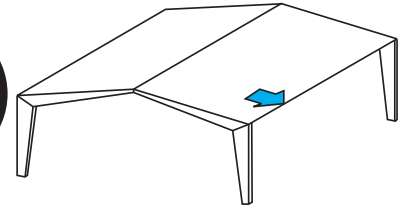
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ERECTION SEQUENCE

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STEP
2C



HIGH SYSTEM EAVE/METAL INSIDE CLOSURE

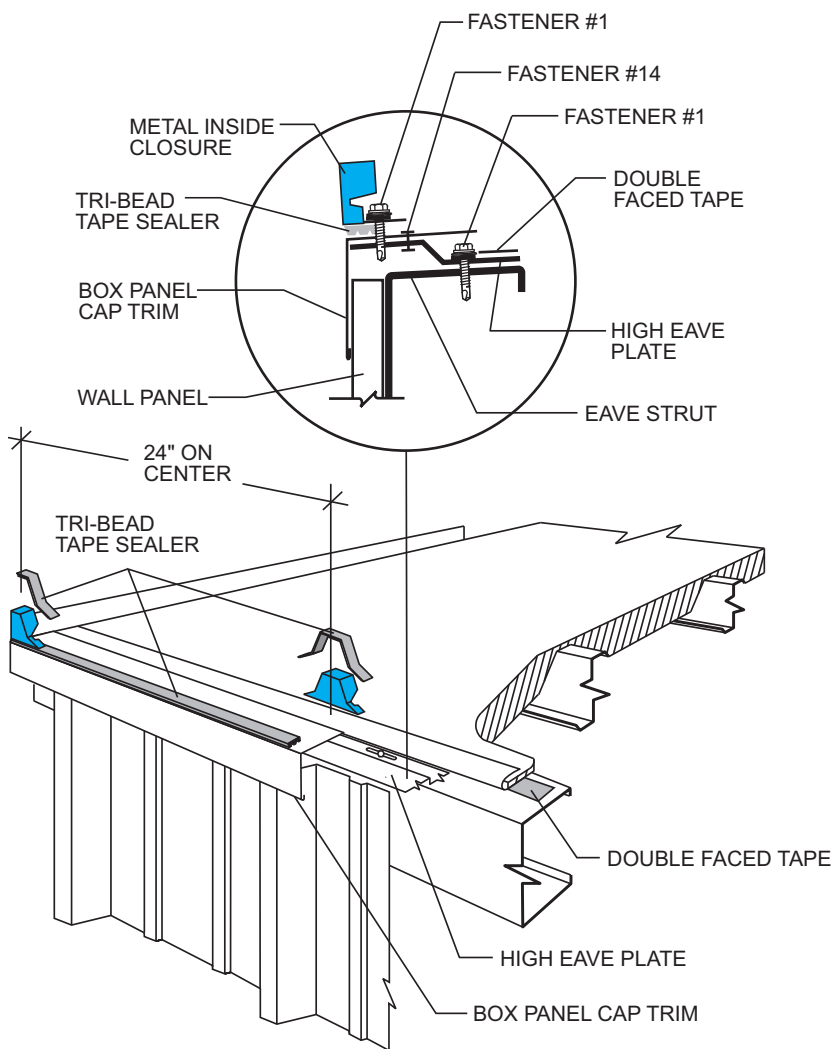
Using Fastener #1, attach the first inside closure to the eave plate, locating the face of the inside closure with the downslope edge of the eave plate. **NOTE THAT THE FIRST INSIDE CLOSURE MUST BE FIELD CUT IN HALF TO FILL THE VOID UNDER THE PARTIAL RIB.**

Locate additional closures on 24" centers from the first closure to maintain panel module, attaching each with Fastener #1. Install two fasteners per closure. The first fastener should be installed through the slotted hole to allow for any adjustment that may be required. Place Tri-Bead tape sealer on the top and side of each closure to complete the seal at the eave. These may be pre-taped before installation. **To maintain panel module, metal inside closures must be installed on 24" centers. Measure from tab to tab located on the metal inside closure.**

Roll out insulation from eave to peak, laying the side of the insulation on top of the rake support. The first roll should be 3' wide. This will keep insulation sidelaps 1' from panel sidelaps. Allow approximately 4" of insulation to hang past the double faced tape (downslope) before sticking the insulation to the double faced tape. Cut and remove the fiberglass approximately 4" and fold the vapor barrier back over the insulation (upslope).

CAUTION:

The fiberglass insulation must not interfere with the Tri-Bead tape sealer which provides a positive seal at the eave.



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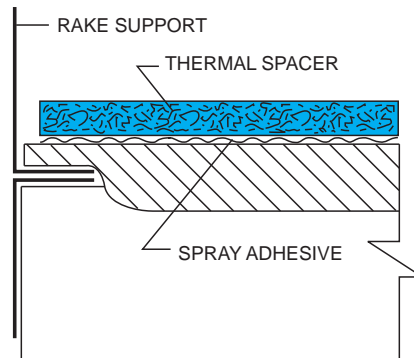
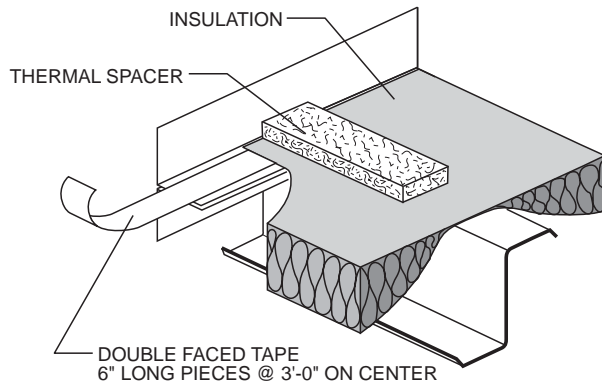
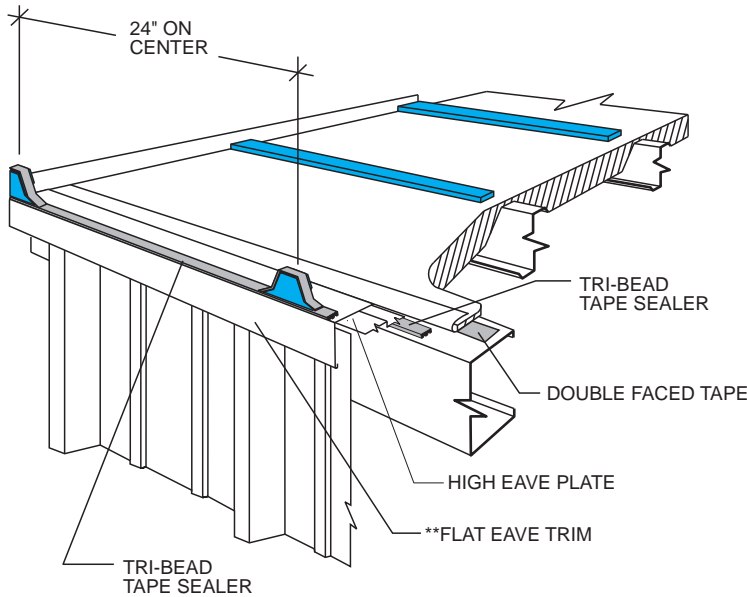
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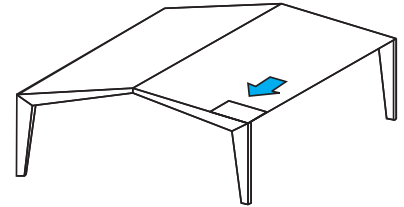
Metal Roof and Wall Systems

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ERECTION SEQUENCE



**STEP
3**



THERMAL SPACER (FOR HIGH SYSTEM ONLY)

Position the thermal spacer on top of the insulation over each purlin and against the rake support prior to installing the roof panel.

Using spray adhesive, (not by MBCI) adhere the thermal spacer to the insulation. The thermal spacer increases the insulation capacity along the purlins.



Metal Roof and Wall Systems

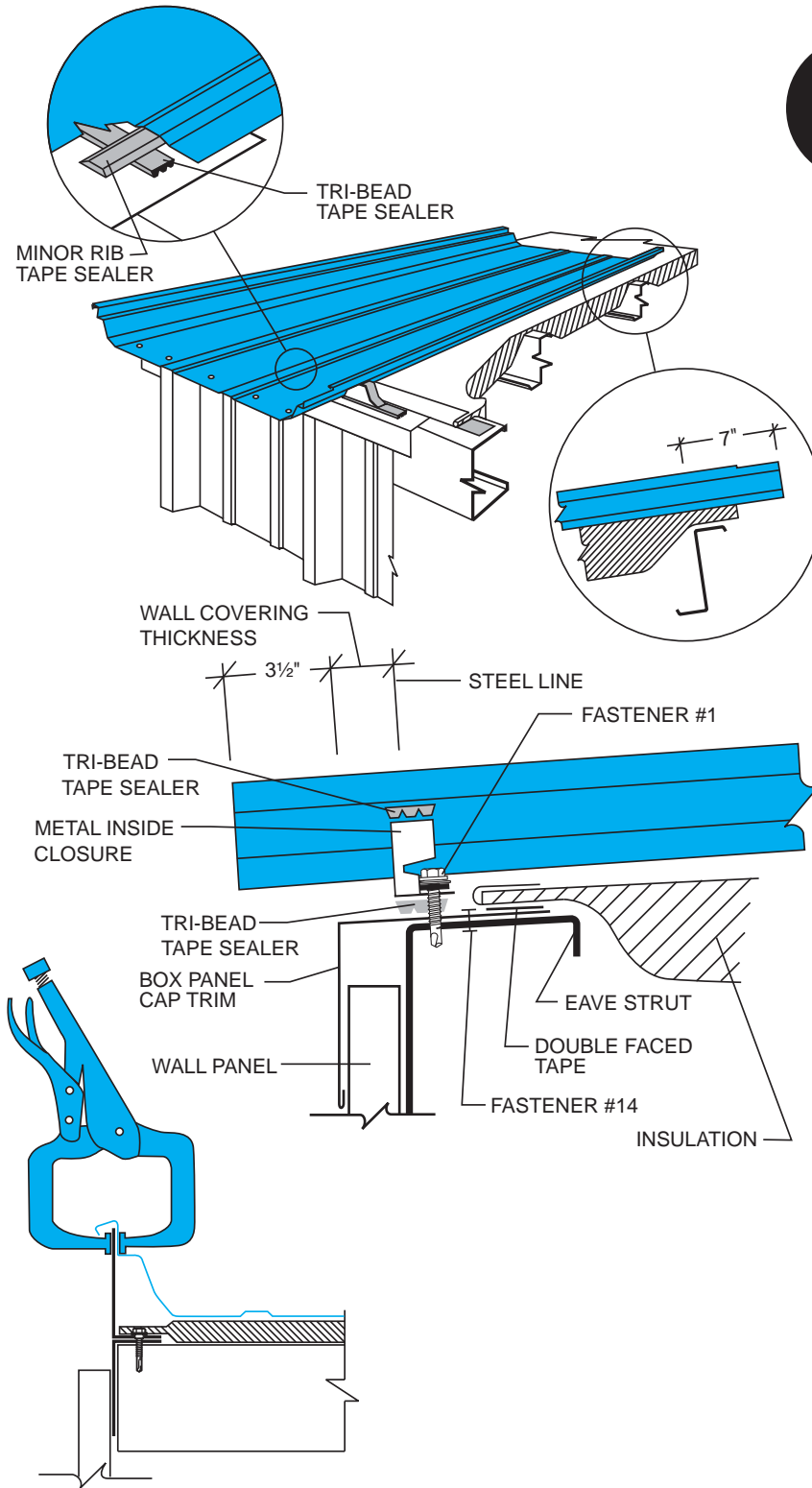
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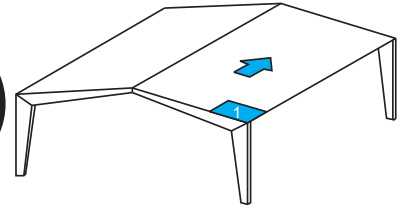
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ERECTION SEQUENCE

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STEP
4



FIRST PANEL

Apply minor rib tape sealer to the underside of the minor ribs of the panel. Position so that this tape sealer will cross the Tri-Bead tape sealer on the eave trim (for low system) or on the high eave plate (for high systems) when panel is installed.

Position the panel so that it overhangs the eave strut by the thickness of the wall covering plus 3½". The upper end of the panel must be 7" beyond the web of the purlin.

PREPUNCHED PANEL HOLES AT THE EAVE ARE INTENDED TO BE PART OF THE GUTTER OVERHANG AND WILL BE HIDDEN BY THE GUTTER. FOR A BUILDING WITH SCULPTURED EAVE TRIM, THE PREPUNCHED HOLES WILL BE USED TO ATTACH THE EAVE TRIM TO THE PANEL.

Lay the female lip of the panel over the rake support. To prevent wind damage, secure the female lip to the rake support with "C" clamps or temporary fasteners. Fasteners must go through rake support. The panel will not be fastened permanently to the rake support until the rake trim is installed.

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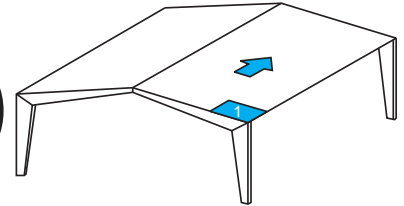


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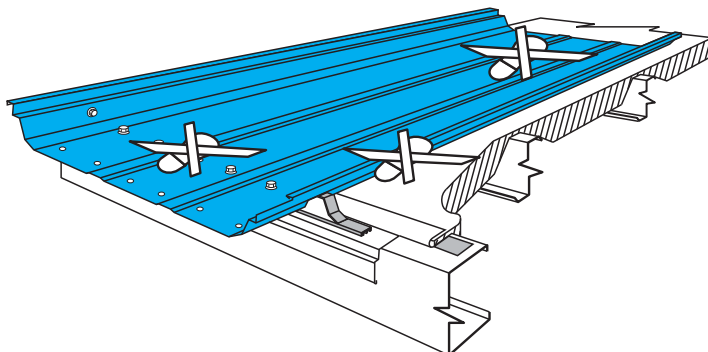
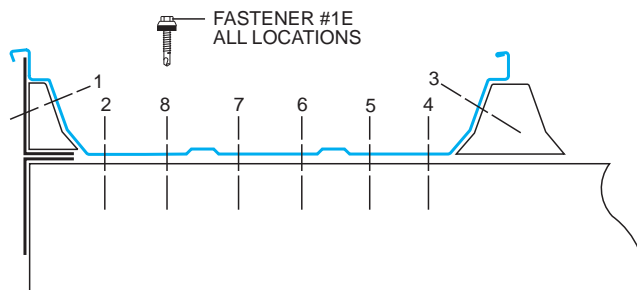
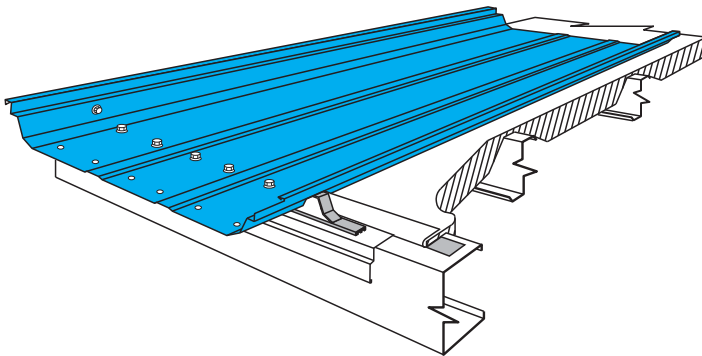
**STEP
4
CONT.**



FIRST PANEL

Attach the panel to the eave strut and metal inside closures with Fastener #1E. Eight fasteners are required at this location.

NOTE: IT IS ESSENTIAL THAT THE ERECTOR MAINTAIN A 24" MODULE AT THE EAVE, WITH THE PROPER INSTALLATION OF THE INSIDE CLOSURES AND BY INSTALLING FASTENERS IN THE PROPER SEQUENCE.



CAUTION

Do not, under any circumstance, step on the panel at the seam or at the panel ends until the adjacent side, end panels or eave fasteners are fully attached. The roof panel may not support the weight of a man at these locations and could affect panel module.

CAUTION

The roof should be swept clean of any drill shavings at the end of each day to prevent rust.



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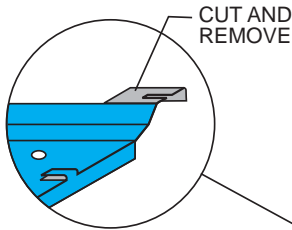
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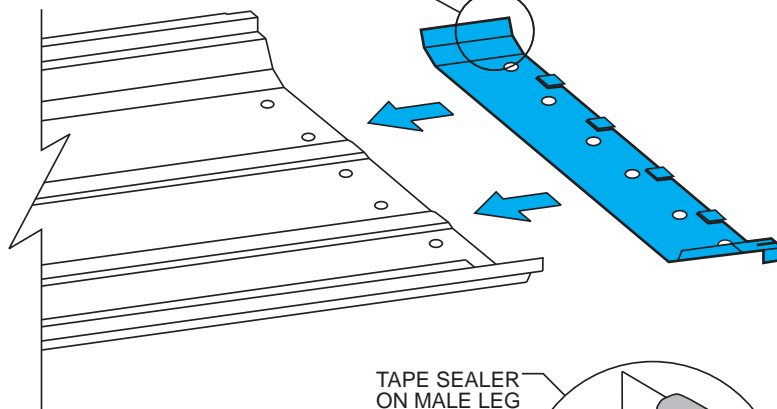
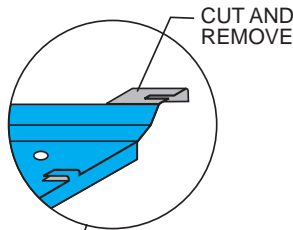
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FIELD MODIFY (FIRST RUN ONLY)

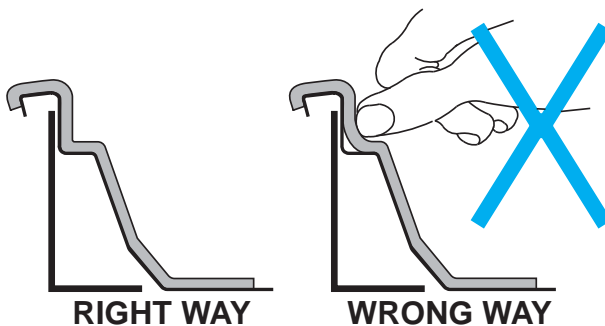
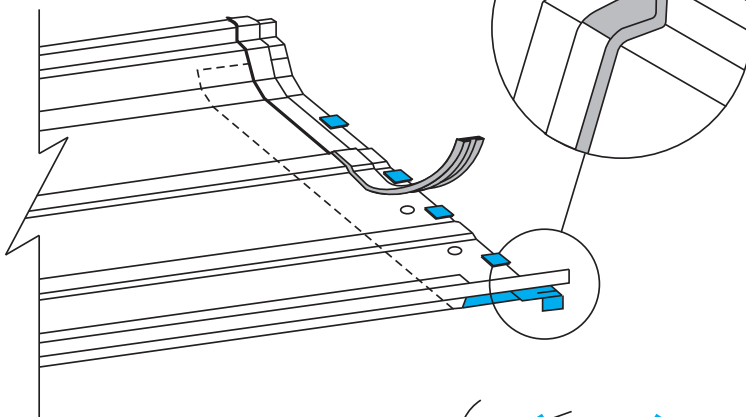
LOW SYSTEM



HIGH SYSTEM



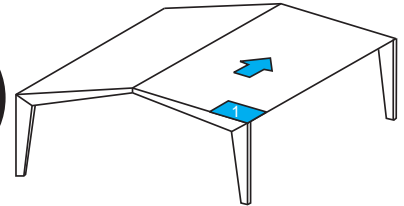
TAPE SEALER
ON MALE LEG



RIGHT WAY

WRONG WAY

**STEP
5**



BACK-UP PLATE

NOTE

All back-up plates on first panel run will require field modification to avoid fouling rake support.

Slide a back-up plate onto end of panel; make sure the teeth on top of the back-up plate are on top of the panel. Visually check to see that the holes in the panel align with the holes in the back-up plate.

Place Tri-Bead tape sealer over the entire width of the panel. It must be centered directly over the pre-punched holes, following the panel configuration.

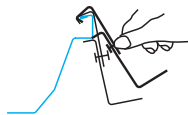
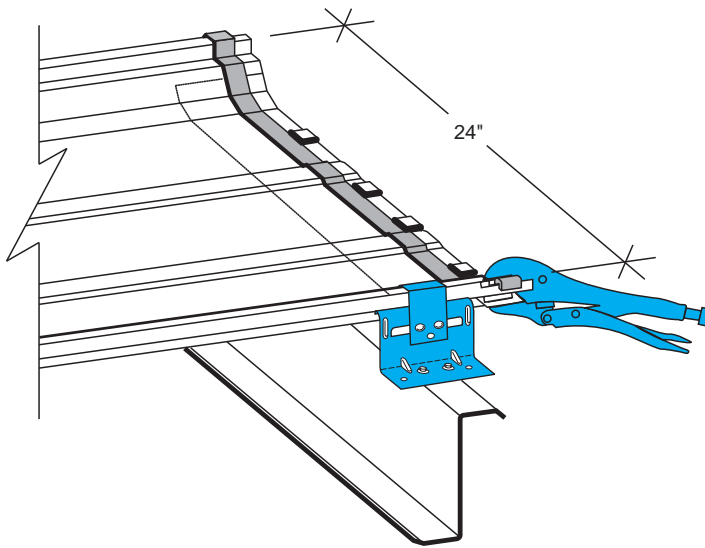
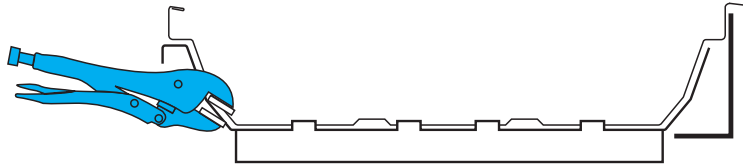
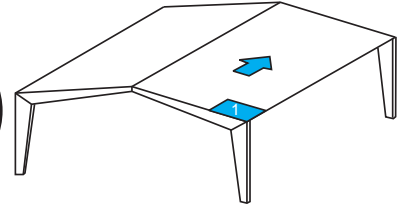
CAUTION

Forcing the tape sealer back into the corners will lessen the thickness of the tape sealer where it is needed most.

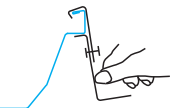
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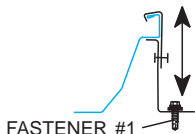
STEP 6



- Position the clip over the male leg of the panel as shown, and rotate clip downward.



- With the upper clip firmly seated, position the base firmly against the purlin flange.



- When properly positioned, the vertical legs of the upper and lower sections of the clip will be pointed upward, as shown.

CLIP INSTALLATION

Before installing the first clip, clamp the male side of the panel to the side of the back-up plate with a pair of Vise-Grip® locking pliers. This will help maintain panel module at the endlaps.

Install a clip on the male leg of the panel at the endlap. **This should be the first clip installed as it controls the 24" module for the remainder of the panel.** Remove Vise-Grip® locking pliers and install clips on all remaining purlins.

FASTENER REQUIREMENTS

Purlins- Fastener #1 or #1F
 Joists- Fastener #6
 (Two fasteners per clip)

CAUTION

For UL 90 Roofs, see Page DL-4.

CAUTION

The panel clip has factory applied mastic in the upper lip. This mastic is compressed when the clip is rotated in place. If, for some reason, a clip must be removed, a new clip must be used.

IMPORTANT

As each clip is installed, maintain a 24" panel module.



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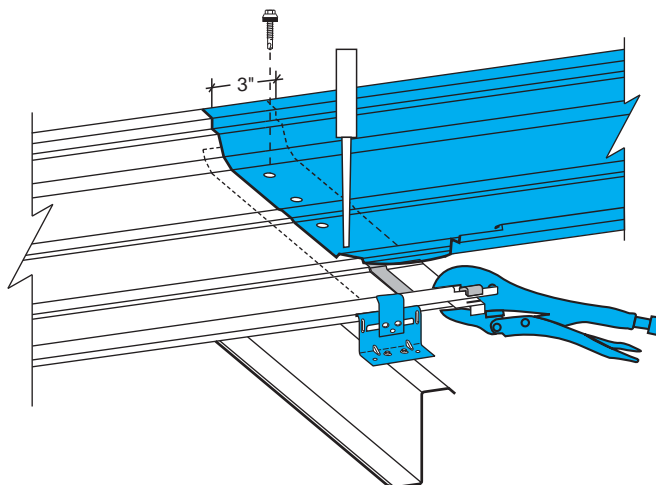
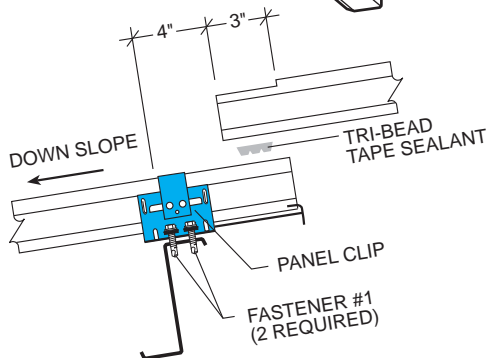
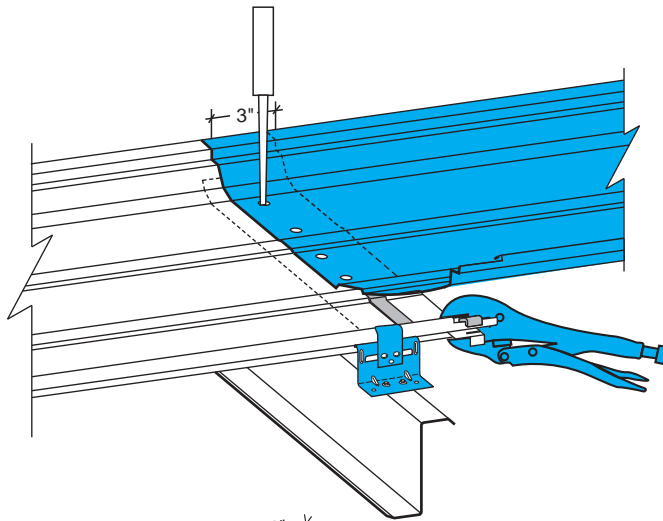
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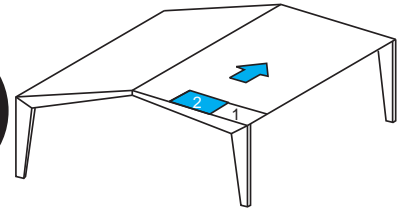
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STEP
7



ENDLAP

NOTE

Step 7 applies only where more than one panel is used in a single slope.

Position female lip of upper panel over rake support, while holding male side of panel up away from the tape sealer. Using an awl, align the hole nearest the female side of the top panel with the corresponding hole in the lower panel and the back-up plate.

Once this is accomplished, rotate the male side of the upper panel down to rest on the Vise-Grip® locking pliers.

Make sure the panel notches are aligned.

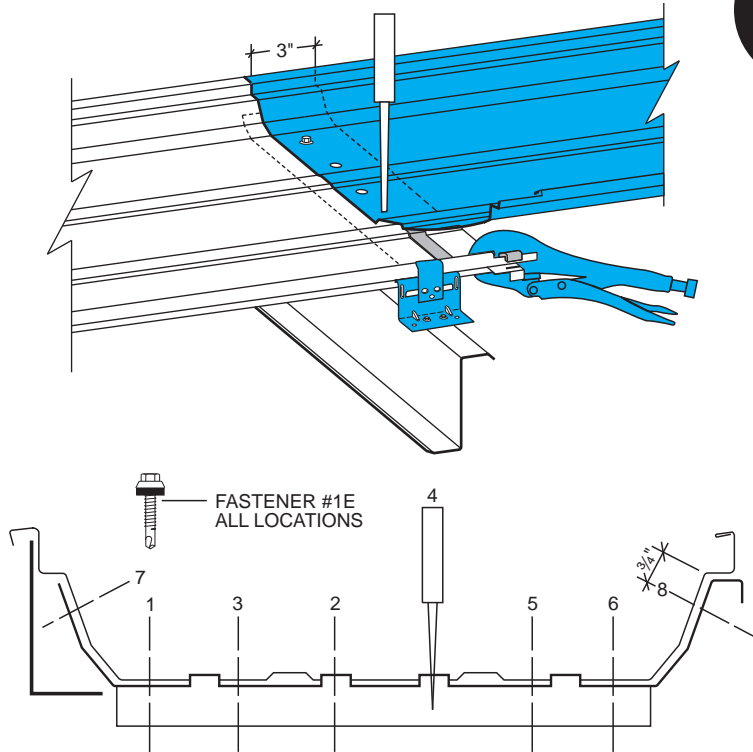
Remove awl and insert in the middle hole nearest the male leg. Install Fastener #1E in the hole by the female leg.

CAUTION

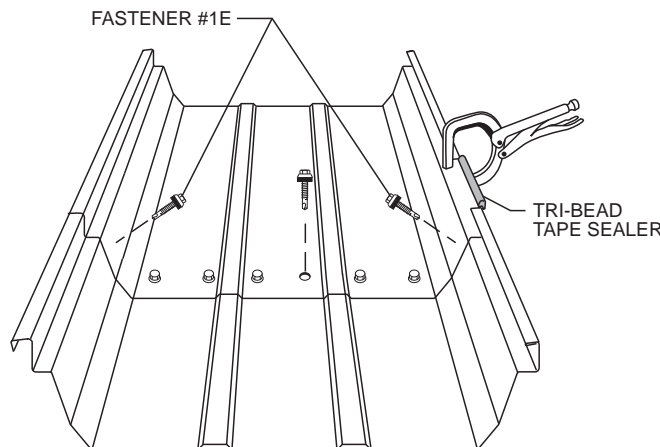
The roof should be swept clean of any drill shavings at the end of each day to prevent rust.

double-lok[®]

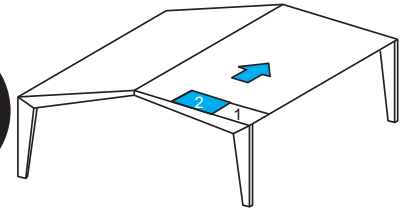
ERECTION SEQUENCE



FASTENER SEQUENCE
FIRST RUN - ENDLAP



STEP 8



ENDLAP

NOTE

Step 8 applies only where more than one panel is used in a single slope.

All holes in the upper and lower panels and the back-up plate should now be aligned with each other.

Install Fastener #1E in sequence 2, 3 and the hole left by the awl after it is removed (4). Next, remove the Vise-Grip[®] locking pliers and install Fastener #1E in positions 5, 6, 7 and 8.

To ensure that the male legs do not separate at the panel endlap, clamp the horizontal ledge with a "C" clamp until the endlap is fastened together. **Apply Tri-Bead tape sealer over the notched portion of these male legs.**

Repeat the endlap procedures as required for each panel until the ridge or high eave is reached.



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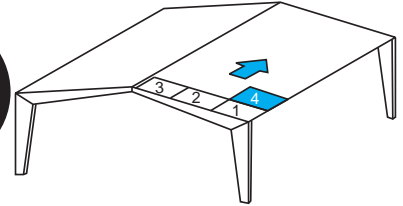
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ERECTION SEQUENCE

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STEP
9



RIDGE PANEL

NOTE

All back-up plates on first panel run will require field modification to avoid fouling rake support.

At the ridge, install a back-up plate as in Step 5. The back-up plate is necessary to maintain panel module.

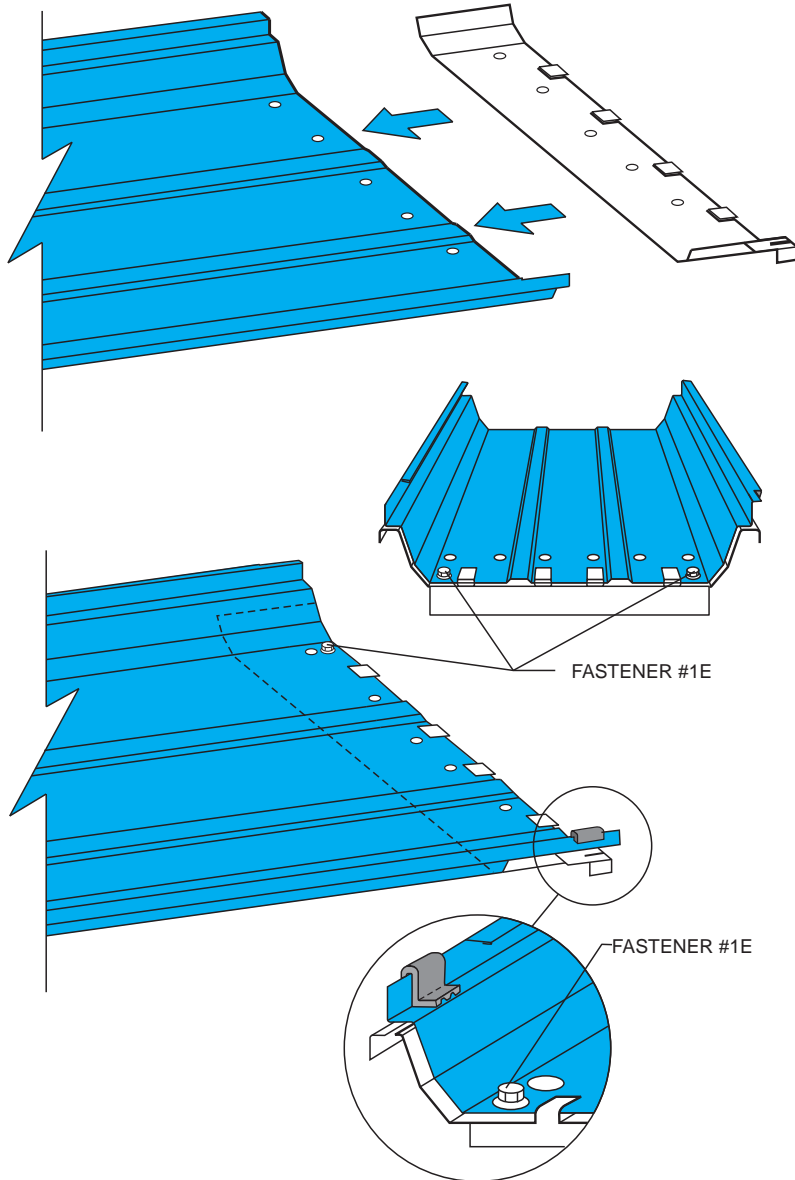
Install Fastener #1E upslope from the holes at each side of the panel. Fasteners should be at the edge of the panel. This will help maintain panel modularity at the ridge.

Install Tri-Bead tape sealer across the profile of the male leg at the ridge. This tape sealer will be centered 1½" from the end of the panel, which is also in alignment with the prepunched holes. **DO NOT INSTALL TAPE SEALER ACROSS PANEL AT RIDGE AT THIS TIME.**

Install clips on ridge panel as in Step 6.

CAUTION

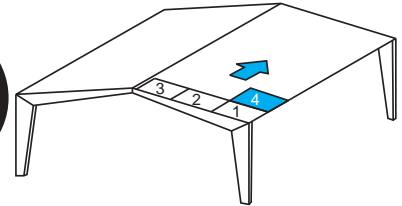
Installing the tape sealer to the male leg at the ridge is important. Without it, water could be driven behind the outside closure by a strong wind.



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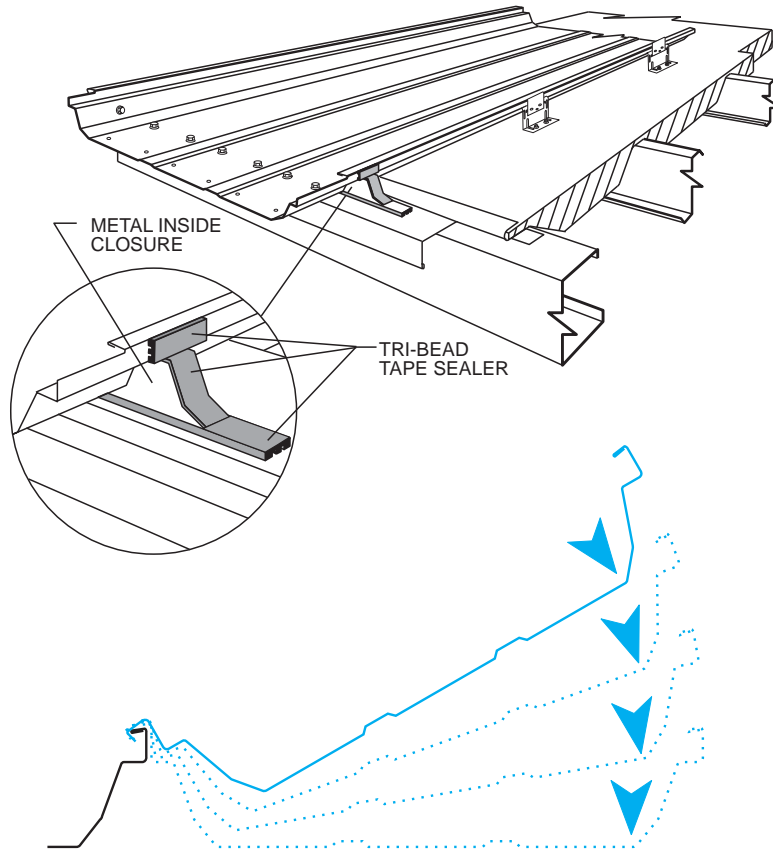
ERECTION SEQUENCE

STEP 10

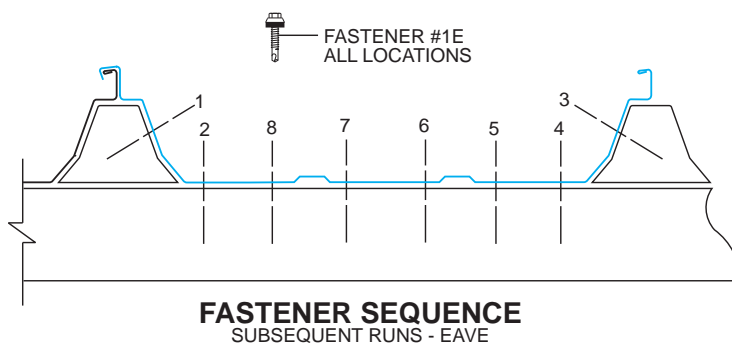


SUBSEQUENT RUNS EAVE

Apply tape sealer to the male leg of the first panel run directly over the inside closure. This will prevent water infiltration through the end of the seam. Install the next run of insulation and another inside closure using Fastener #1. The second run of roof is now ready to install.



Holding the male side of the next panel up, lay the female lip on top of the male leg of the adjacent panel and align it flush at the eave. Rotate the panel down, visually checking that the female lip is engaged onto the male leg of the adjacent panel along its entire length. **IF THE PANEL MUST BE RAISED FOR FURTHER ALIGNMENT, CARE SHOULD BE TAKEN TO AVOID PULLING THE FACTORY APPLIED MASTIC FROM THE FEMALE LIP.**



Install Fastener #1E at eave in the recommended sequence. Eight fasteners are required at this location.

CAUTION

Do not walk on the minor ribs.

CAUTION

The roof should be swept clean of any drill shavings at the end of each day to prevent rust.



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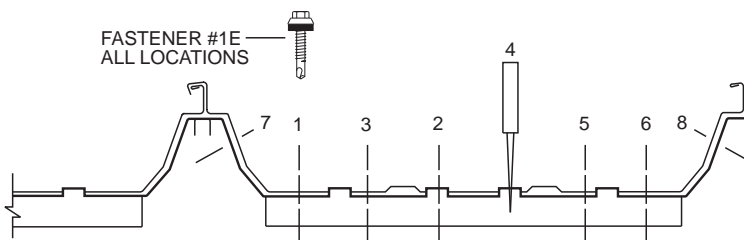
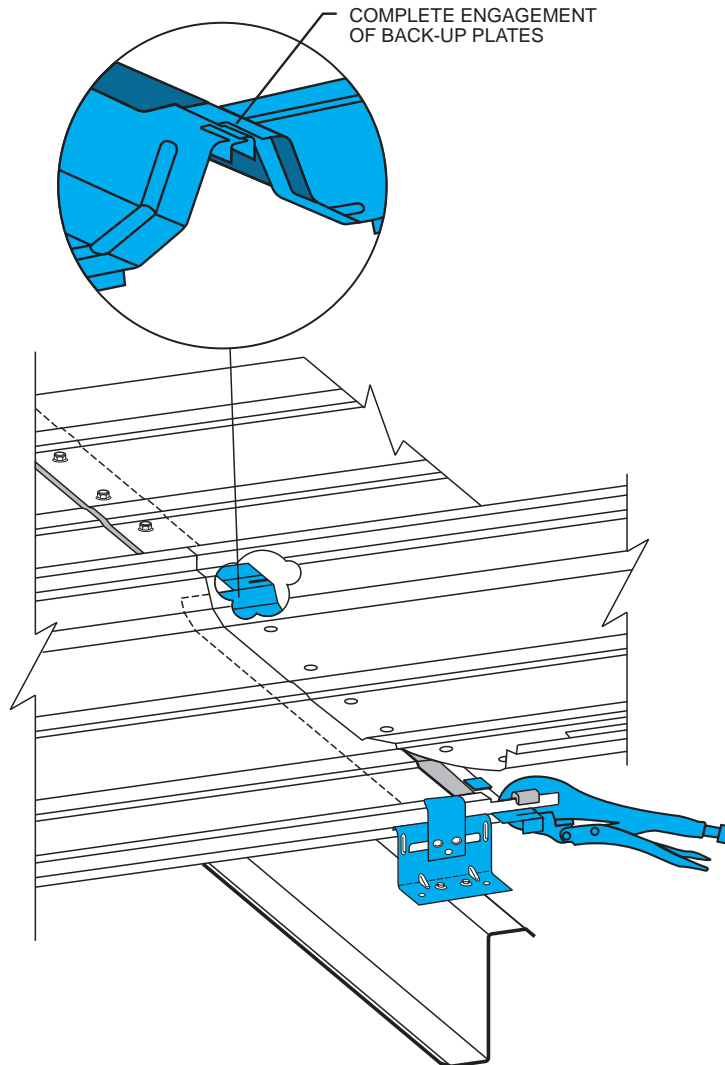
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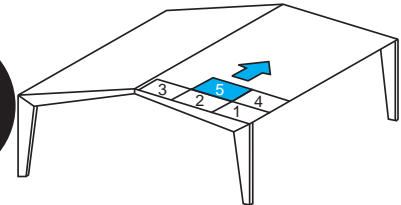
ERECTION SEQUENCE

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FASTENER SEQUENCE
SUBSEQUENT RUNS - ENDLAP

STEP
11



SUBSEQUENT RUNS ENDLAP

Install back-up plate and tape sealer as in Step 5. However, on this and all subsequent runs, care must be taken to engage the tab on the side into the slot of the adjacent back-up plate. This procedure will assist in maintaining a 24" panel module.

Install clips as described in Step 6.

Install upper panel as described in Step 7 & 8.

Repeat the endlap procedures as required for each panel until the ridge is reached.

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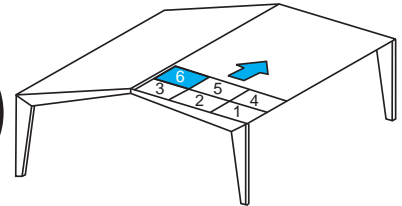


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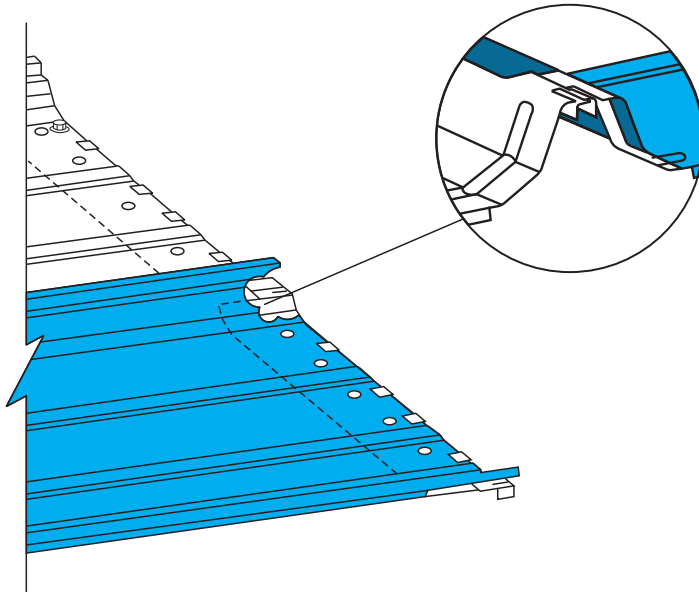
ERECTION SEQUENCE

STEP
12

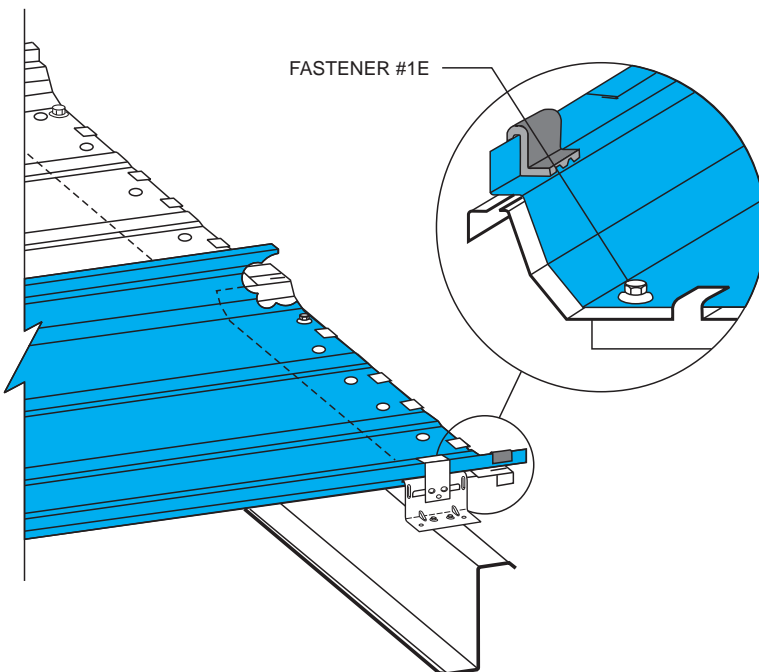


SUBSEQUENT RUNS RIDGE/OUTSIDE CLOSURE

Install back-up plate, taking care to engage the tab on the side with the slot on the adjacent back-up plate.



FASTENER #1E



Install Fastener #1E and Tri-Bead tape sealer as described in Step 9.

Install clips as described in Step 6.

CAUTION

Installing tape sealer to the male leg is important. without it, water could be driven behind the outside closure by a strong wind



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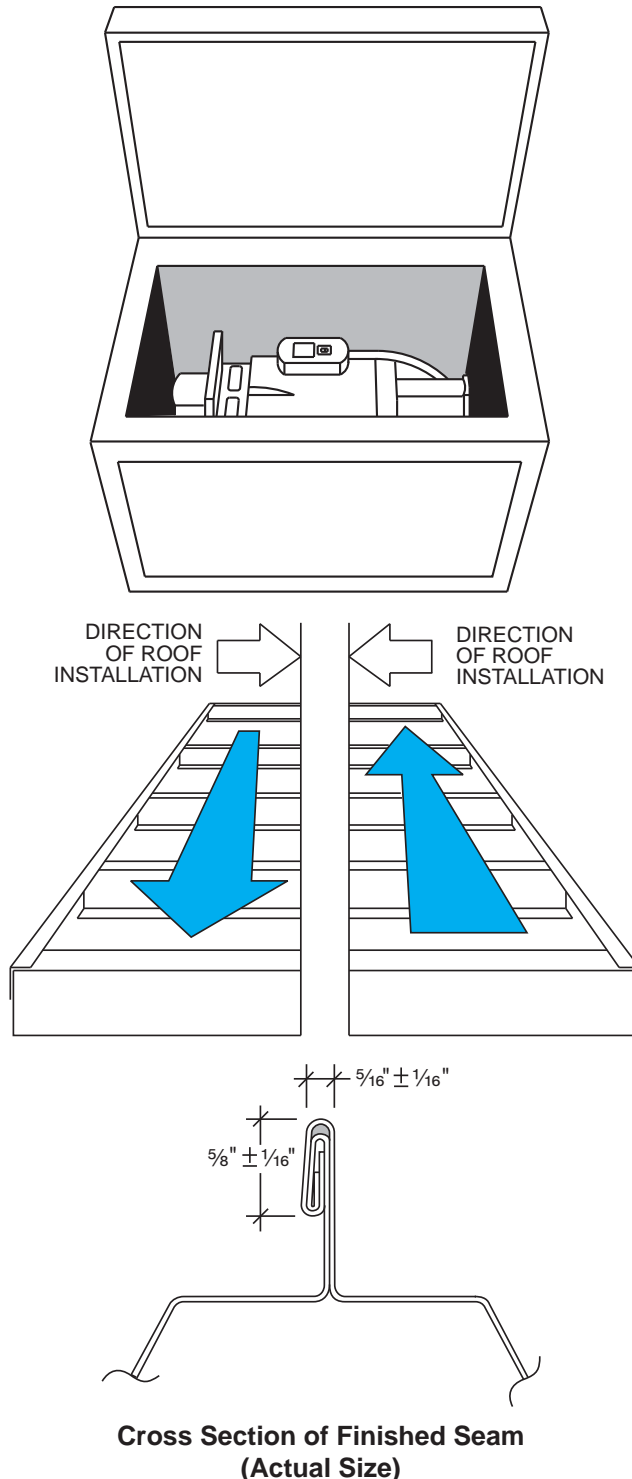
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ERECTION SEQUENCE

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STEP 13

SEAMING PANEL SIDELAPS



The seamer comes in a specially designed box accompanied by a field manual and a hand seaming tool. **READ THE SEAMER MANUAL THOROUGHLY BEFORE STARTING THE SEAMING OPERATION. FAILURE TO ADHERE TO THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY AND DAMAGE TO THE SEAMER AND/OR PANELS. THE ERECTOR WILL BE HELD LIABLE FOR ANY COSTS INCURRED FOR REPLACEMENT OR REPAIR.**

PRE-SEAMING INFORMATION

1. Locate seamer box. Assemble hand seaming tool.
2. Locate power source and check against power requirements in field manual.
3. Check seams for proper engagement.
4. Clean dirt, debris and excess sealant from seams and panel surfaces to avoid interfering with the seaming operation.
5. Panels do not have to be seamed as they are installed. However, to prevent panel separation by a strong wind, panels should be seamed as soon as possible. **ALL PANELS SHOULD BE SEAMED AT THE END OF EACH DAY.**

SEAMING OPERATION

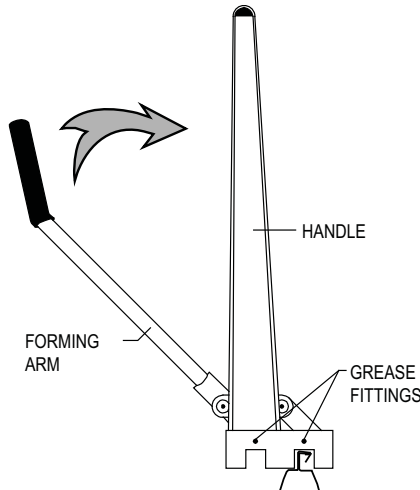
To determine the direction of the seaming process, stand at the eave and look upslope. If the roof is being installed from left to right, the seamer will run from ridge to eave. If the roof is being installed from right to left, the seamer will run from eave to ridge.

INSPECTION OF SEAM

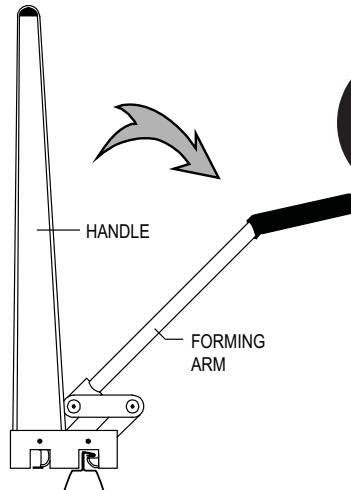
A visual inspection of the seam should be made to determine if the seam is forming properly. Check seam against the cross section provided. **IF THE SEAMER IS NOT PRODUCING A FINISHED SEAM IDENTICAL TO THE CROSS SECTION PICTURED, STOP AT ONCE AND CALL MBCI AT 1-877-713-6224 EXT. 28069.**

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ERECTION SEQUENCE



**BEGINNING
PHASE 1 ACTION**



**FINISHED
PHASE 1 ACTION**

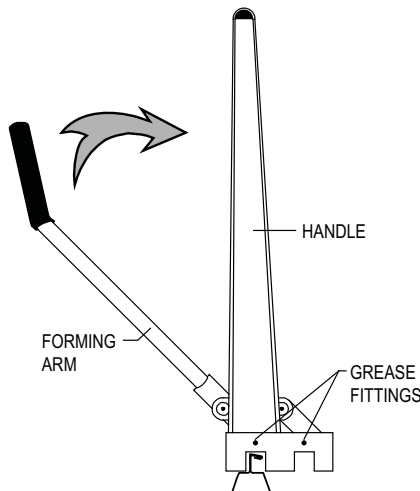
**STEP
13
CONT.**

SEAMING OPERATION

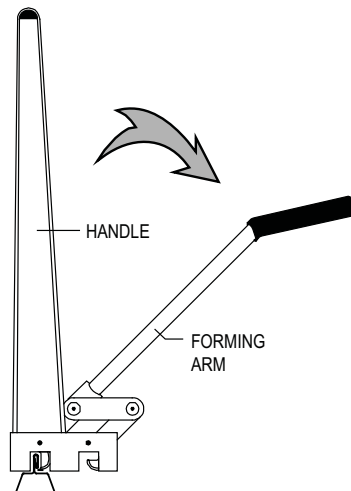
CAUTION

It is critical that the panel seams are crimped and folded as shown before using the electric seamer. Failure to follow these guidelines will result in damaged seams.

To begin seaming with hand tool, set the hand tool on the seam making sure seam is in the **PHASE 1 ACTION** slot. Align the edge of the hand tool with the end of the panel. Rotate the forming arm under the panel to produce 6" of **PHASE 1** seam. This should be done four times along the seam for a total of 24"



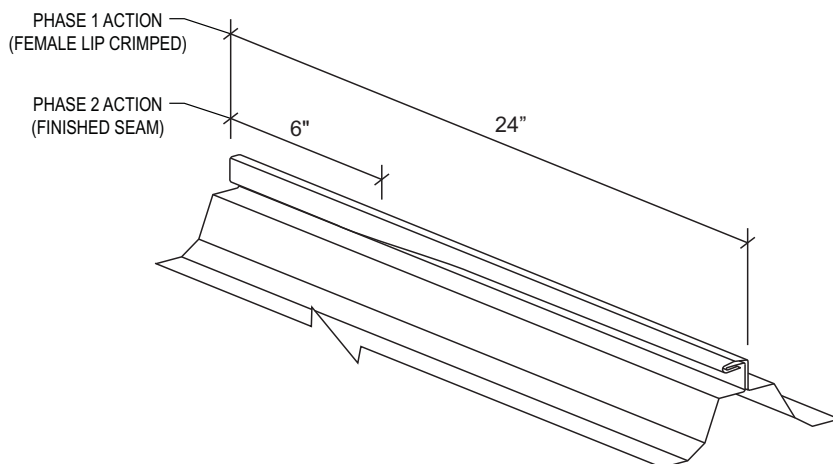
**BEGINNING
PHASE 2 ACTION**



**FINISHED
PHASE 2 ACTION**

Return to the end of the panel to begin **PHASE 2 ACTION**. Set hand tool onto seam making sure seam is in the **PHASE 2 ACTION** slot. Align the edge of the hand tool with the end of the panel. Rotate the forming arm under the handle to produce 6" of finished **PHASE 2** seam. This should be done once per rib. **The relationship of this 6" of finished seam to the 24" of crimped seam is critical to the proper alignment of the rolls in the electric seamer.**

The seam is now ready to accept the electric seamer.





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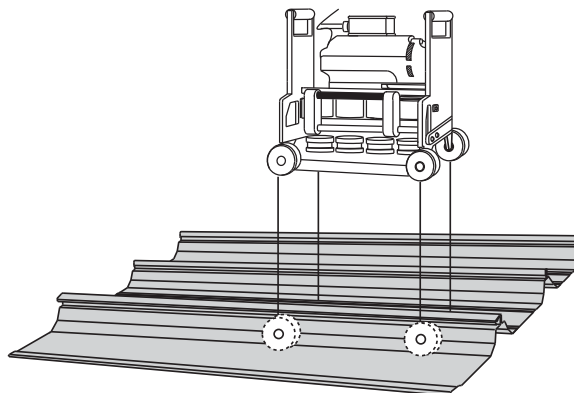
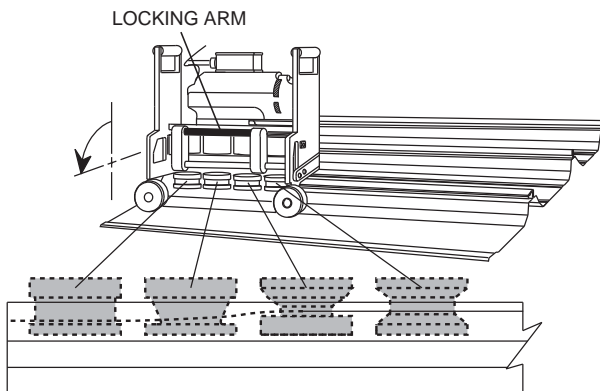
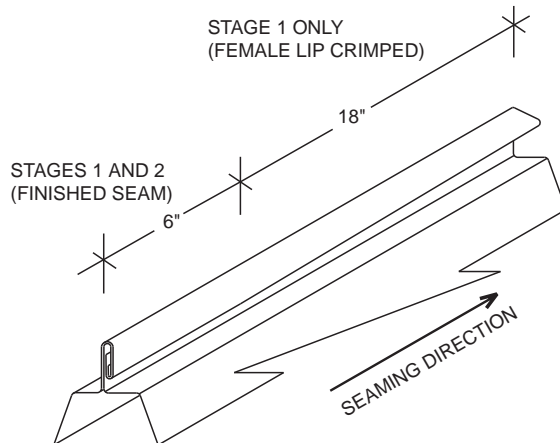
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ERECTION SEQUENCE

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**STEP
13
CONT.**



SEAMING OPERATION

Set seamer on seam with the locking arm up and to open side of the seam. The rear wheels should be at the edge of the panel.

Check to see that the last roll of the seamer is on the finished portion of the seam and the other rolls are on the crimped portion of the seam. Push the locking arm down to engage the rolls and turn the seamer on.

CAUTION

Seamer motor is equipped with 15 amp circuit breaker. Extension cord wire size must be 10 gauge and no longer than 200' from power source.

The manufacturer will not be responsible for motor damage if above instructions are not adhered to.

CAUTION

Seamer operation should be closely supervised at all times. A safety cable should be attached to the seamer.

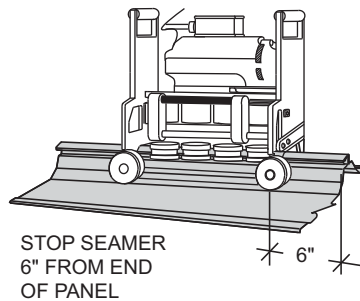
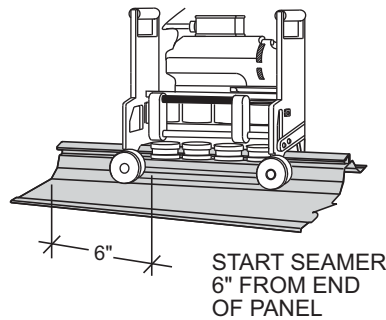
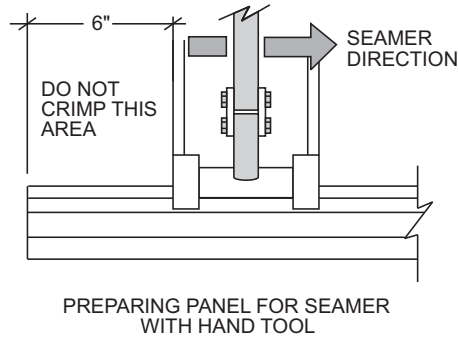
Stop seamer about one foot from ridge. Disengage locking arm and remove the electric seamer.

Finish seam with hand tool by first crimping the remaining portion of female lip. Then, using the second stage of the hand tool, fold and finish the seam. Repeat this procedure for all panels.

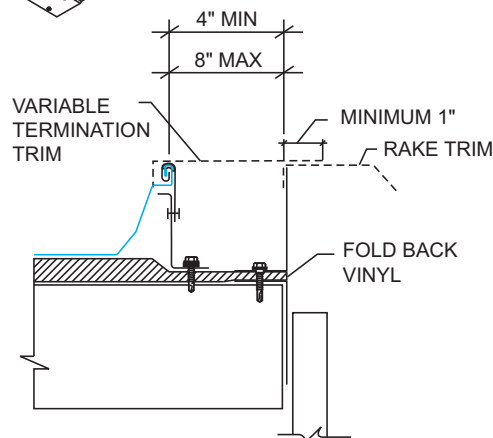
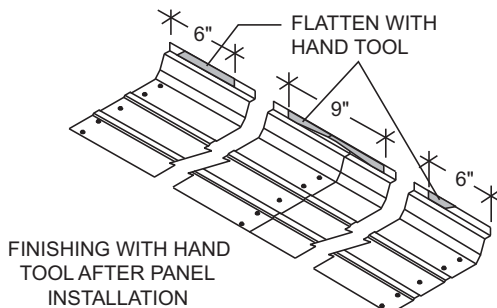
IF DIFFICULTY ARISES USING THE SEAMING MACHINE, PLEASE CALL 877-713-6224 EXT. 28069

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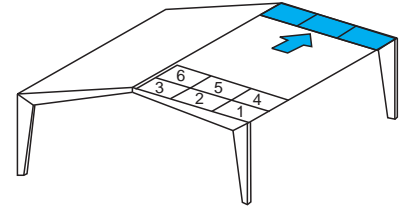
ERECTION SEQUENCE



FLATTENING MALE LEG BEFORE PANEL INSTALLATION



STEP 14



LAST PANEL RUN

This roof system is designed to finish in the high on even footage buildings by using 24", 18", or 12" panels on the last run.

With insulation in place, install rake support along steel line.

FINISHING ON MODULE

If your roof is finishing on module, the male leg of the last panel run will need to be flattened before installation, with the exception of the first and the last 6" of each panel. This will allow for proper panel engagement at endlaps once panels are installed. Use the hand tool to flatten the male leg 6" from the starting end. (Refer to legend plate on seamer to determine the end that the seamer will start from.) With locking bar up, place seamer on male leg so that the last two rolls of the seamer are on the flattened portion of the seam. The first two rolls will be under the unflattened portion of the seam. Lower locking bar and run seamer to within 6" of the end of the panel. Raise locking bar and remove seamer. Repeat this procedure for all panels. Install panels as usual. Use hand tool to finish the unflattened portion of the male leg at the eave, ridge and endlaps.

FINISHING OFF MODULE

If the panel ends 4" - 8" away from the rake support due to an out-of-square condition or other factors, simply install the panel clips and run seamer over male leg. This will lock the clips in place and flatten the male leg. This system allows for the roof to be trimmed in the high.

CAUTION

The seamer will not support itself while flattening the male leg on the last run. It must be supported during this operation.



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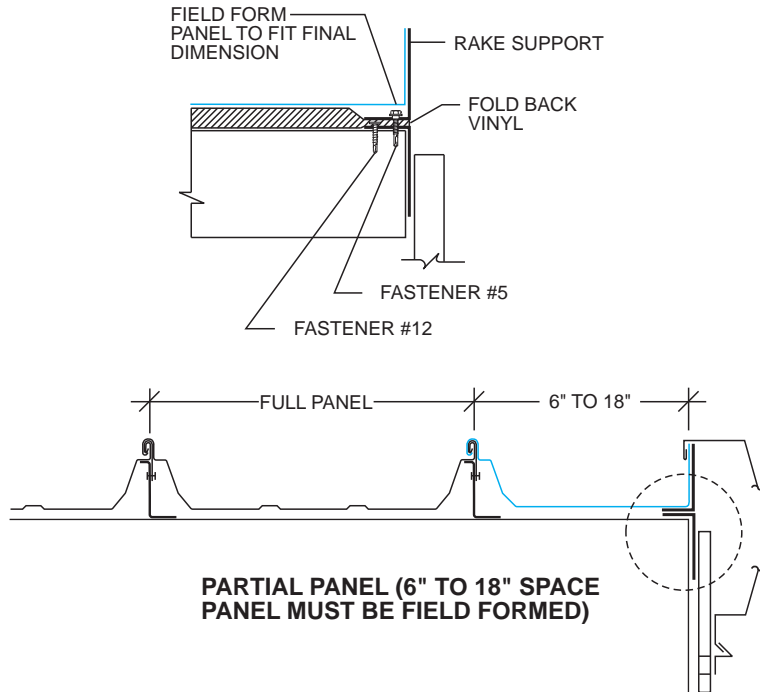
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 Oklahoma City, OK 800-597-6224
 Omaha, NE 800-458-6224

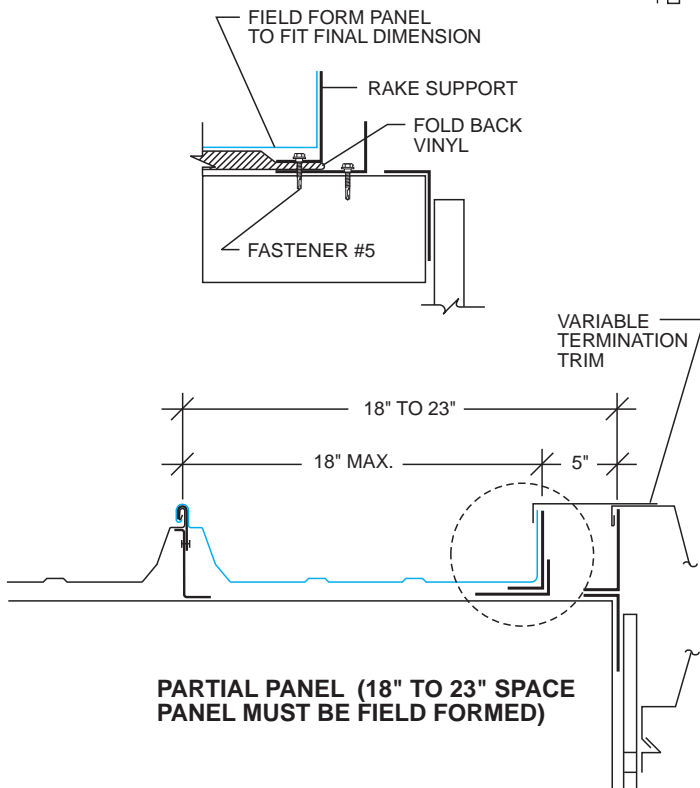
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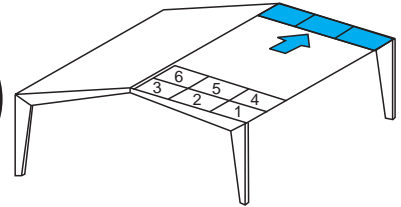


**PARTIAL PANEL (6" TO 18" SPACE
 PANEL MUST BE FIELD FORMED)**



**PARTIAL PANEL (18" TO 23" SPACE
 PANEL MUST BE FIELD FORMED)**

**STEP
 14A**



LAST PANEL RUN OPTIONAL

The roof is designed to finish in the high on even footage buildings. Odd length buildings and variations in erection practices may dictate that an alternate detail be used.

When terminating in an odd dimension, field cut and bend a 3" vertical leg on the panel.

After laying the last insulation run, install the field formed panel. Temporarily fasten the formed leg of the panel to the rake support with vice grips.

The combination of field formed panel and Variable Termination Trim may be used to accommodate large dimensions as shown. Refer to page DL-78 for alternate termination details.

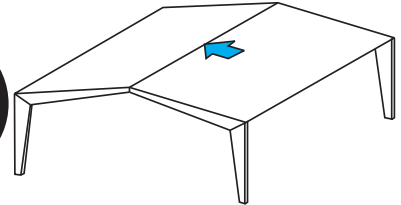
CAUTION

The roof should be swept clean of any drill shavings at the end of each day to prevent rust.

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ERECTION SEQUENCE

**STEP
15**



OUTSIDE CLOSURE

After all panel runs are installed and seamed, return to first panel run at the ridge. Install Tri-Bead tape sealer across full width of each panel, covering the prepunched holes.

Rotate outside closure into position contacting the female side of the panel first. Using an awl, align the first hole on the female side of the outside closure with the corresponding hole in the panel and back-up plate. Remove the awl and install Fastener #1E in this hole.

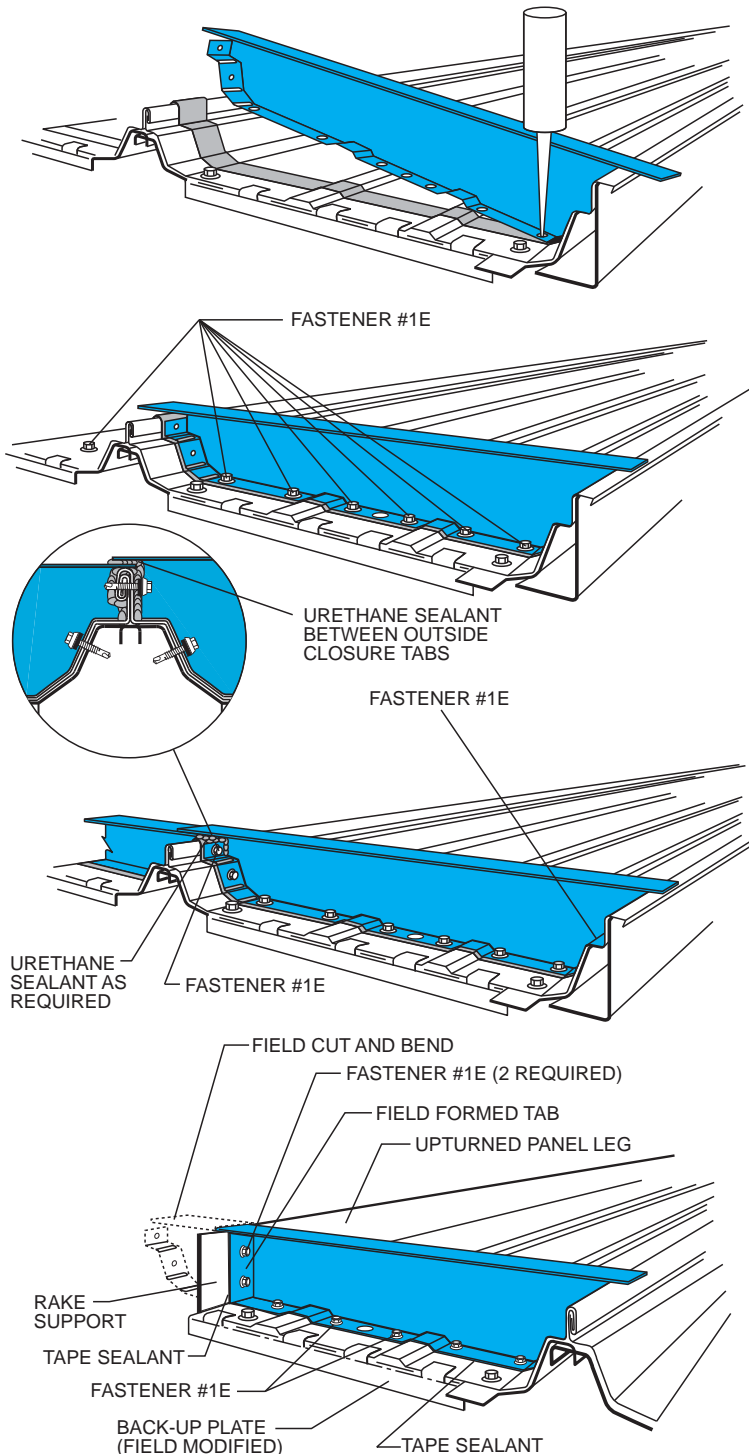
Push the other end of the outside closure into position and align the holes with the awl. Remove the awl and install Fastener #1E in all remaining holes except for the hole at the panel seam. **Do not install the panel seam fastener at this time.**

Install all outside closures on both sides of the ridge.

If the last panel run was field modified, the final outside closure on the last panel will require field modification as well. A tab should be formed on the end of the outside closure for attachment to the upturned leg of the roof panel (field formed). This tab should be attached to the panel with Fastener #1E, two required.

Install Fastener #1E in remaining hole at the panel seam of all outside closures. The fastener installed in the top hole must go through the panel seam and the corresponding hole of the adjacent outside closure.

Use urethane sealant to fill any voids around panel seam on upslope side of outside closure.





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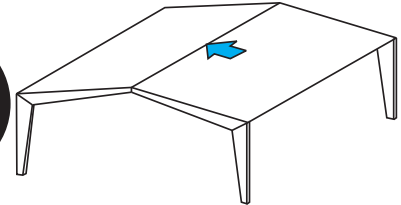
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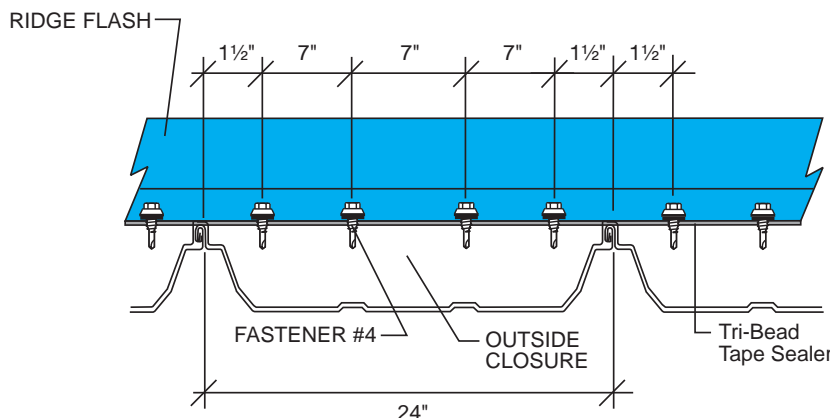
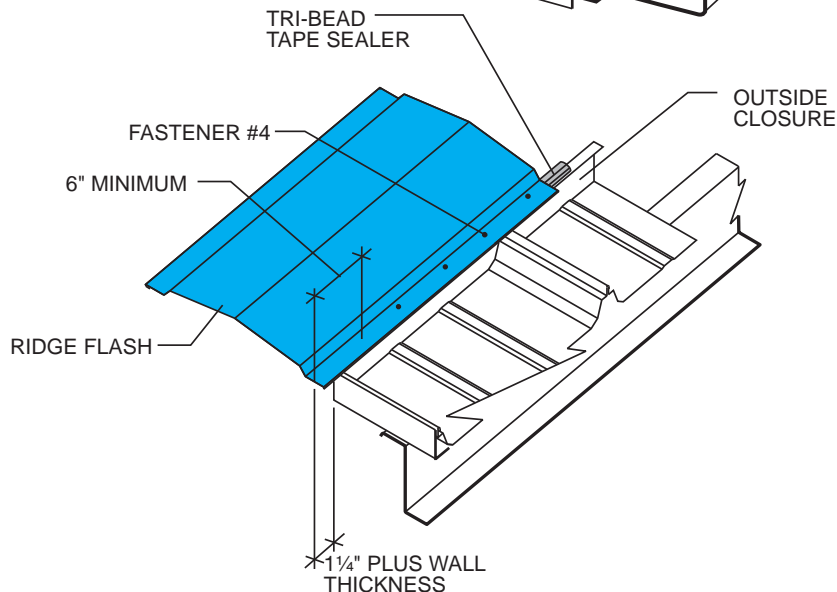
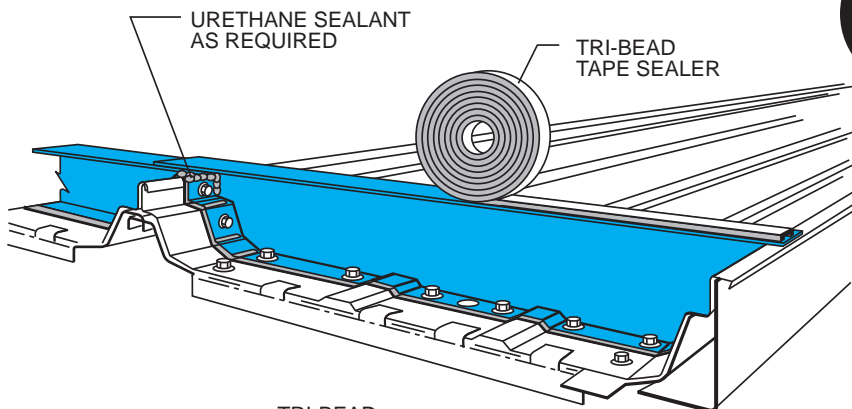
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**STEP
16**



RIDGE-OUTSIDE CLOSURE/FLASHING

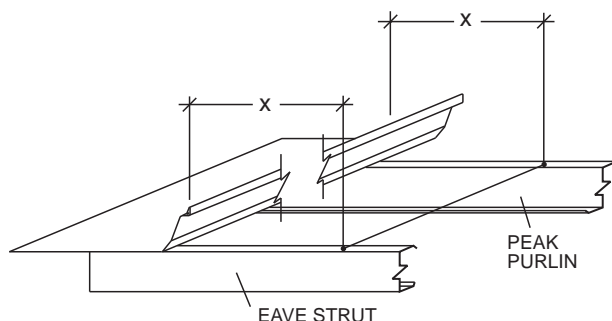
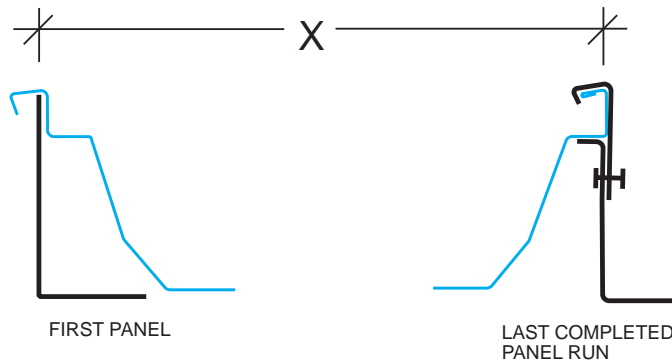
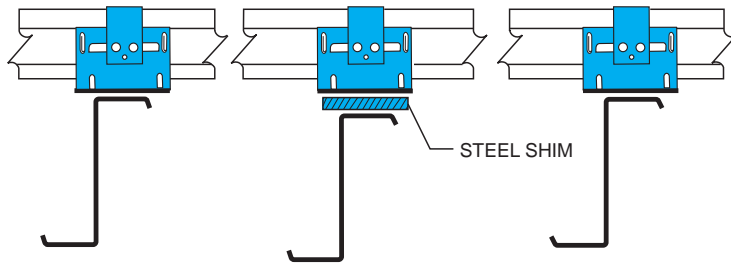
Apply Tri-Bead tape sealer to the top of the outside closure.



Install the ridge flashing starting and ending $1\frac{1}{4}$ " plus wall thickness outside the steel line. Fasten the ridge flashing to the outside closures with Fastener #4. Install a fastener $1\frac{1}{2}$ " from panel seam on both sides of panel. Install additional fasteners directly above minor ribs of panel. Four fasteners are required at each panel. Leave 6" unfastened on each end to allow for the rake trim to be installed later. **DO NOT FASTEN THROUGH THE LOCK OF THE STANDING SEAM.**

For floating peak box installation see page DL-79.

double-lok[®] SPECIAL ERECTION TECHNIQUES



RECOMMENDED ERECTION PRACTICES

CORRECTING OUT-OF-PLANE SUBSTRUCTURE

Occasionally a purlin may be encountered that is lower (out-of-plane) than those adjacent to it. When a clip is attached to this purlin, it will go down further than those adjacent to it, distorting the seam. This can cause the next panel sidelap to be difficult to lap together in this area. To compensate for this lower purlin, a steel shim may be placed under the clip to bring it up to the proper height (in plane). This shim should be no thicker than 1/4". If 1/4" is not enough, then structural modification will be necessary.

Avoid "stair-stepping" of the panels at the eave. This will cause problems engaging back-up plates at the endlap and ridge.

Any "stripped out" fasteners at the endlaps or outside closures should be immediately replaced with Fastener #2A. Place a 1" long piece of tri-bead tape sealer over the "stripped out" hole before installing Fastener #2A. This will allow the fastener threads to be coated with tape sealer and provide a good seal.

NEVER ALLOW PANELS TO COME INTO CONTACT WITH LEAD, COPPER, GRAPHITE, GASOLINE OR OTHER HARSH CHEMICALS AS THIS WILL VOID THE GALVALUME[®] WARRANTY.

CHECK ROOF FOR PANEL ALIGNMENT

Check the roof every three or four runs for panel alignment as it is being erected. This can be accomplished by two different means.

1. Measure from the rake support to the seam of the last completed panel run. Take measurements at the ridge, eave, and all endlaps.
2. Attach a stringline to the eave plate and ridge purlin, running parallel to the rake support. The stringline should stay ahead of the work and can be moved across the roof as construction progresses. Measure from the stringline back to the last completed panel run. Take measurements at the ridge, eave, and all endlaps.



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SPECIAL ERECTION TECHNIQUES

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RECOMMENDED ERECTION PRACTICES

(CONTINUED)

ADJUSTING PANEL WIDTH

NOTE

Do not adjust panel width more than 1/2" on any panel area.

SLIDING CLIP

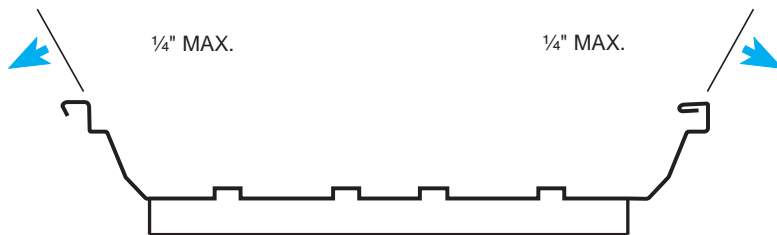
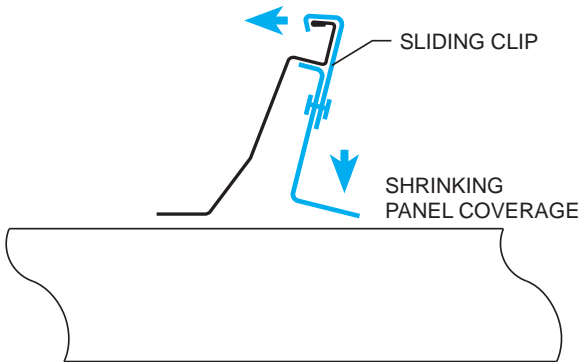
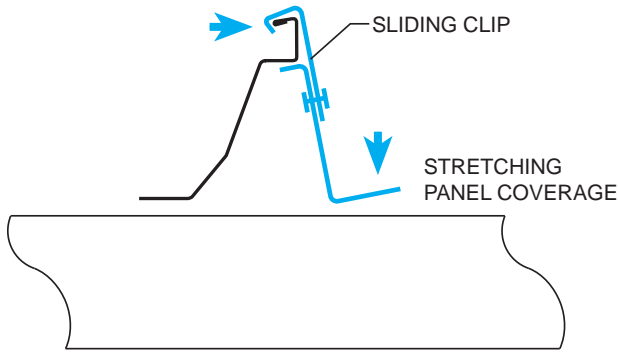
To stretch panel coverage, install the clip at the panel endlap or ridge with the base angled away from the panel. As the fastener is installed through the base of the clip and into the purlin, the clip base will rotate down to the purlin causing the top of the clip to move outward, stretching the panel coverage. Install the remainder of the clips as usual.

To shrink panel coverage, install the clip at the panel endlap or ridge with the base angled toward the panel. As the fastener is installed through the base of the clip and into the purlin, the clip base will rotate down to the purlin causing the top of the clip to move inward, shrinking panel coverage. Install the remainder of the clips as usual.

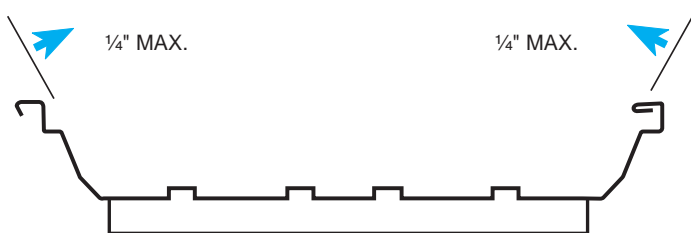
BACK-UP PLATES

To stretch panel coverage, bend the sides of the back-up plate out and install at endlap or ridge. Do not bend either side more than 1/4". Install clips as usual.

To shrink panel coverage, bend the sides of the back-up plate in and install at endlap or ridge. Do not bend either side more than 1/4". Install clips as usual.



STRETCHING PANEL COVERAGE



SHRINKING PANEL COVERAGE

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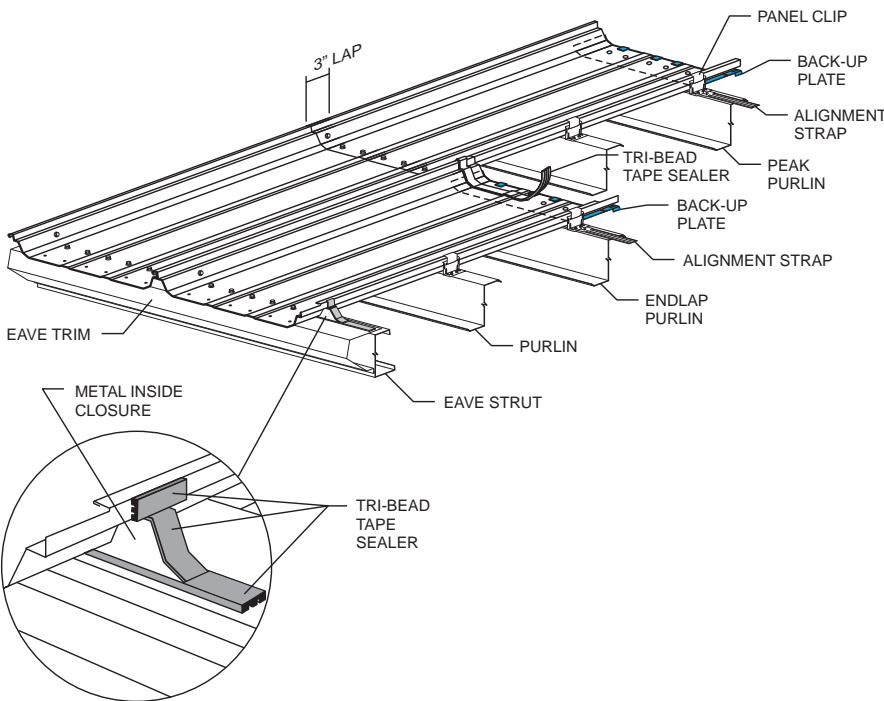
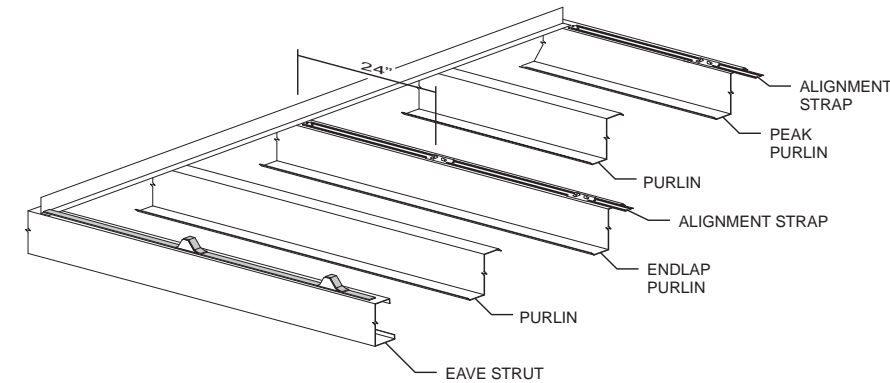
Metal Roof and Wall Systems

double-lok® SPECIAL ERECTION TECHNIQUES

RECOMMENDED ERECTION PRACTICES (CONTINUED)

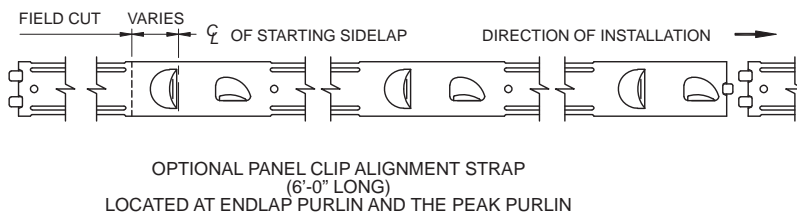
Using Panel Alignment Strap

Panel alignment straps can be used to hold panel module. Install alignment straps at each end lap purlin and the peak purlin for the full length of the building. The alignment straps have two lances at 24" on center that allow the base of the panel clip to nest in between them. The vertical leg of the panel clip should fit snugly against the flat side of the tall lance in the alignment strap.



Start the alignment strap at the rake support angle. The alignment strap has two tabs on one end and one tab on the other end. The end with two tabs should be oriented to leading end of the roof panel installation. The first alignment strap should be installed with the flat side of the tall lance exactly 24" from the vertical leg of the rake support angle. Fasten the alignment strap to the purlin with Fastener #1 at each prepunched hole location. Subsequent alignment straps will be engaged to the previous strap and fastened to the purlins as outlined above.

During panel installation, panel clips at the end lap and ridge purlins are to be installed first. When installing these clips, ensure the clip bases fit in between the void created by the two vertically formed lances in the alignment strap. This will hold the clips at these locations on 24" module. After these clips are installed, the remaining clips can be installed in any order convenient to the erector.





Metal Roof and Wall Systems

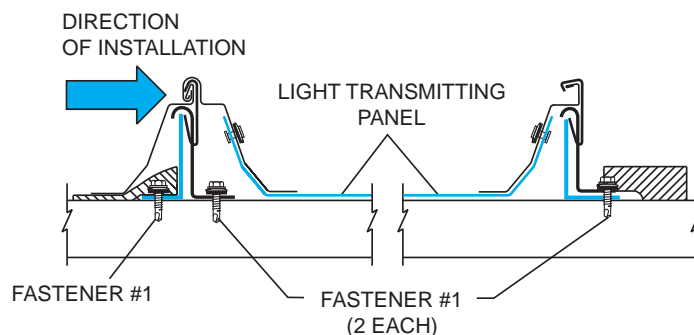
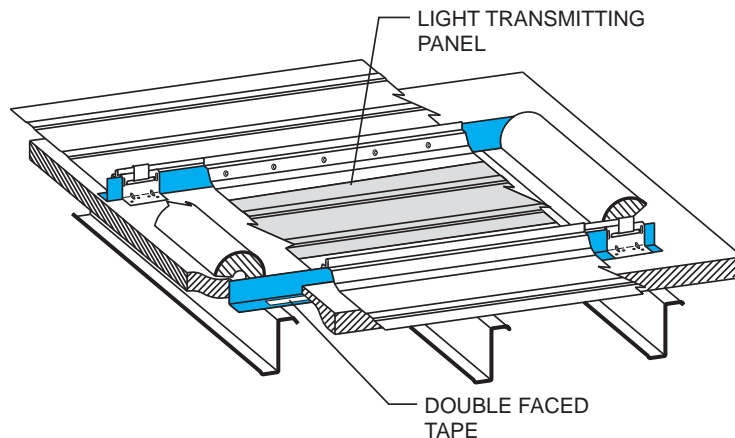
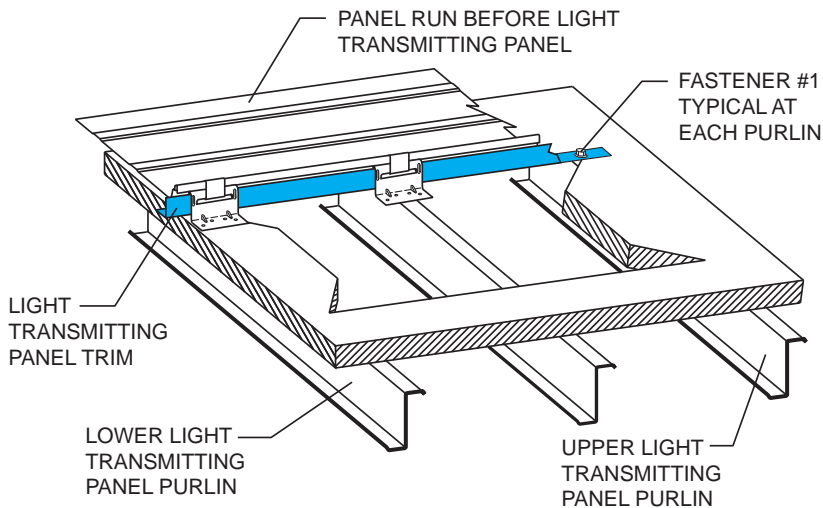
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SPECIAL ERECTION TECHNIQUES

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LIGHT TRANSMITTING PANEL TRIM INSTALLATION

(OPTIONAL)

Light transmitting panel trim is available to cover the exposed insulation at the sides of the light transmitting panel opening. Two pieces of 2¼"x3¼"x10'-3" angle are required per light transmitting panel. This angle is designed to work with either the low or the high system. **THE 2¼" LEG IS TURNED UP FOR THE LOW SYSTEM AND THE 3¼" LEG IS TURNED UP FOR THE HIGH SYSTEM.**

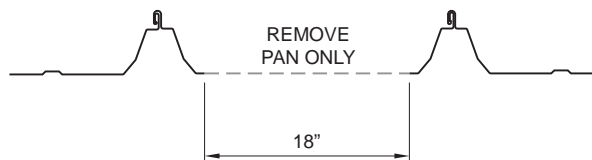
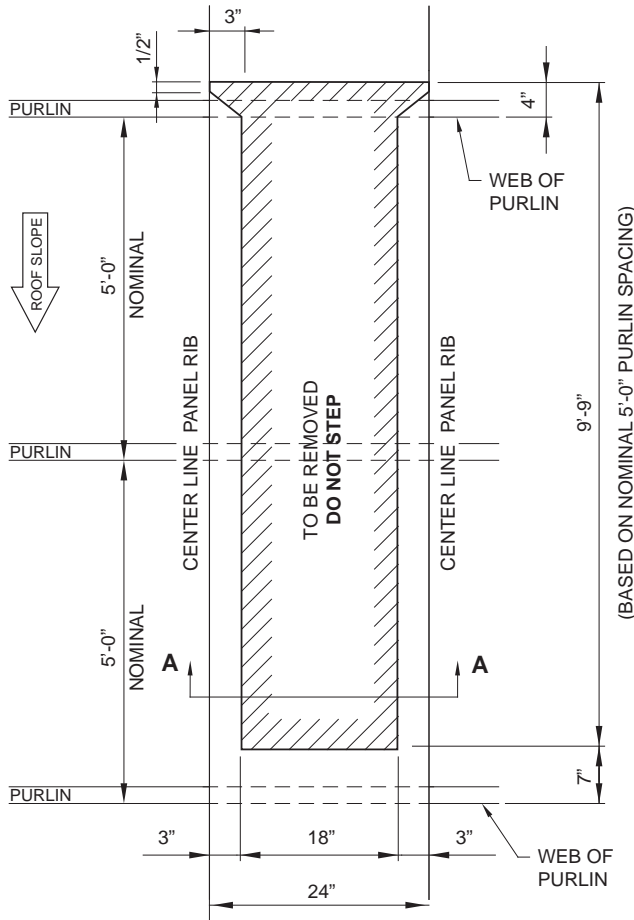
INSTALLATION PROCEDURE

Install panels up to light transmitting panel run. Do not install clips on this run until first light transmitting panel trim piece is installed. Cut and remove insulation where light transmitting panel is to be located. Leave enough insulation at the top and bottom of the opening to be rolled back, allowing only the backing to be exposed. Place double faced tape on top of the horizontal leg of the trim to hold the insulation. Notch trim for back-up plates and install directly under male leg of last panel installed, running from lower light transmitting panel purlin to upper light transmitting panel purlin. Attach to purlins with Fastener #1. Install clips. Install lower light transmitting panel run panel. Leave upper-most clip off until next trim piece is installed. Fold insulation end tab under lower panel and install light transmitting panel. Fold upper insulation end tab above light transmitting panel. Fold upper insulation end tab above light transmitting panel and install upper light transmitting panel. Place double faced tape on next trim piece and notch for back-up plates. Install directly under male leg of light transmitting panel and clip all panels down.

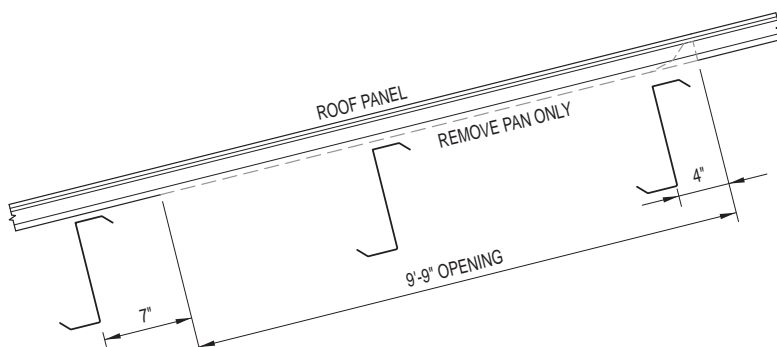
CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

double-lok® SPECIAL ERECTION TECHNIQUES



SECTION A-A



Field Located LTP Installation Directions

The Field Located LTP can be installed at any time, either during roof installation or after the roof has been completed. The Field Located LTP may be installed almost anywhere in the roof. The LTP must involve at least two purlin spans and must be at least 5' from the eave, ridge or rake.

Once the Field Located LTP location is determined, verify the exact purlin location at the up slope and down slope ends of the LTP. Cut out the panel flat as shown in the adjacent drawings. At the up slope end only, notch out the panel ribs as shown.

The opening for an LTP on a roof with 5' purlin spacing will measure 9'-9" long by 18" wide. The opening at the down slope end will be 7" from the web of the purlin. The opening at the up slope end will be 4" from the web of the purlin.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



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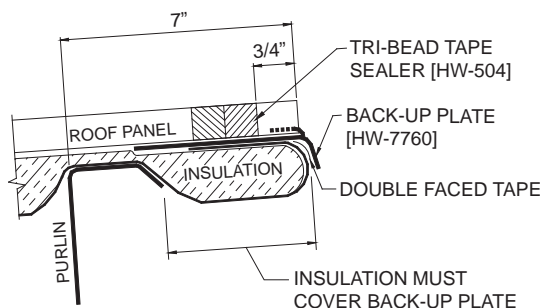
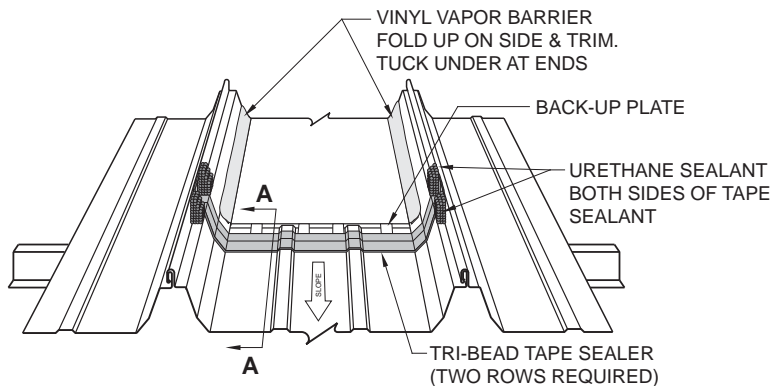
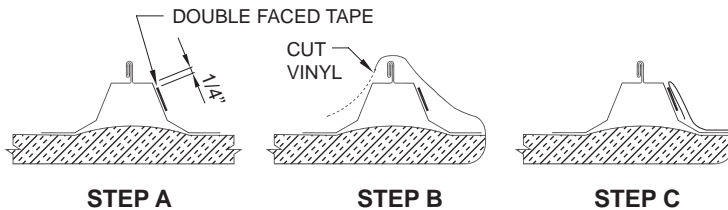
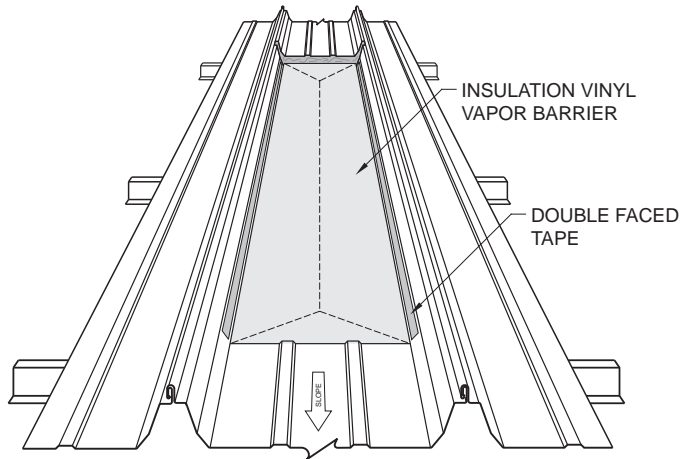
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SPECIAL ERECTION TECHNIQUES

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SECTION A-A

Field Located LTP Installation Directions - (CONTINUED)

After the metal has been removed from the LTP opening, remove the exposed fiberglass insulation without damaging the vinyl vapor barrier. This can be aided by carefully running the blade of a utility knife along the edge of the metal at the opening. Do not penetrate the vapor barrier.

Apply double-faced tape along the side of the panel trapezoid, on both sides of the opening as shown in Step A. Pull the vapor barrier over the panel ribs, then cut vinyl vapor barrier as indicated by the dotted lines as shown in step B. Fold vapor barrier and push tightly to the double-faced tape as shown in Step C. At both the up slope and down slope ends, the vapor barrier should be tucked under the metal panel.

At the down slope end of the opening, install a back-up plate onto the end of the roof panel, then install two rows of Tri-Bead tape sealant across the width of the panel. The up slope edge of the tape sealant should be 3/4" down slope from the edge of the opening. Apply a liberal bead of urethane sealant across the tape sealant at the panel seam on either side of the opening.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

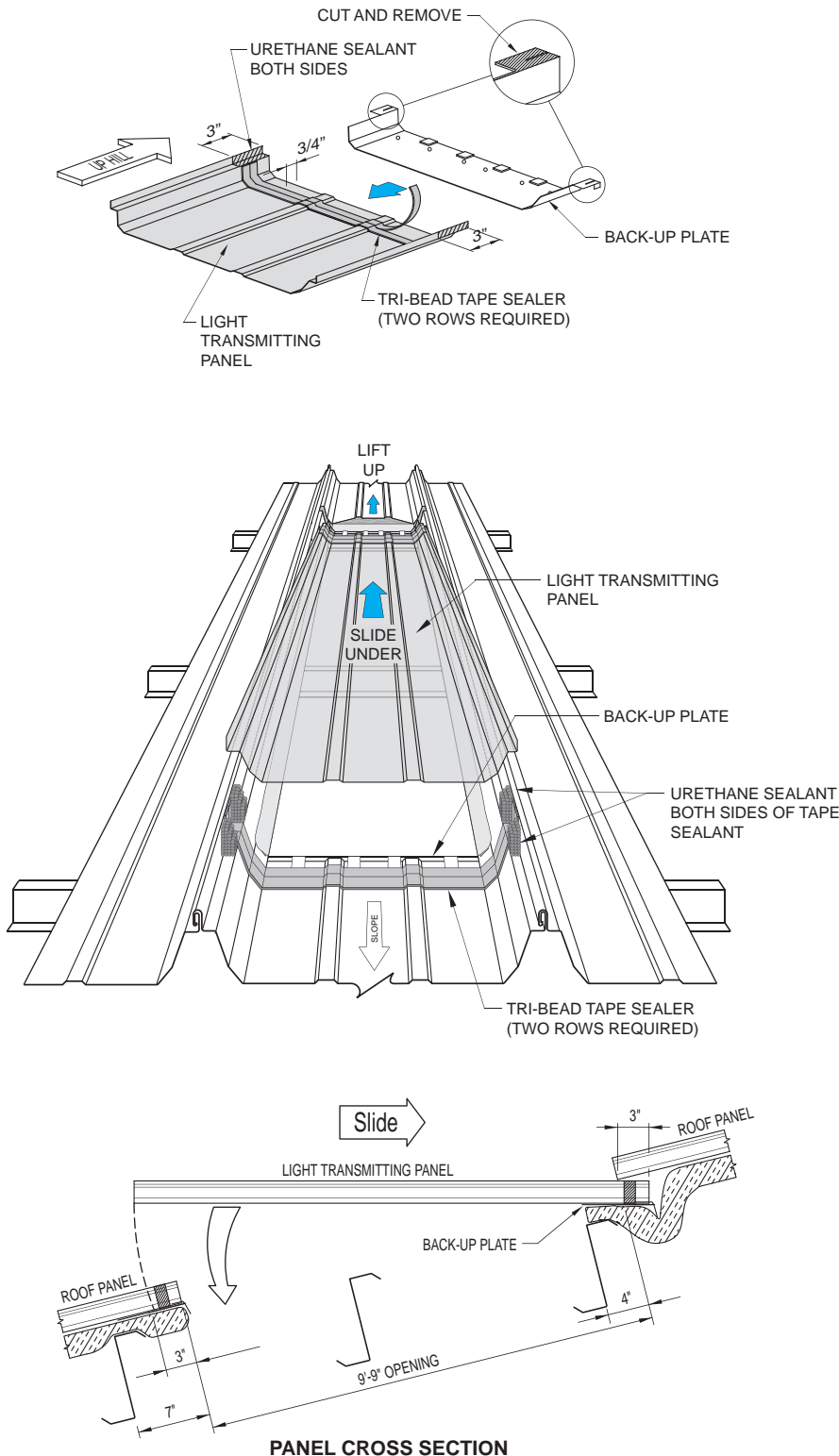
double-lok® SPECIAL ERECTION TECHNIQUES

Field Located LTP Installation Directions - (CONTINUED)

At the up slope end of the LTP, install two rows of Tri-Bead tape sealant across its width, up to the horizontal shelf of the trapezoid. The up slope edge of the top run of tape sealant should be $\frac{3}{4}$ " from the edge of the LTP. Apply a 3" long bead of urethane sealant that covers the rest of the rib of the LTP and marries to the tape sealant. This should be done on both sides of the LTP.

Cut the "engagement flanges" off of both sides of a back-up plate and install onto the up slope end of the LTP.

Lift the metal roof panel at the upslope end of the opening. While the metal panel is lifted up, slide the up slope end of the LTP (with the back-up plate engaged on it) under the metal panel for 3". Once the 3" end lap has been achieved at the up slope end, lower the down slope end of the LTP onto the metal panel.



CAUTION

Do not step on the LTP panel. It is not designed to support the weight of a person.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



Metal Roof and Wall Systems

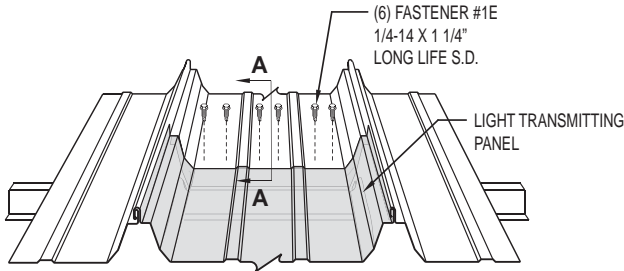
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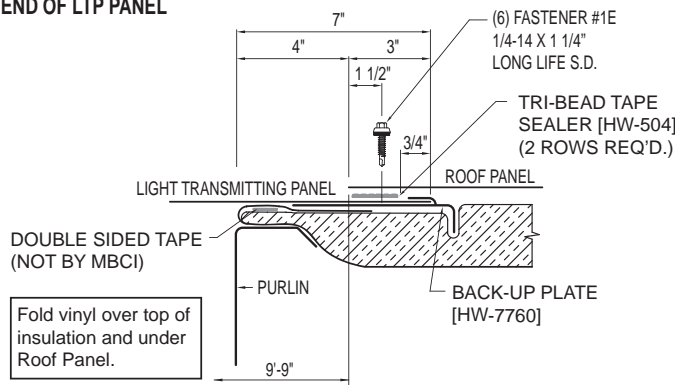
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SPECIAL ERECTION TECHNIQUES

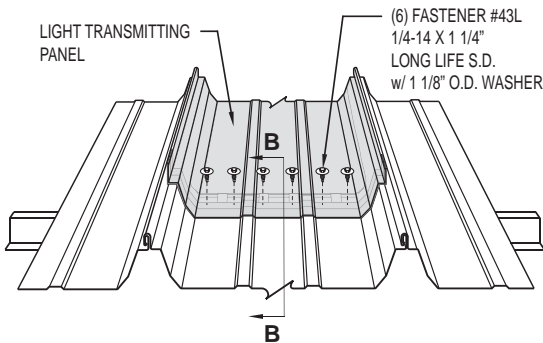
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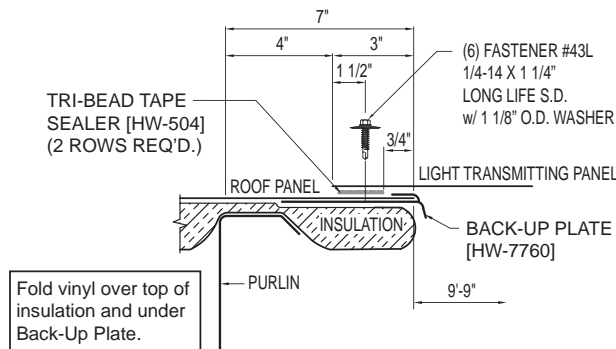
UP SLOPE END OF LTP PANEL



SECTION A - A



DOWN SLOPE END OF LTP PANEL



SECTION B - B

Field Located LTP Installation Directions - (CONTINUED)

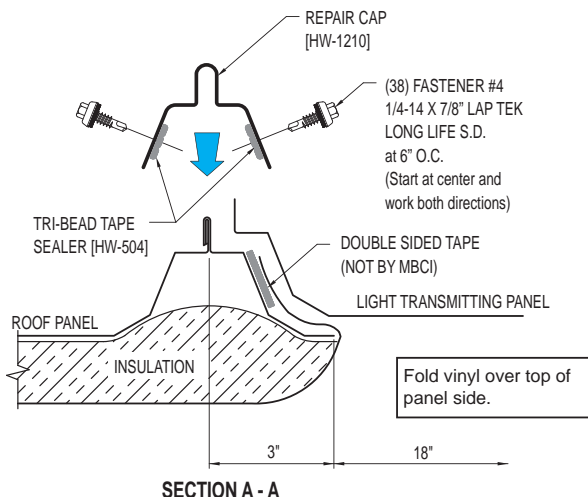
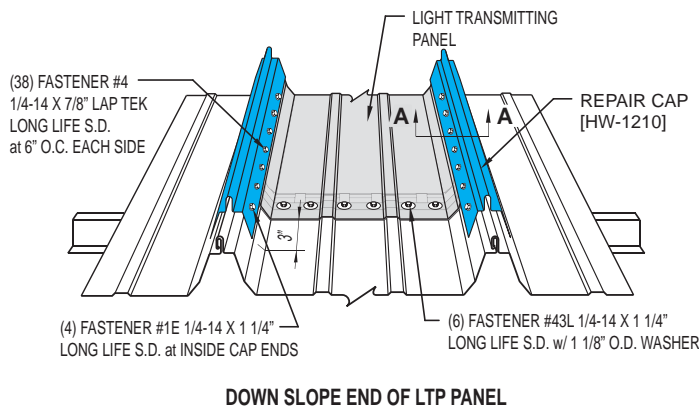
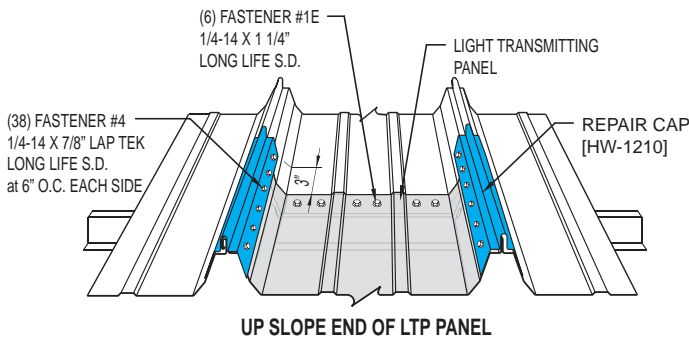
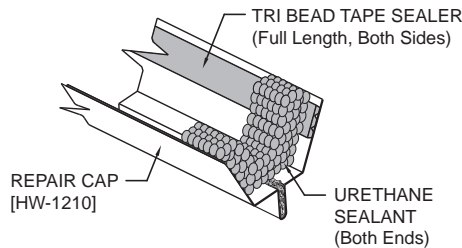
At the up slope end of the LTP, install six #1E fasteners through the metal panel, LTP and into the back-up plate. Fasteners should be 1-1/2" up slope from the edge of the metal panel and spaced evenly across the flat of the panel as shown in the top two drawings.

At the down slope end of the LTP, install six #43L fasteners through the LTP, the metal panel and into the back-up plate. Fasteners should be 1-1/2" up slope from the edge of the LTP and spaced evenly across the flat of the panel as shown in the bottom two drawings.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

double-lok® SPECIAL ERECTION TECHNIQUES



Field Located LTP Installation Directions - (CONTINUED)

Install Tri-Bead tape sealant on the inside and along the full length of two repair caps. At each end of both repair caps, apply a liberal amount of urethane sealant in the rib and up both sides.

Install the repair caps to either side of the LTP. The repair caps should extend past the LTP an equal distance at both ends. While putting moderate foot pressure on the repair cap, install Fastener #4 at 6" on center. Fastener must penetrate through the tape sealant on the inside of the repair cap and into panel side cinching repair cap tight. It is best to pre-mark the fastener locations and start in the middle of the repair cap and work towards both ends installing the fasteners.

When repair caps are attached, inspect the up slope end of each to insure that the urethane sealant completely sealed the repair cap to the panel and that there are no voids. If any voids are found, inject more urethane sealant into the area and finger wipe.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



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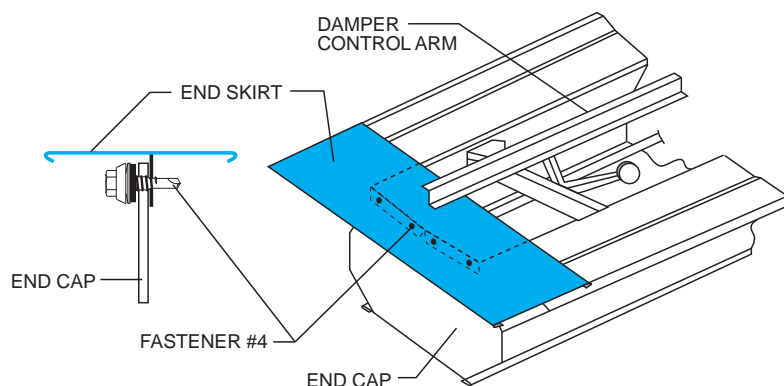
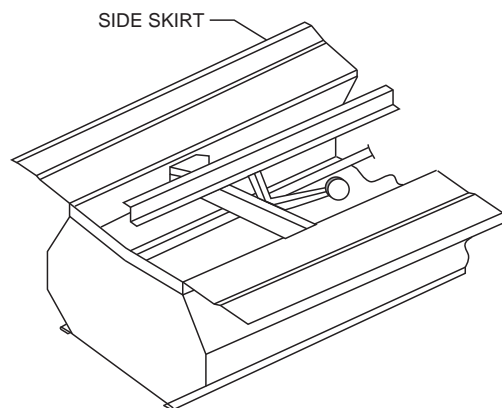
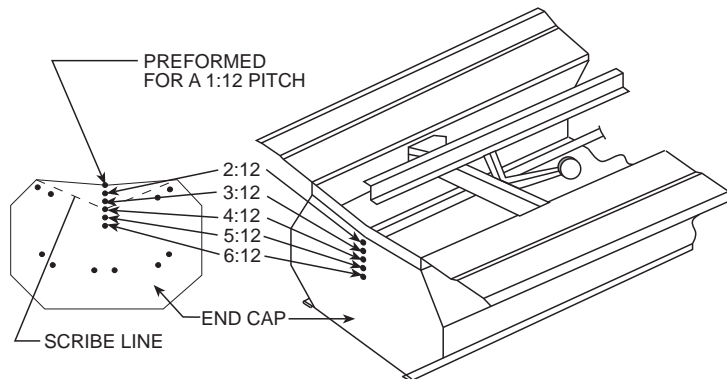
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SPECIAL ERECTION TECHNIQUES

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RIDGE VENTILATOR

NOTE

MBCI does not recommend the use of a ridge ventilator on standing seam roof systems. Sidewall or endwall exhaust fans or other ventilating methods should be considered. These details are for your convenience only. Only a 9" ridge ventilator can be used with this SSR system. **Do not use ridge ventilators on any roof over 200' in width or with a slope less than 1:12 or greater than 6:12.**

INSTALLATION

Turn ventilator over and place gently on its top. Note that the end cap is pre-formed for a 1:12 roof pitch. The five benchmark dots represent 2:12, 3:12, 4:12, 5:12 and 6:12 roof pitches. Draw a line between indicated corners and the appropriate dot for the roof pitch. Cut and remove that portion of the end cap. On 5:12 and 6:12 roof pitches see vent manufacturer's special instructions for the installation of the vent skirt. The end cap is now ready to receive the end skirt.

CAUTION

The end skirts shipped with ridge ventilators will not work on a standing seam roof. You must order a "Ridge Vent SSR Kit" for each ridge ventilator to be installed on **Double-Lok®** roofs. This kit contains two end skirts which must be installed to support the ventilator.

Position end skirt onto end cap. Be sure the down-turned angle of the end skirt is inside of and up against the end cap. Attach end skirt to ventilator end cap with Fastener #4 in four places.

double-lok[®] SPECIAL ERECTION TECHNIQUES

RIDGE VENTILATOR INSTALLATION

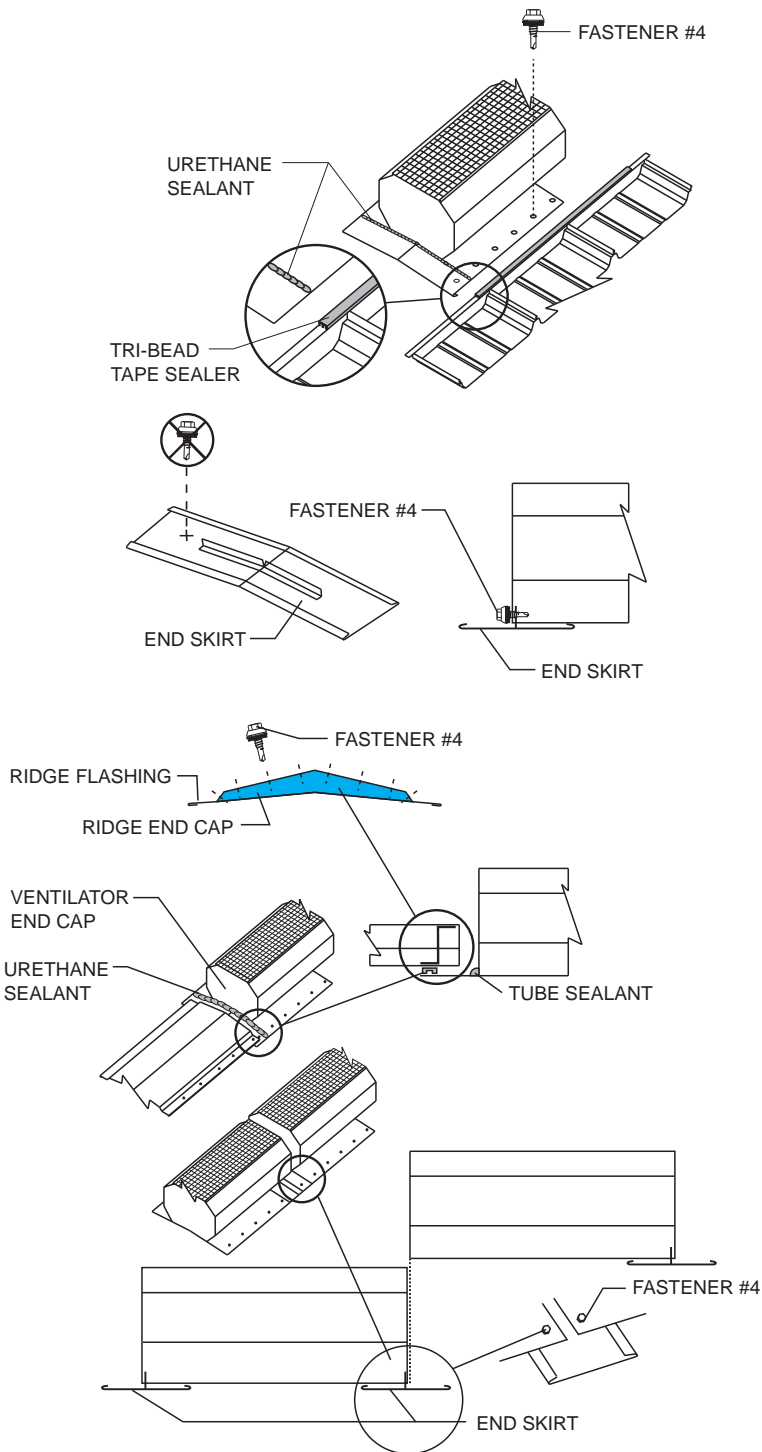
(CONTINUED)

After Tri-Bead tape sealer has been applied to top of outside closures, install ventilator in proper location. Be sure to center in opening. Attach ventilator to outside closures with Fastener #4 on 6" centers. Use tube sealant to seal between the outside of the ventilator and the end skirt.

Install the ridge flashing as in Step 16, except for those pieces on either side of ventilator. These will lay on top of, and seal to, the ventilator end skirt with a ridge end cap. Use Tri-Bead tape sealer to seal the ridge end cap to the ridge flashing and the end skirt. Use Fastener #4 to install the end cap. Six fasteners are required to tie the end cap to the ventilator end skirt. Eight fasteners are required to tie the end cap to the ridge flashing.

For continuous ventilators, install end skirts on both ends of the first ventilator and one end of all following ventilators. Attach ventilator to outside closures as outlined above. Install an additional Fastener #4 through the corner of the side skirt and into the end skirt.

Do not connect more than 4 vents to the same linkage.





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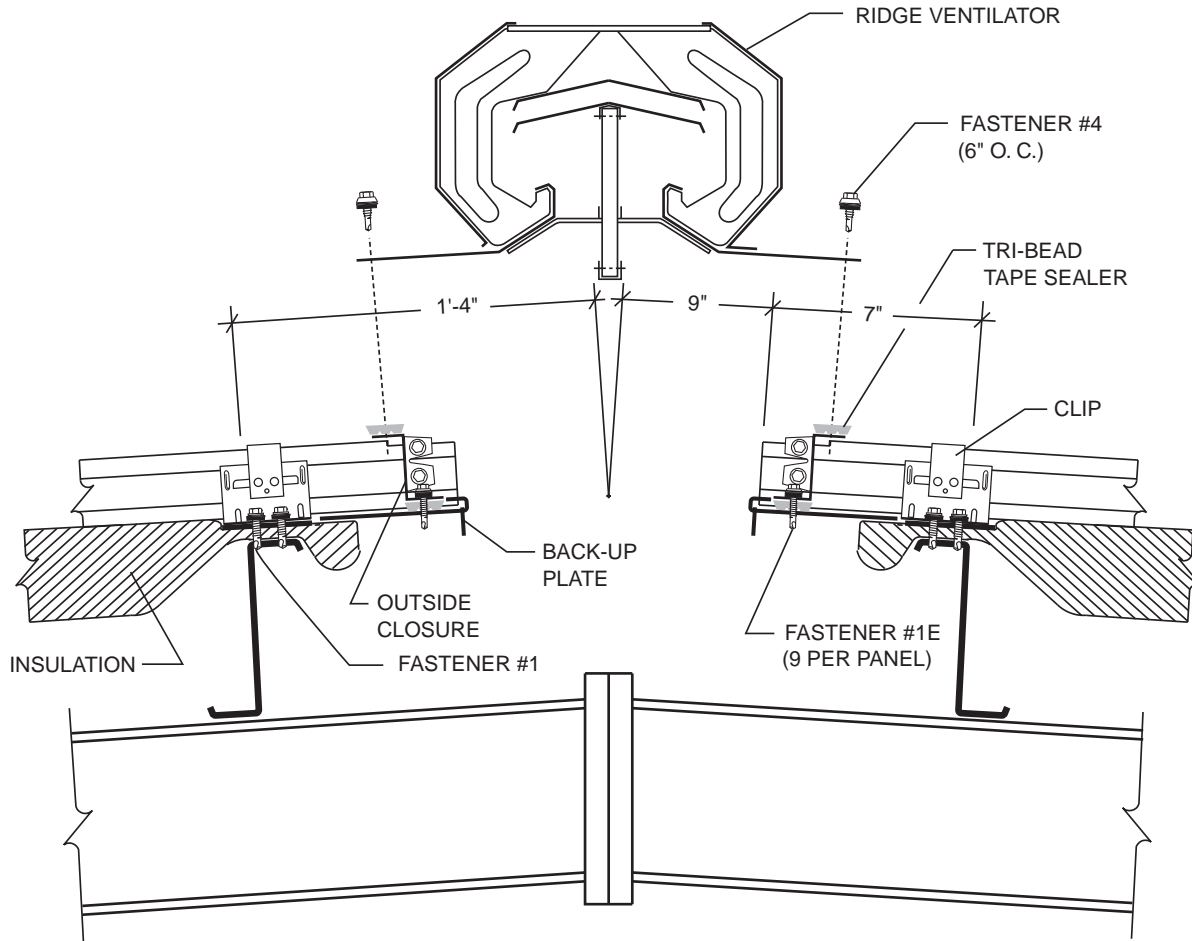
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SPECIAL ERECTION TECHNIQUES

double-lok®

RIDGE VENTILATOR



CAUTION

The end skirts shipped with ridge ventilators will not work on a standing seam roof. You must order a "Ridge Vent SSR Kit" for each ridge ventilator to be installed on **Double-Lok®** roofs. This kit contains two end skirts which must be installed to support the ventilator.

NOTES:

ONLY 9" RIDGE VENTILATORS CAN BE USED WITH THIS SSR SYSTEM.

DO NOT USE RIDGE VENTILATORS ON ANY ROOF OVER 200' IN WIDTH OR WITH A SLOPE LESS THAN 1:12 OR GREATER THAN 6:12.

SEE PAGES DL-25 AND DL-28 FOR FASTENER SELECTION.

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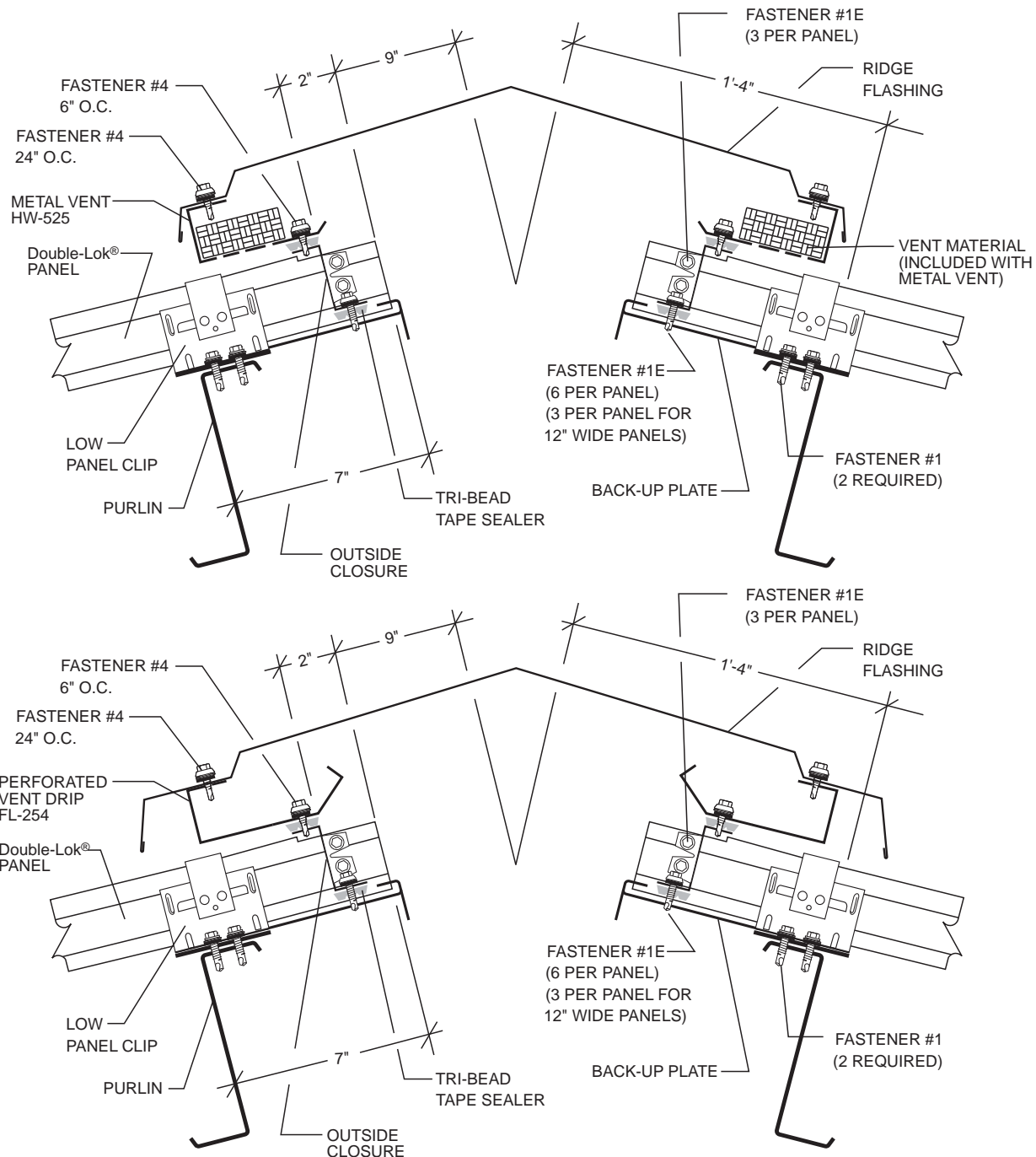
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double-lok® SPECIAL ERECTION TECHNIQUES

VENTED RIDGE





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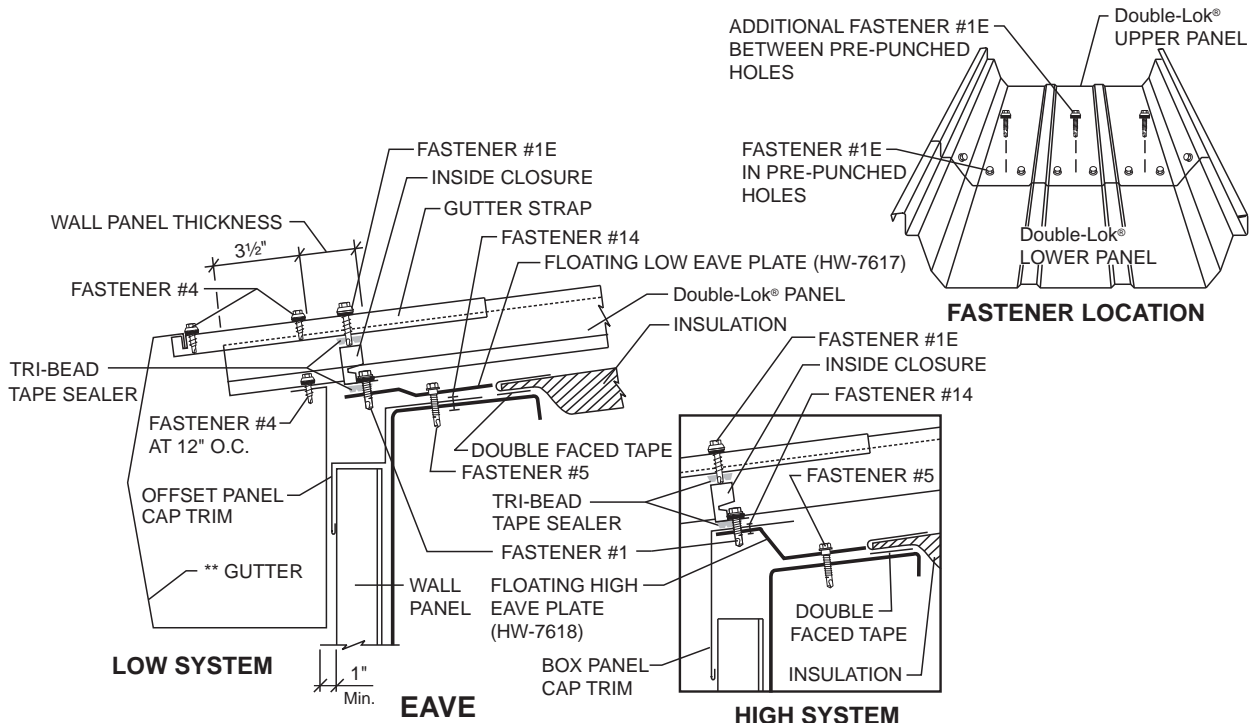
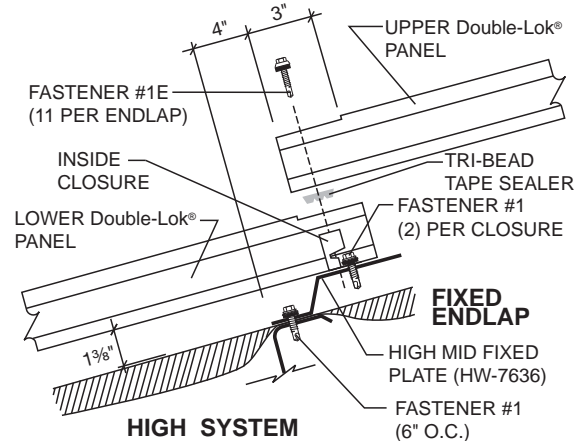
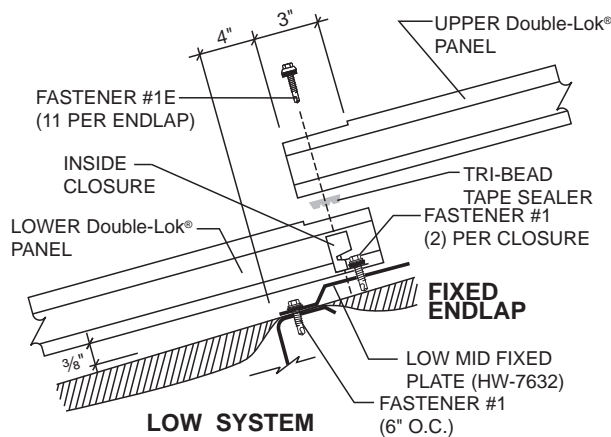
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SPECIAL ERECTION TECHNIQUES

double-lok®

MID SLOPE FIXED CONDITION



FASTENER LOCATION

NOTES

1. This special detail is for use when a panel run exceeds the thermal movement capabilities of the panel clip. Please refer to page DL-6.
2. A positive panel attachment is made at the mid-point in the panel run allowing for thermal movement to the eave and ridge.
3. The standard floating ridge condition must be used in conjunction with this special eave detail.
4. The **floating eave plate** must be used to allow for panel movement at the eave.
5. Refer to page DL-5 for maximum clip movement in each direction. Thermal calculations must be performed for each project to ensure that the thermal movement of the roof will not exceed the design of the clips and slot in the special eave plate.

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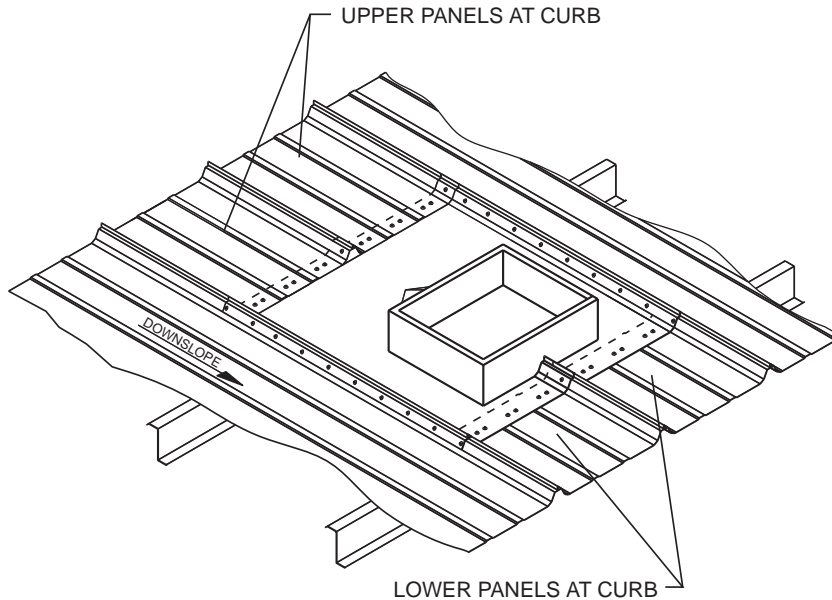
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Metal Roof and Wall Systems

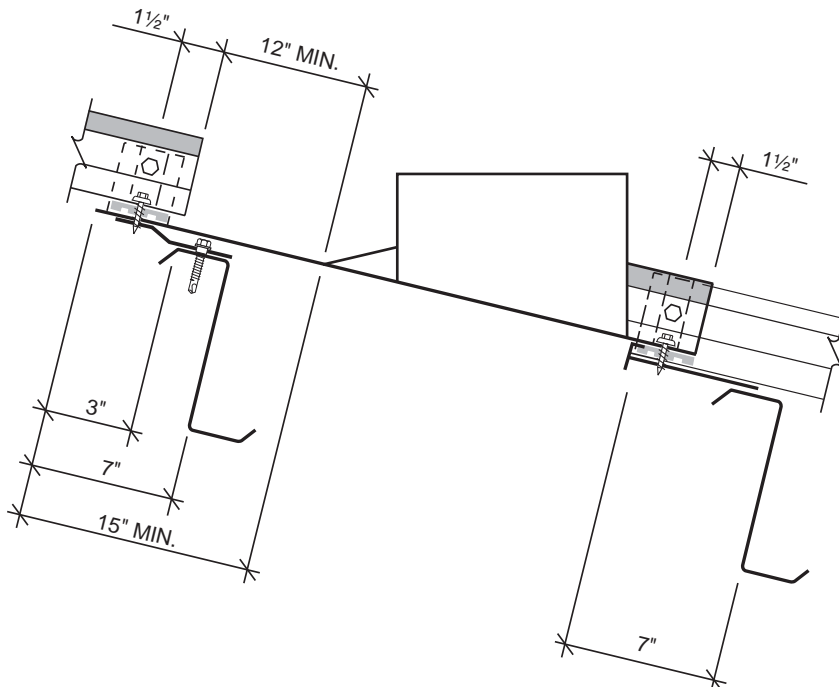
double-lok® SPECIAL ERECTION TECHNIQUES



ROOF CURB INSTALLATION

The manufacturer recommends that only one-piece aluminum curbs be used on its standing seam roof systems. The curb flange is constructed to match the configuration of the panel. The side flange extends to the next natural seam in the roof panel and conforms to the seam configuration. Cap strips, furnished by the curb manufacturer, secure the curb to the roof panels. The roof curb is installed under the roof panels on the upslope end and on top of the roof panels on the downslope end. Support framing should be installed before curb installation. **Back-up plates*** (for the roof panels at the down slope end of the curb), a **floating eave plate** (for the upslope end of the curb), long-life fasteners and Triple Bead tape sealer must be ordered for each curb.

ROOF CURB CROSS SECTION



ATTENTION

All curbs must be installed over support framing, supplied by the metal building manufacturer or the curb supplier. Support framing must be properly located to provide "endlap" conditions at the upslope and downslope ends of the curb. Refer to Roof Curb Cross Section for critical dimensions.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



Metal Roof and Wall Systems

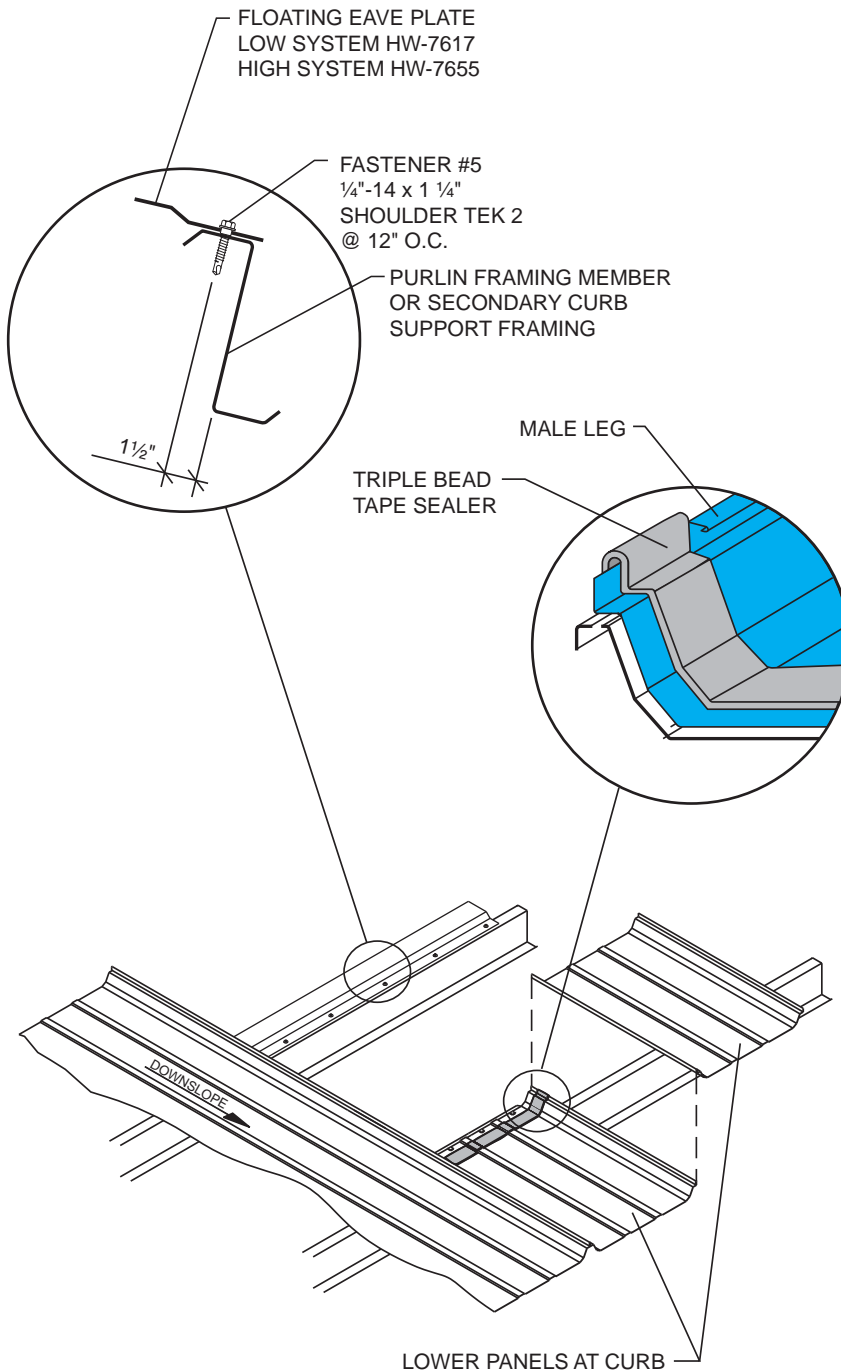
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SPECIAL ERECTION TECHNIQUES

double-lok®



INSTALLATING CURB WITH ROOF

Install curb support framing at curb location. Install full length roof panels up to curb location. Install lower panels at downslope end of curb. **If the lower panels are field cut to length, you must (1) cut the downslope end, leaving a factory cut at the curb end or (2) if the curb end of the panel is field cut, notch the male leg as it is done in the factory.** Place Triple Bead tape sealer across the full width of each panel as it is installed. To determine how far down on the panel to place the tape sealer, temporarily lay the curb in place and mark the down slope edge of the curb on the first panel. This will give you a reference point as to how far down slope to place the tape sealer. **It is critical that the tape sealer be installed across each panel individually so that the tape sealer can be placed over the male leg.** This will provide a seal in the panel seam when the next panel is installed. Install back-up plates onto each of the lower panels.

ATTENTION

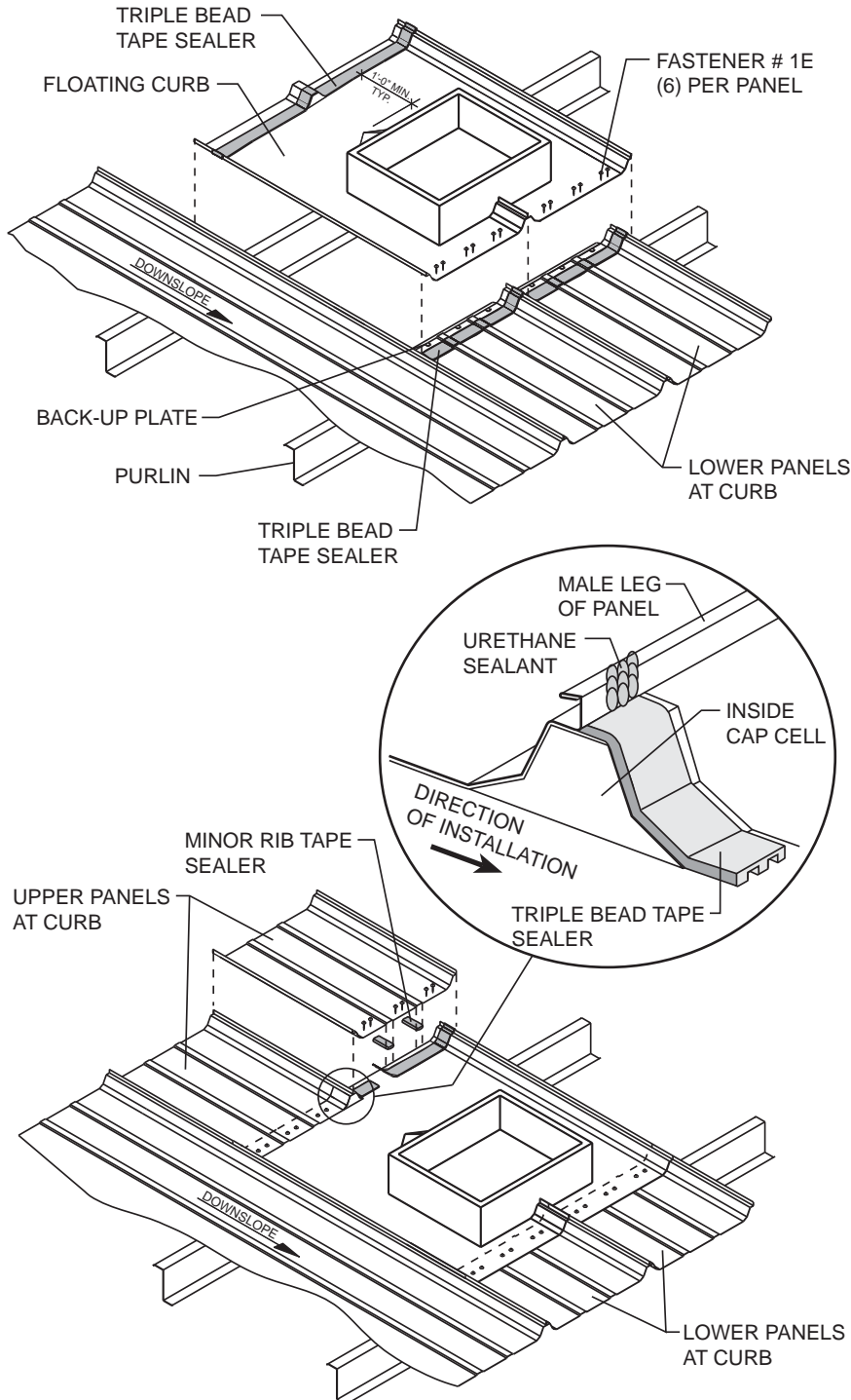
All curbs must be installed over support framing, supplied by the metal building manufacturer or the curb supplier. Support framing must be properly located to provide "endlap" conditions at the upslope and downslope ends of the curb. Refer to Roof Curb Cross Section for critical dimensions.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

double-lok[®] SPECIAL ERECTION TECHNIQUES

ROOF CURB INSTALLATION (continued)



Install the roof curb on top of the lower roof panels and the curb support framing. Do not attach the curb to the support framing as this may prevent the curb from floating with the roof. Fasten the down slope end of the roof curb to the lower roof panels and back-up plates with Fastener #1E as at a standard endlap. This will require six fasteners in the pan of the panel and one in each trapezoid for a total of eight fasteners per panel. Fasteners must go through the Triple Bead tape sealer.

Install Triple Bead tape sealer across the width of the upslope end of the roof curb. Use the down slope end of the inside cap cell, which is welded to the roof curb, as a guide for placement of the tape sealer.

Apply minor rib tape sealer to the underside of the minor ribs on the down slope end of the upper panels. Install the upper panels with Fastener #1E as at a standard endlap. This will require six fasteners in the pan of the panel and one in each trapezoid for a total of eight fasteners per panel. Fasteners must go through the Triple Bead tape sealer. The down slope edge of these panels should be flush with the down slope edge of the inside cap cell. Apply urethane sealant to the male leg of all panels directly over the inside cap cell. This will prevent water infiltration through the end of the panel seam.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



Metal Roof and Wall Systems

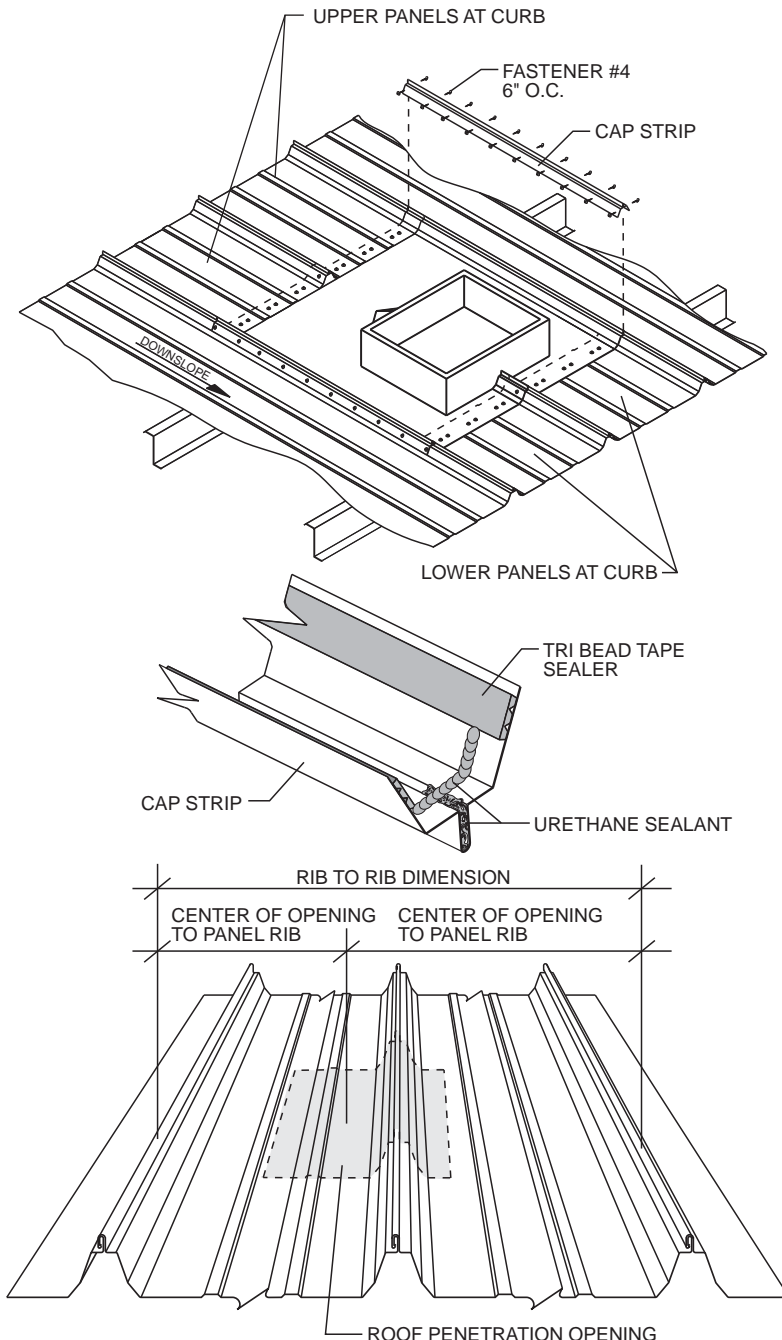
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SPECIAL ERECTION TECHNIQUES

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ROOF CURB INSTALLATION (continued)

After all upper panels have been installed, install full length panel at side of curb. This panel will engage the male leg of the adjacent upper and lower panels. The female leg of this full length panel will overlap the leg of the roof curb.

Cap strips will be installed, full length, along both sides of the curb to seal the curb to the roof panels. Turn the cap strips upside down and install Tri Bead tape sealer to both sides and along the full length of the cap strip. Lower edge of tape sealer should be flush with the lower edge of the cap strip. Apply a generous bead of urethane sealant at both ends of the seam portion of the cap strip. Install each cap strip over the curb/roof panel sidelap with the lower end of the cap strip even with the lower end of the curb. Force the cap strip down tightly to the curb/roof panel sidelap and fasten both sides with Fastener #4 at 6" on center.

INSTALLING CURB AFTER ROOF INSTALLATION

When curbs must be installed in an exact location, the curb support framing can be installed before beginning the roof. When a curb is to be added after the roof is installed, the curb framing must be installed from below the roof after the roof panels have been cut for installation of the curb.

After roof is installed, identify the exact location for the curb. Measure from the center of the required opening to the nearest panel rib in each direction. Also, determine how many panels will be affected by the curb (minimum clearance between vertical wall of curb opening and panel rib is 6") and measure from center of rib of first panel affected to center of rib of last panel affected (if 24" panel module was not held during roof installation, this dimension will be critical). This information will be required to fabricate the curb so that it will fit the location exactly.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

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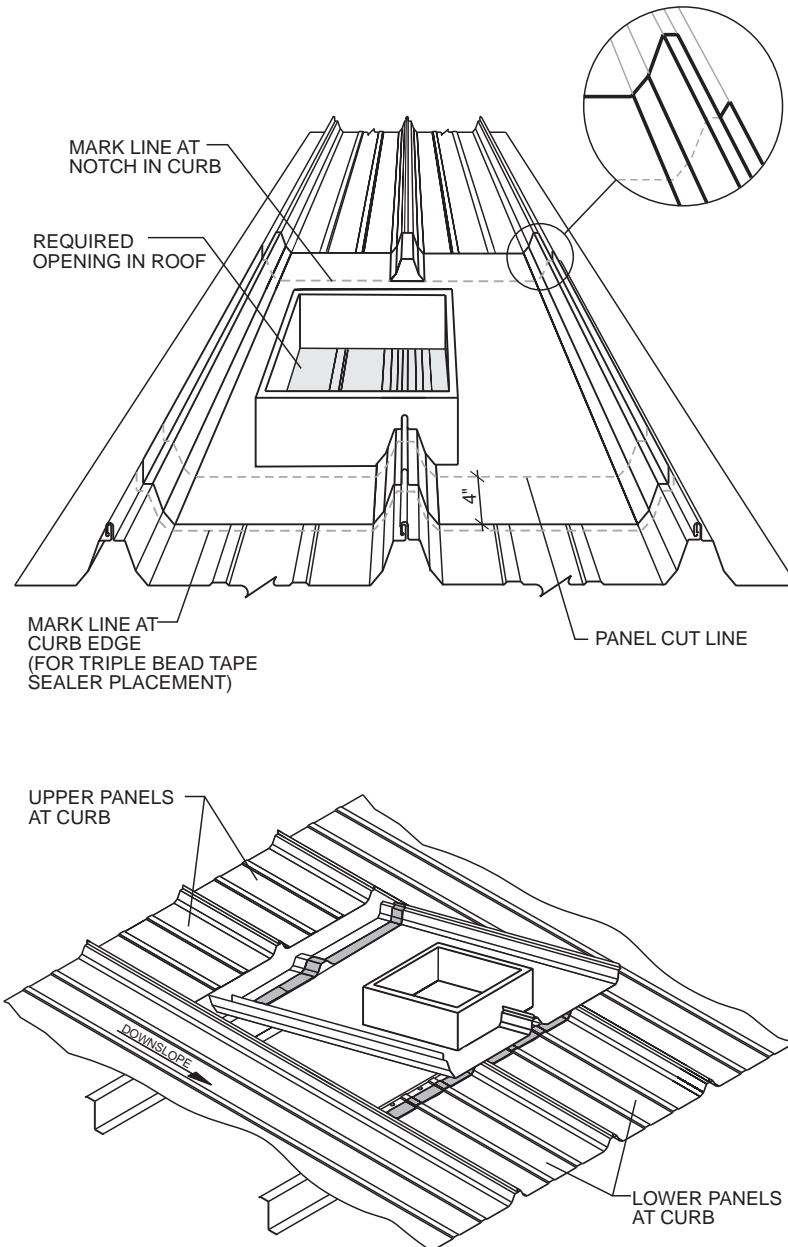
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Metal Roof and Wall Systems

double-lok® SPECIAL ERECTION TECHNIQUES



INSTALLING CURB AFTER ROOF INSTALLATION (continued)

Once curb is ready to be installed, lay curb on roof and align opening in the curb with the exact location the opening is required in the roof. At the up slope end of the roof curb, the roof panels will be cut on a line even with the beginning of the notch at the vertical leg on each side of the roof curb. Secondly, trace a line along the down slope edge of the roof curb. The roof panels will be cut on a line 4" up slope from this line.

Cut roof panels from rib of first panel affected by curb, to rib of last panel affected, along the top and bottom cut lines previously marked.

At the down slope end of the roof opening, install back-up plates onto the ends of the cut roof panels and Triple Bead tape sealer across the full width of these roof panels. The down slope edge of the tape sealer should be on the line previously traced along the downslope edge of the roof curb. The up slope edge of the tape sealer will be approximately 1½" from the end of the cut panel.

Apply Triple Bead tape sealer across the full width of the up slope end of the roof curb. The down slope edge of the tape sealer will align with the down slope edge of the inside cap cells welded to the roof curb.

Install the roof curb under the roof panels at the up slope end and on top of the panels at the down slope end. This will require that you lift the roof panels up slightly at the up slope end to allow the upper flange of the roof curb to slide under the panels. Spray some soapy water on the tape sealer to prevent it from sticking to the roof panels until you have the curb completely in place.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



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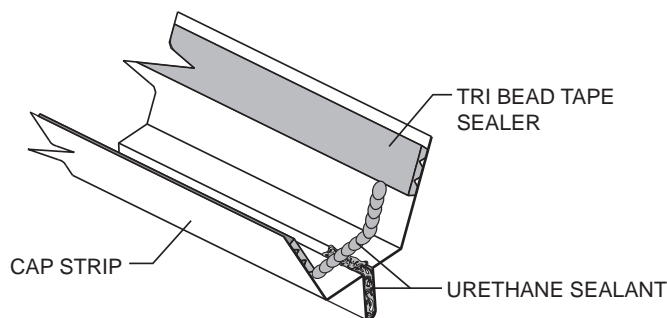
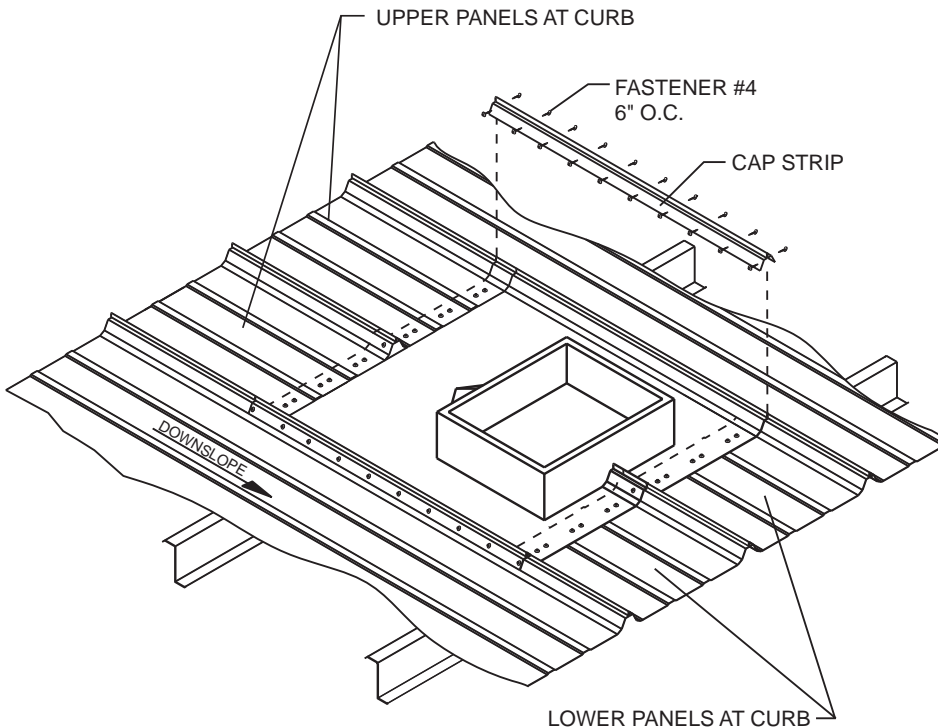
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SPECIAL ERECTION TECHNIQUES

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INSTALLING CURB AFTER ROOF INSTALLATION (continued)

Cap strips will be installed, full length, along both sides of the curb to seal the curb to the roof panels. Turn the cap strips upside down and install Tri Bead tape sealer to both sides and along the full length of the cap strip. Lower edge of tape sealer should be flush with the lower edge of the cap strip. Apply a generous bead of urethane sealant at both ends of the seam portion of the cap strip. Install each cap strip over the curb/roof panel sidelap with the lower end of the cap strip even with the lower end of the curb. Force the cap strip down tightly to the curb/roof panel sidelap and fasten both sides with Fastener #4 at 6" on center.

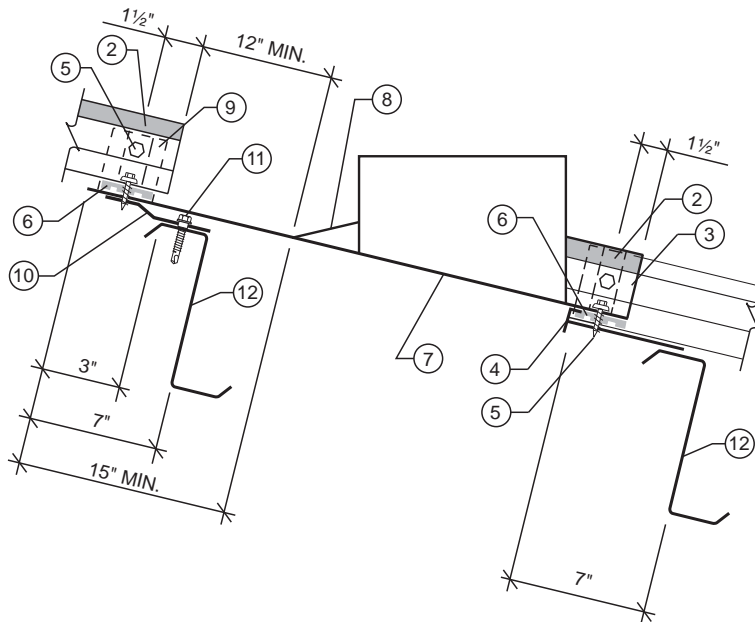


CAUTION

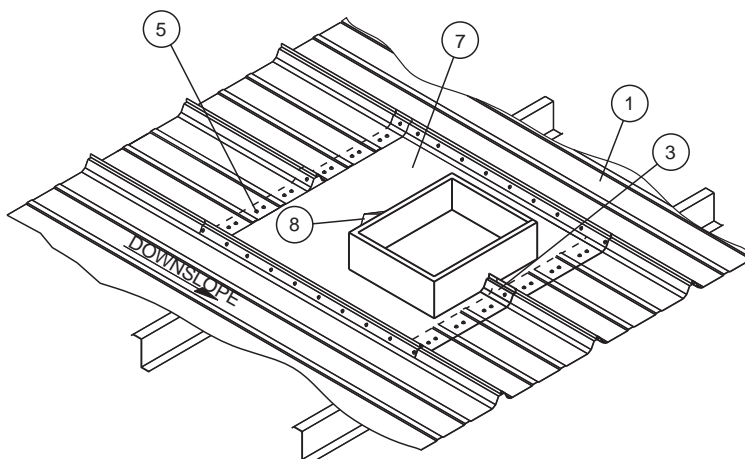
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double-lok® SPECIAL ERECTION TECHNIQUES

ROOF CURB CROSS SECTION



ROOF CURB ISOMETRIC



ROOF CURB CROSS SECTION

1. Double-Lok® Panel
2. Urethane Sealant
3. Outside Cap Cell
4. Back-up Plate
5. Fastener #1E
6. Triple Bead Tape Sealer
7. Roof Curb Made From Structural Aluminum (Min. .080 Thickness)
8. Water Diverter
9. Inside Cap Cell
10. Floating Eave Plate
11. Fastener #5
12. Purlin Framing Member or Secondary Curb Support Framing

CAUTION

The above curb type and installation instructions must be used for curbs to be included in a weathertightness warranty.

ATTENTION

All curbs must be installed over support framing, supplied by the metal building manufacturer or the curb supplier. Support framing must be properly located to provide "endlap" conditions at the upslope and downslope ends of the curb. Refer to Roof Curb Cross Section for critical dimensions.

CAUTION

It is the user's responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.



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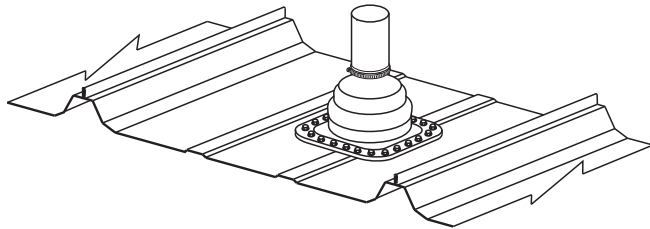
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SPECIAL ERECTION TECHNIQUES

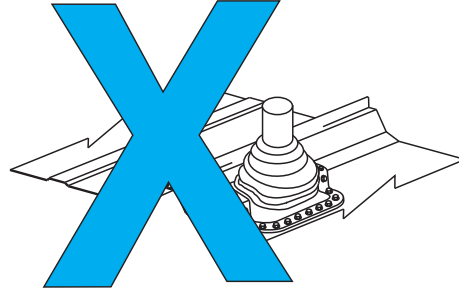
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PIPE PENETRATION INSTALLATION

RECOMMENDED SMALL AND LARGE PIPE PENETRATION INSTALLATION



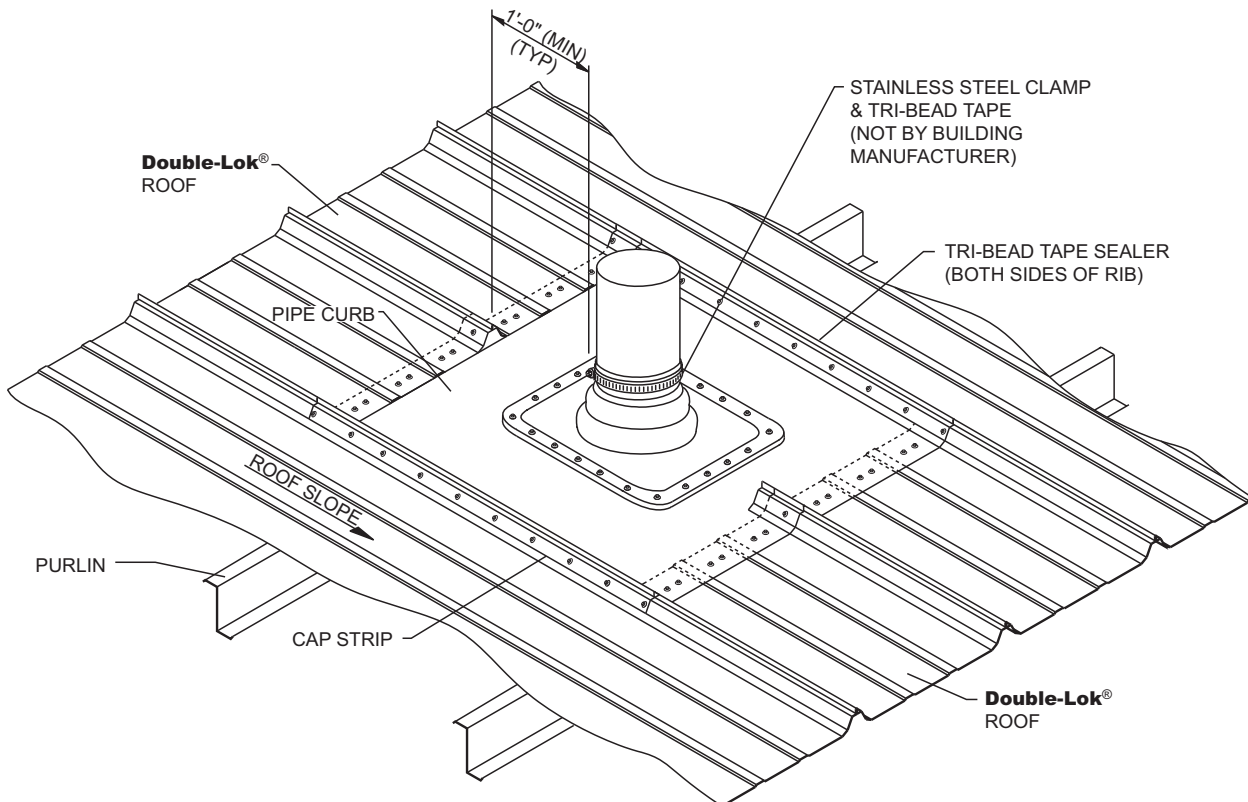
RIGHT WAY



WRONG WAY

RECOMMENDED SMALL PIPE PENETRATION INSTALLATION

INSTALL PIPE IN CENTER OF PANEL TO ALLOW BASE OF RUBBER ROOF JACK TO LAY FLAT ON PANEL.

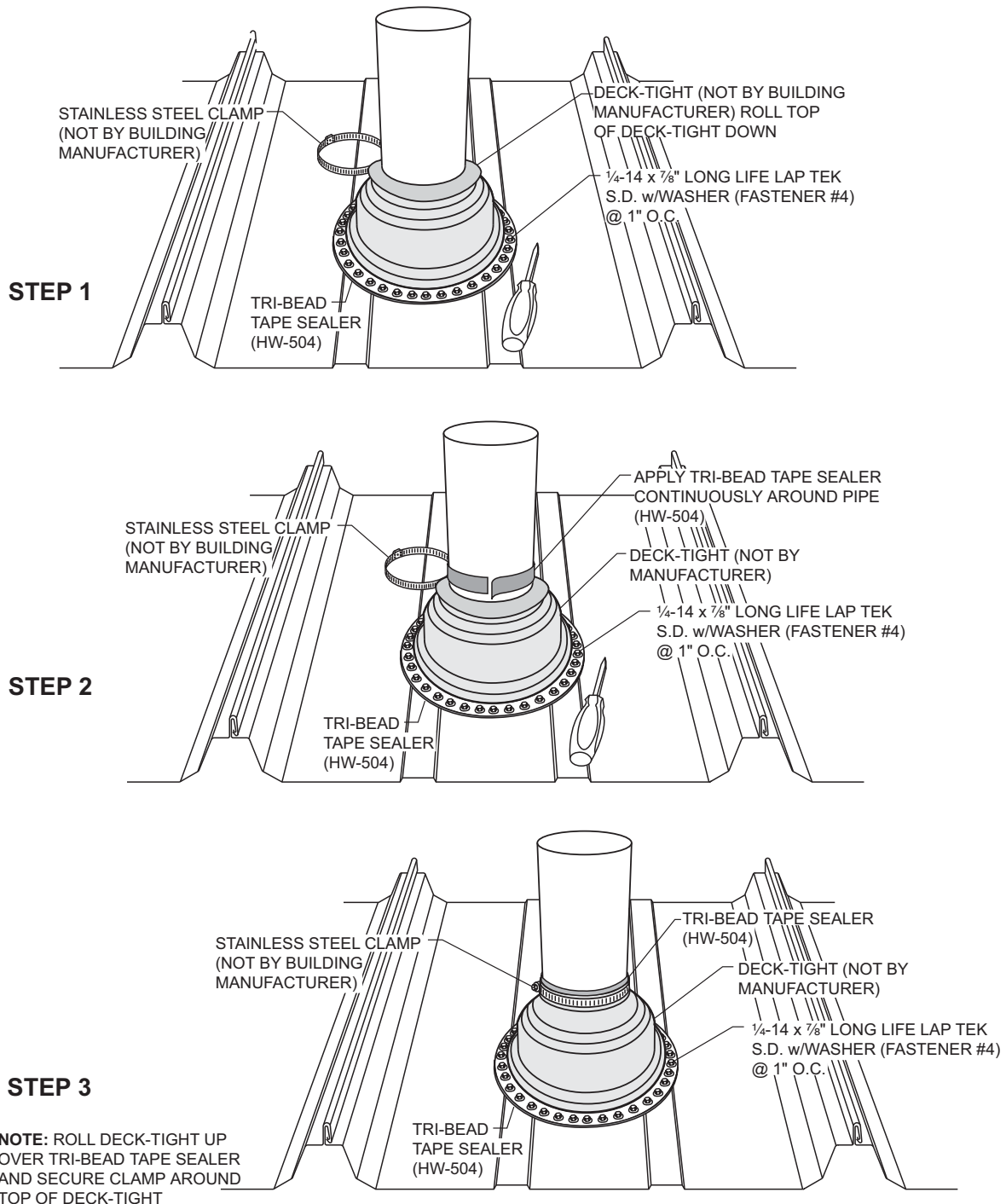


RECOMMENDED LARGE PIPE PENETRATION INSTALLATION

THIS METHOD TO BE USED IN ALL CASES WHERE A PIPE PENETRATION INTERSECTS A PANEL RIB OR WHEN THE PIPE IS TOO LARGE AND WILL NOT ALLOW ADEQUATE WATER FLOW DOWN THE PANEL.

double-lok[®] SPECIAL ERECTION TECHNIQUES

PIPE PENETRATION INSTALLATION DECK-TIGHT INSTALLATION





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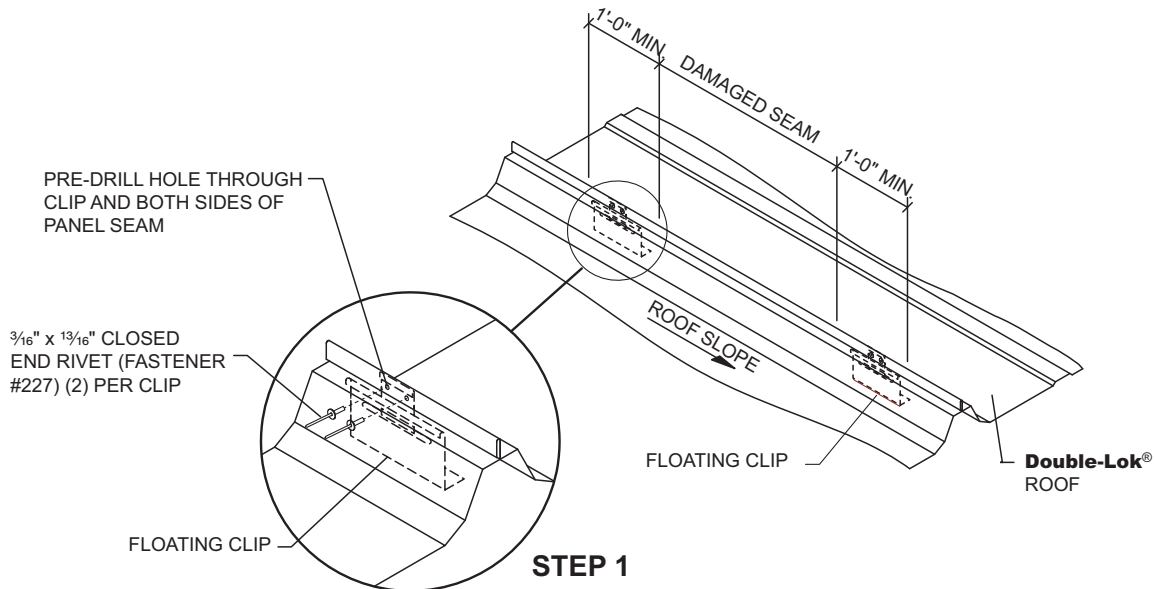
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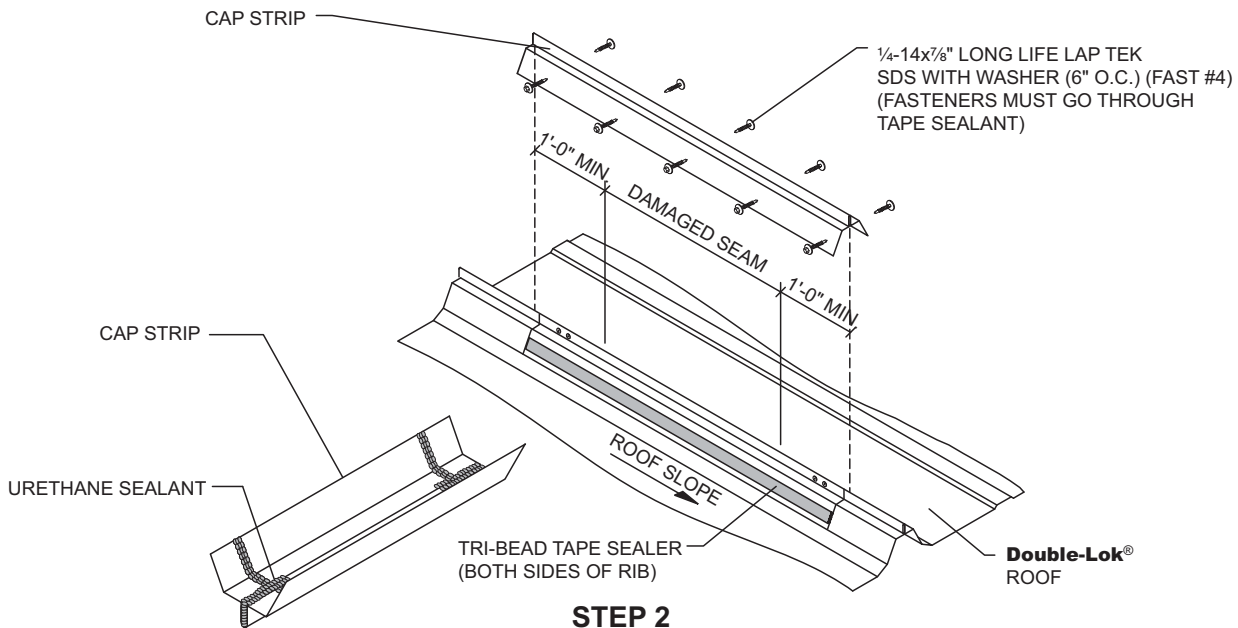
SPECIAL ERECTION TECHNIQUES

double-lok®

Double-Lok® REPAIR CAP INSTALLATION



1. Repair cap must extend 1'-0" above and below the damaged area.
2. $\frac{3}{16}$ " x $\frac{13}{16}$ " closed end rivet fastened through each clip and both sides of panel rib in damaged area. (2 required per clip)



1. Install a continuous run of Tri-Bead tape sealer to both sides of damaged panel rib.
2. Apply a bead of urethane sealant up and over both panel ribs at each end of damaged panel seam.
3. Fill seam portion of repair cap with urethane sealant.
4. Push repair cap down onto panel rib and fasten with $\frac{1}{4}$ -14x $\frac{7}{8}$ " Long Life Lap Tek (Fastener #4) @ 6" O.C. on both sides. Fasteners must go through tape sealer.
5. Check repair cap at each end to verify that urethane sealant has sealed across the entire cross section of repair cap.

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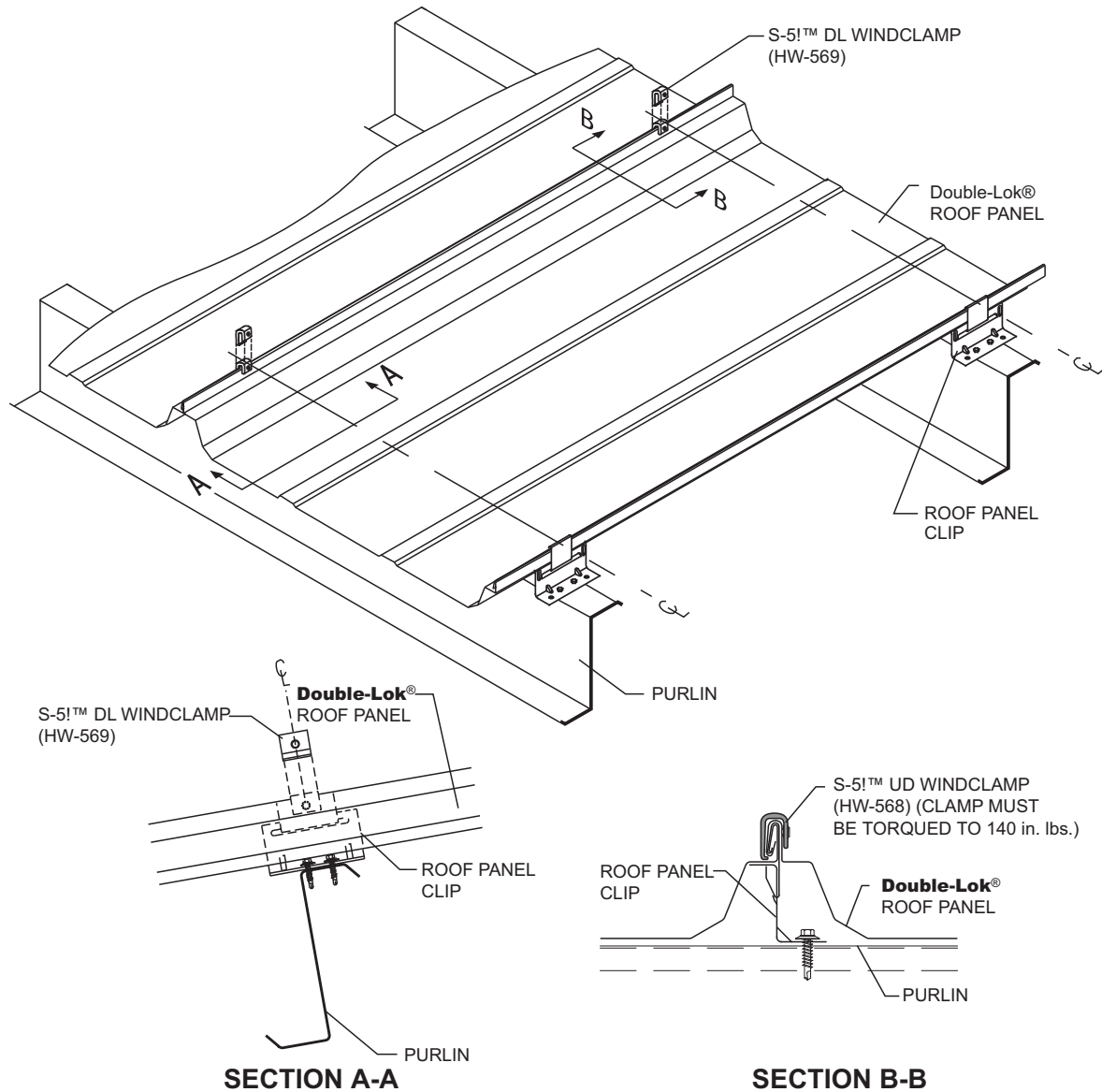
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Metal Roof and Wall Systems

double-lok® SPECIAL ERECTION TECHNIQUES

S-5!™ Double-Lok® Windclamp Installation Location



Notes:

1. Only for use with HW-214, 216, 2122, 2124, 2126, and 2128 clips.
2. Torque set screw to 140 in-lbs.
3. **Application zone and feasibility of wind clamps must be determined by a Registered Professional Engineer.**
4. For load tables please inquire.



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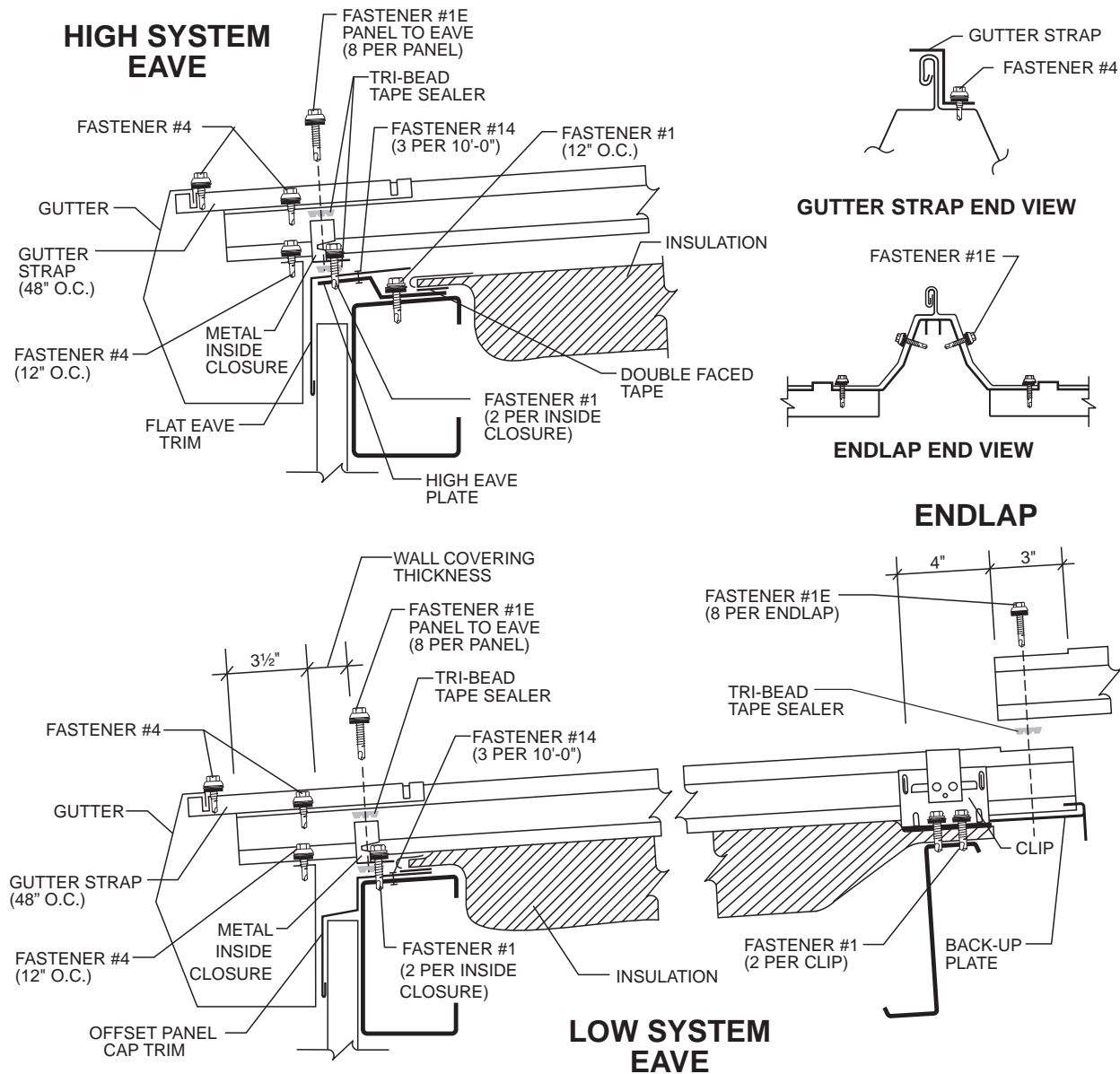
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DESIGN

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TRIM DETAILS EAVE TO ENDLAP



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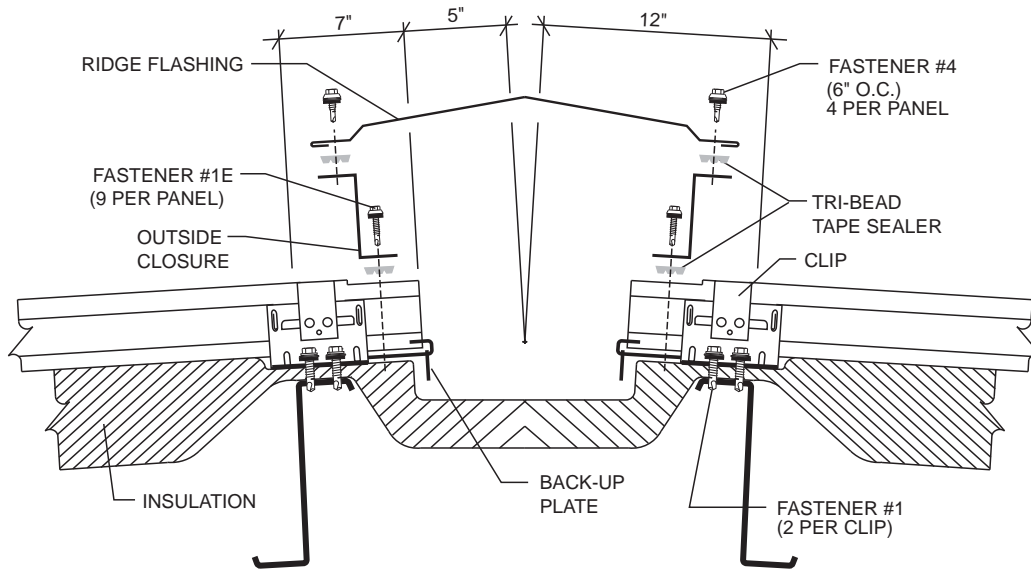


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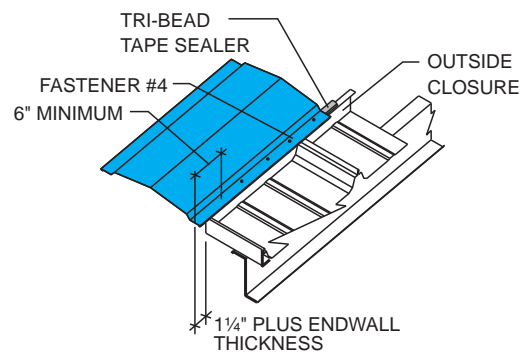
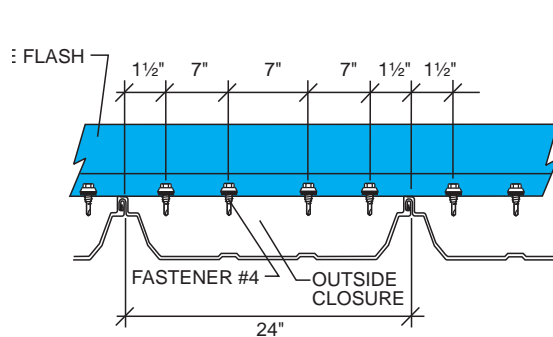
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DESIGN

TRIM DETAILS RIDGE



Install the ridge flashing starting and ending $1\frac{1}{4}$ " plus endwall thickness outside the steel line. Fasten the ridge flashing to the outside closures with Fastener #4. Install a fastener $1\frac{1}{2}$ " from panel seam on both sides of panel. Install additional fasteners directly above minor ribs of panel. Four fasteners are required at each panel. Leave 6" unfastened on each end to allow for the rake trim to be installed later. **DO NOT FASTEN THROUGH THE LOCK OF THE STANDING SEAM.**



CAUTION

Double-Lok® systems must utilize a Floating Peak Box. See page DL-76.

SEE PAGES DL-25 AND DL-28 FOR FASTENER SELECTION.



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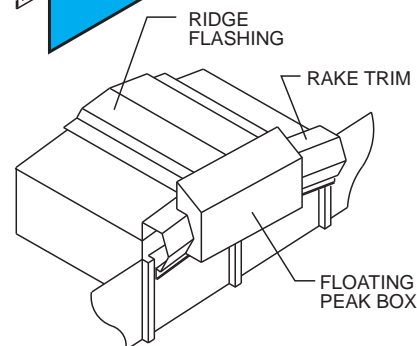
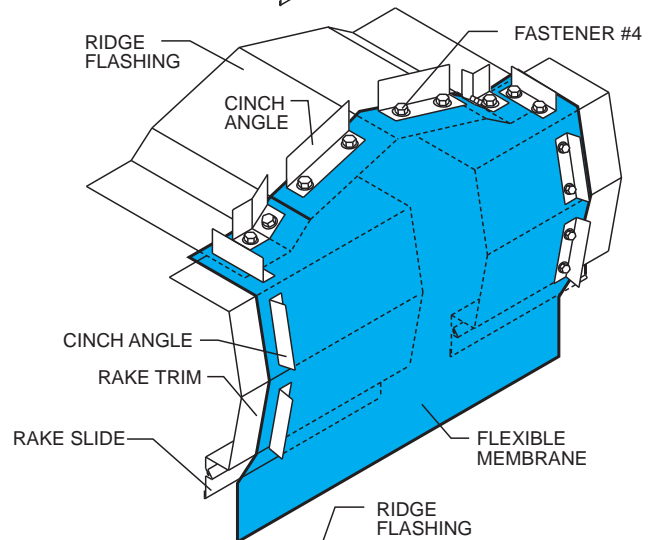
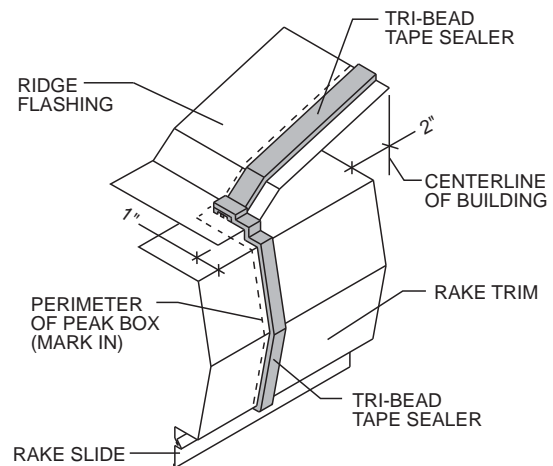
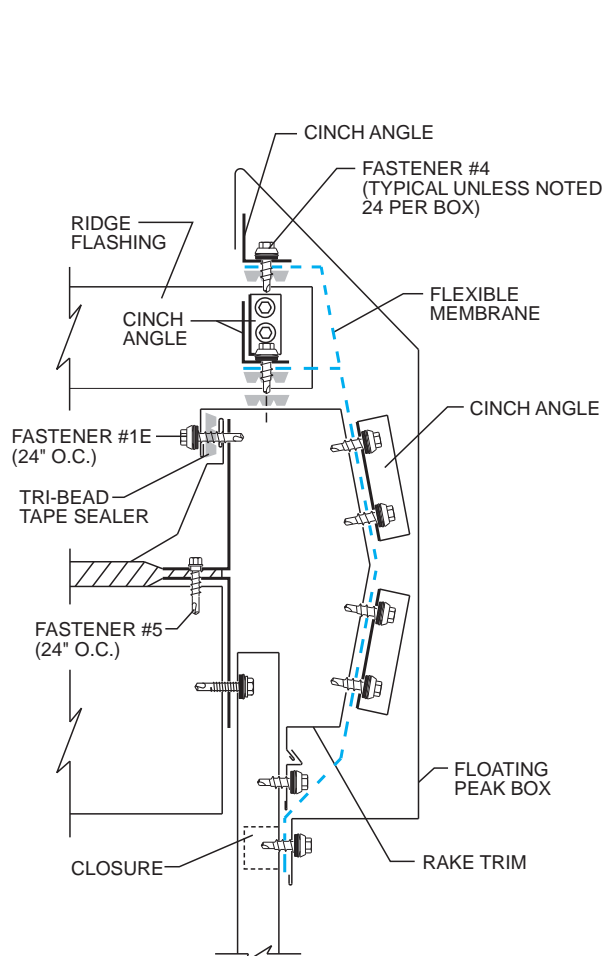
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DESIGN

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TRIM DETAILS FLOATING PEAK BOX



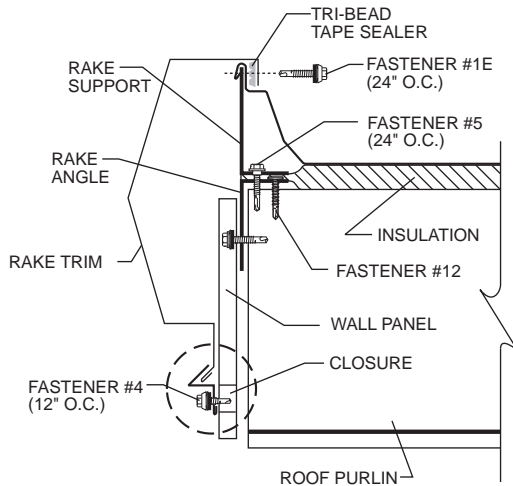
FLOATING PEAK BOX INSTALLATION

1. Install rake trim on each side of ridge to within 2" of centerline of building.
2. Install ridge flash so that it is on top leg of rake trim, 1" back from outside edge.
3. Temporarily set peak box in place and mark perimeter of box on rake trim and ridge flash. Remove peak box.
4. Just inside mark, install tape sealer continuously across ridge flash, then down the face of rake trim on both sides of ridge.
5. Place flexible membrane over tape sealer and hold in place with cinch angles. Cinch angles should be attached with Fastener #4. To prevent leaks, flexible membrane should be tight against ridge flash and rake trim with no wrinkles at the sealed edges.
6. Hook top of peak box over cinch angles installed on top of ridge flash and attach bottom of peak box to endwall with Fastener #4.

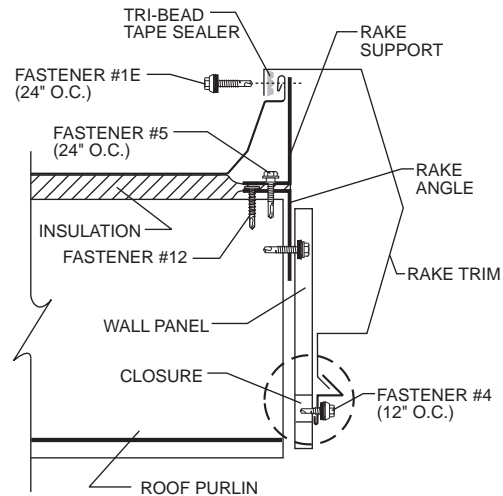
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DESIGN

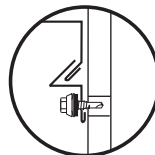
TRIM DETAILS RAKE



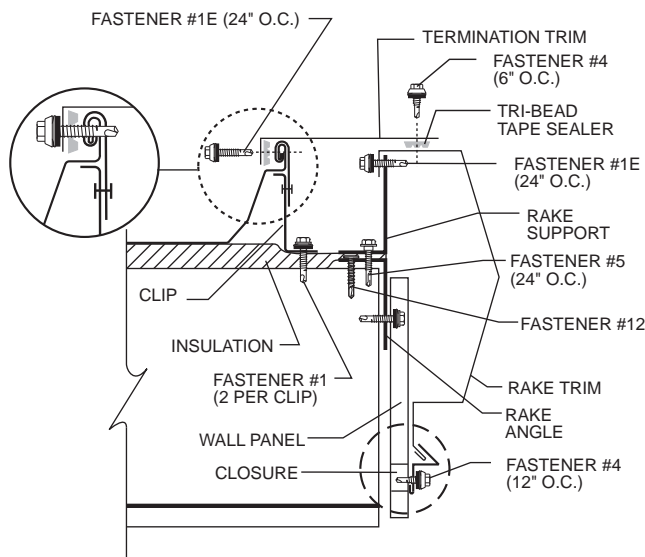
BEGINNING RAKE TRIM



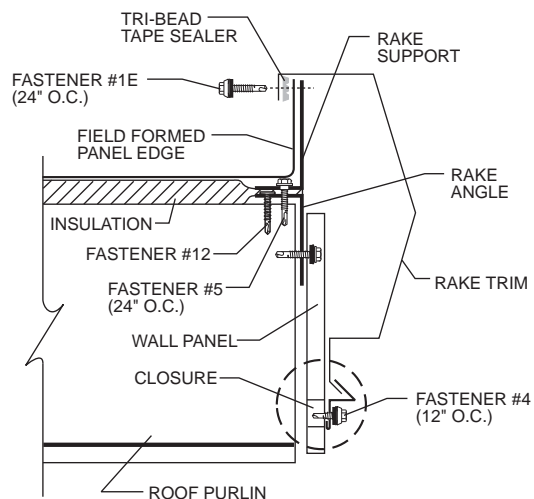
**TERMINATION RAKE TRIM
ON MODULE**



RAKE SLIDE
(FOR FLOATING SYSTEMS ONLY)



**TERMINATION RAKE TRIM
OFF MODULE**



**TERMINATION RAKE TRIM
OFF MODULE (OPTIONAL)**

SEE PAGES DL-25 AND DL-26 FOR FASTENER SELECTION.



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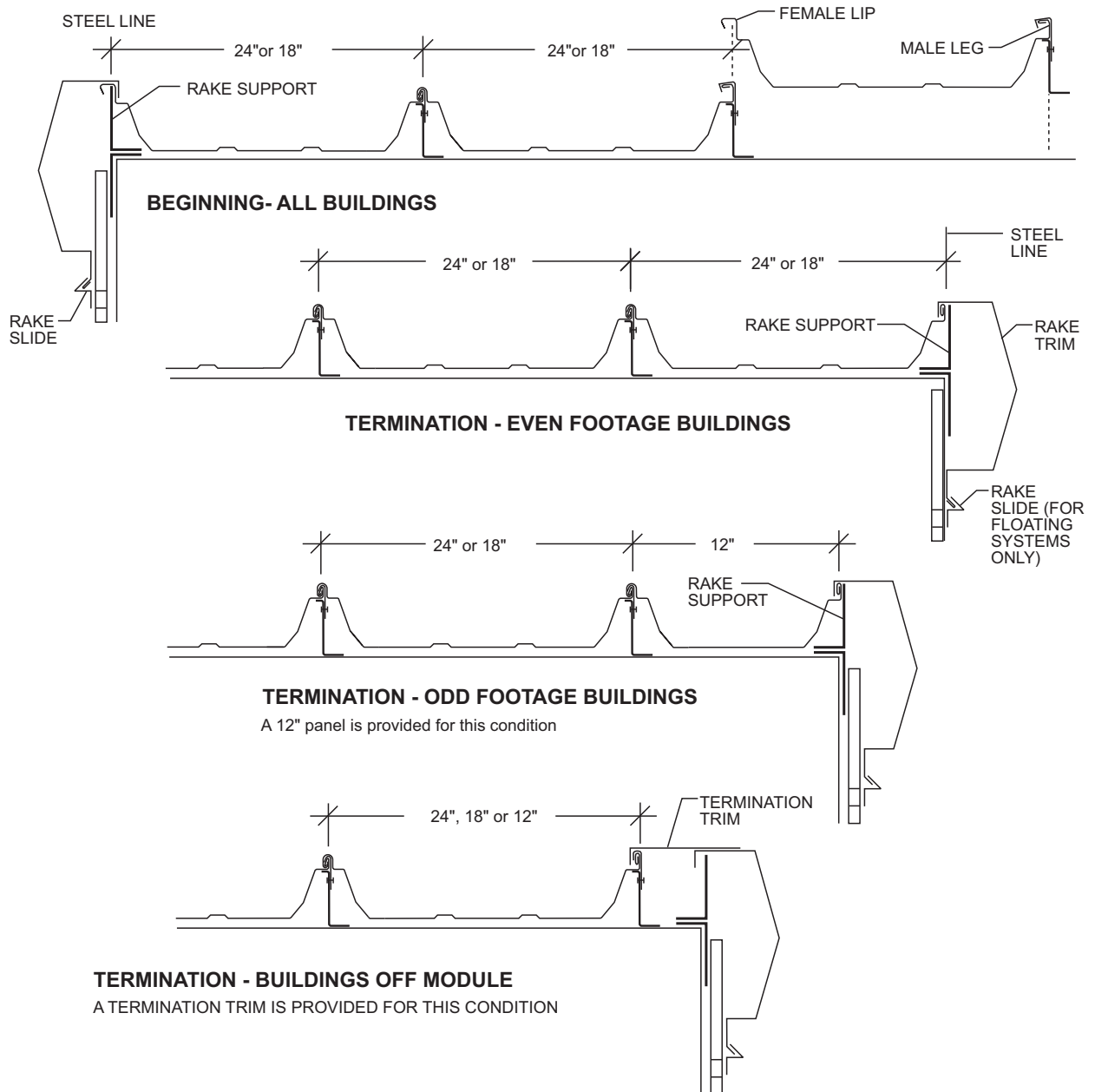
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TRIM DETAILS RAKE TO RAKE



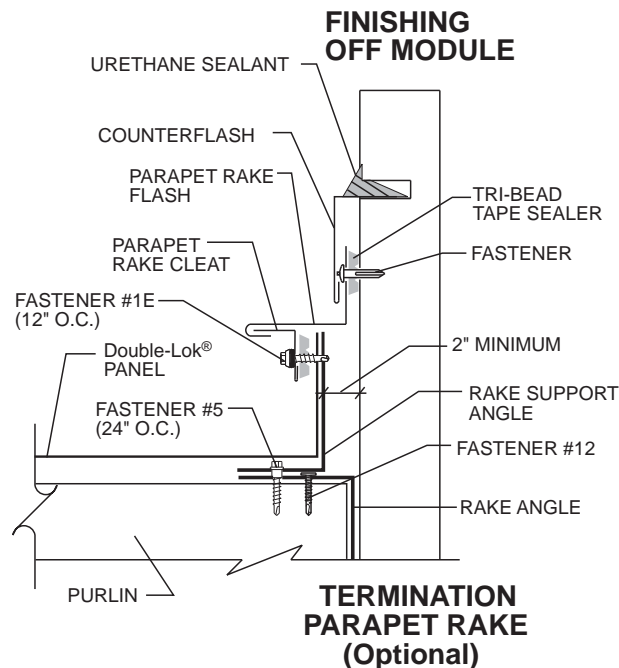
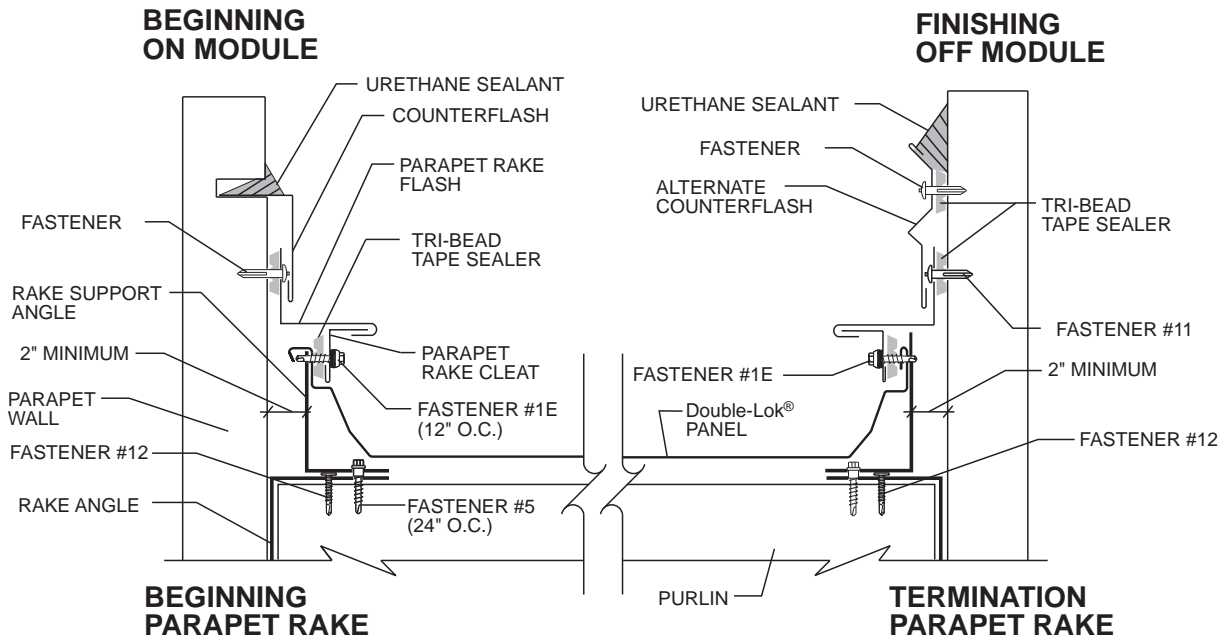
NOTE:

For an adequate understanding of how to design the **Double-Lok®** roof system, it is important to read the section of this manual which includes all trim details.

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TRIM DETAILS RAKE PARAPET





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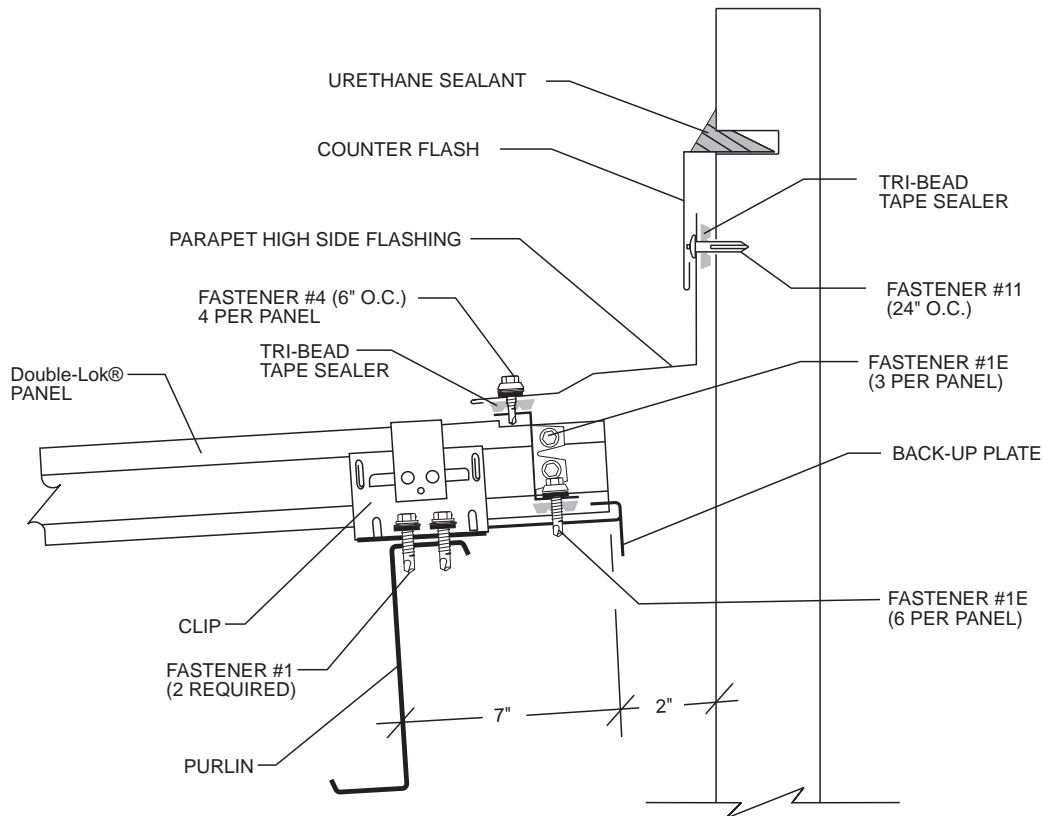
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TRIM DETAILS HIGH EAVE PARAPET



NOTE: HIGH SIDE PURLIN IS 9" DOWN SLOPE

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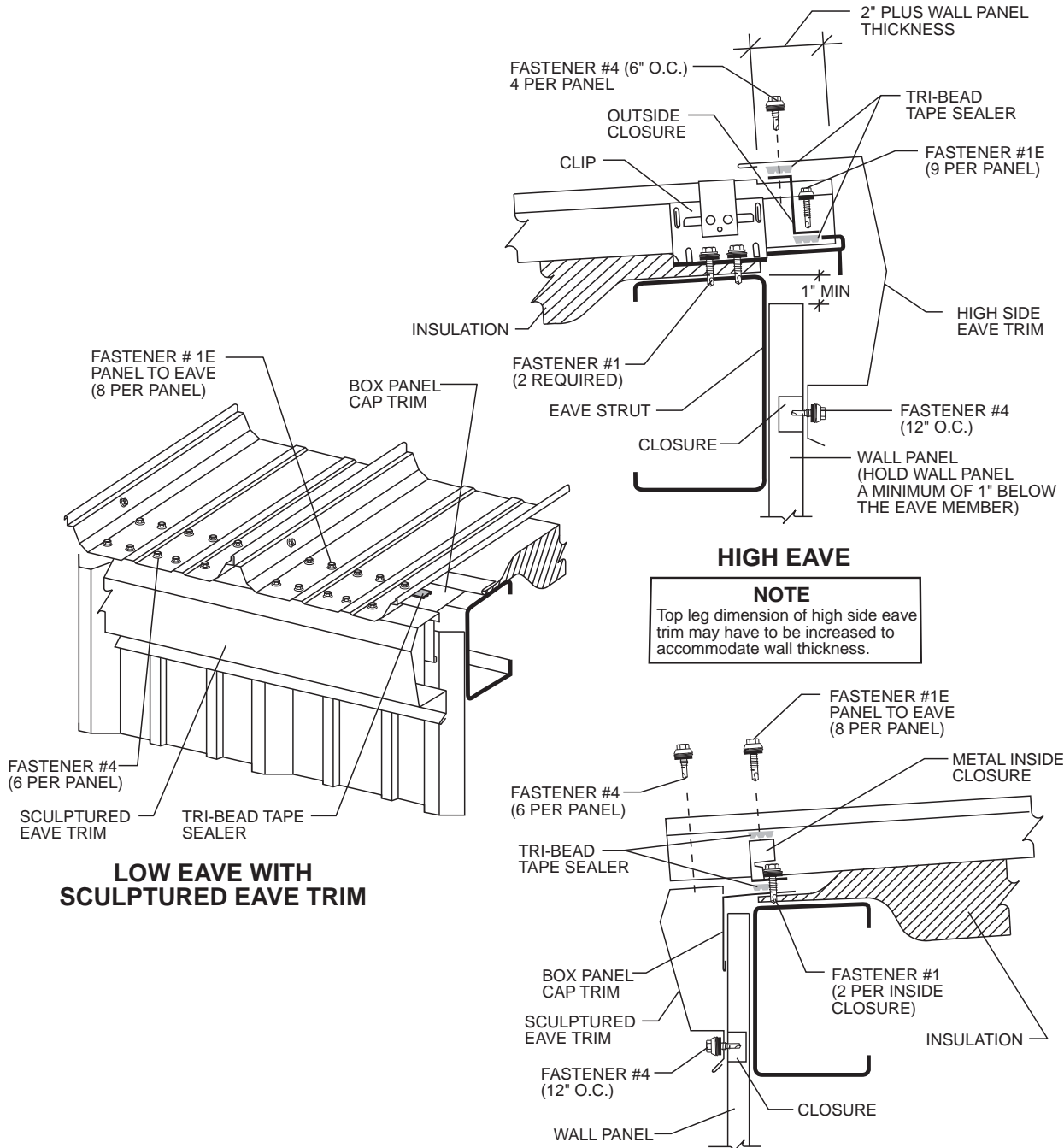


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TRIM DETAILS EAVE



NOTE: THIS OPTIONAL SCULPTURED EAVE TRIM IS AVAILABLE. HOWEVER, UNDER CERTAIN CONDITIONS IT MAY INDUCE STAINING OF WALL PANELS.



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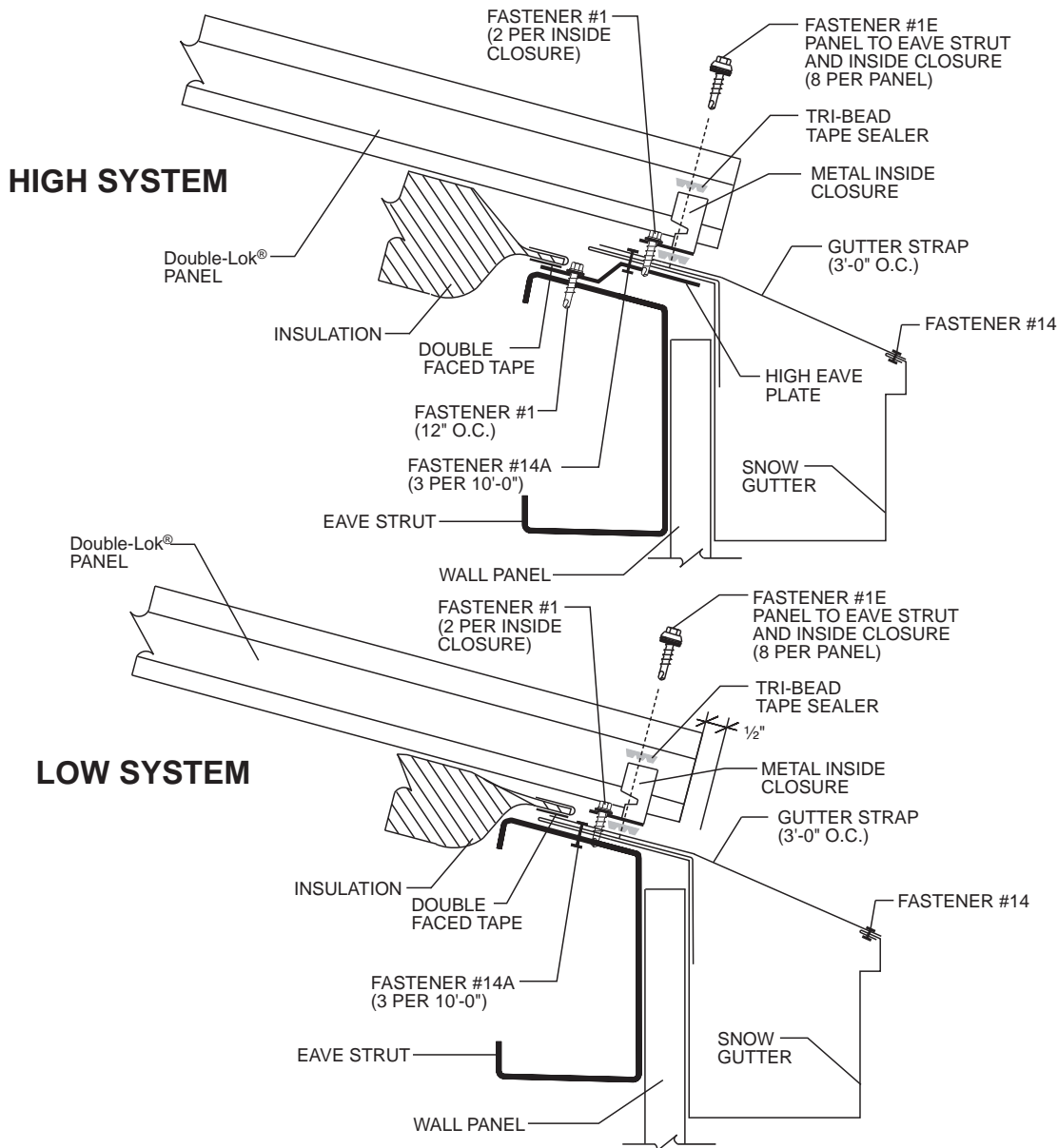
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TRIM DETAILS SNOW GUTTER



NOTES:

1. Attach gutter to eave plate with Fastener #14A (3 fasteners per 10' piece).
2. Install gutter straps 3'-0" o.c.
3. Apply Tri-Bead tape sealer to slope leg of gutter.
4. Use minor rib tape sealer to fill voids in panel at minor ribs as shown on page DL-36.
5. Install panel with Fastener #1E at prepunched holes. **Panel must not overhang into gutter.**
6. Front top edge of gutter must not project above the plane of the panel pan.

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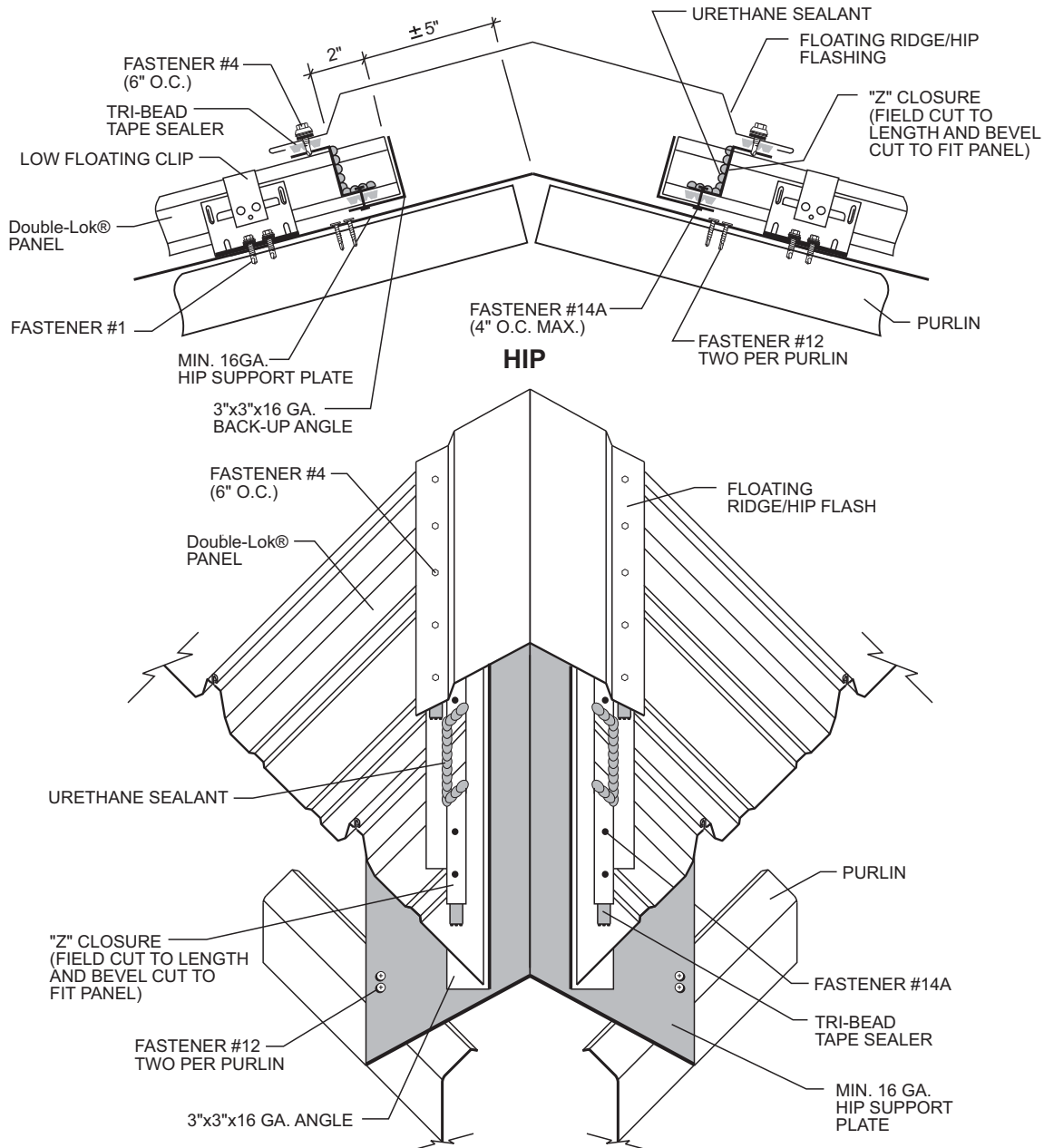


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TRIM DETAILS FLOATING HIP



CAUTION

All trapezoidal panels are extremely difficult to install at hips and valleys in a weathertight manner. The use of these details should only be attempted by installation crews that are highly experienced. In order to assure weathertightness, MBCI recommends one of it's vertical leg standing seam systems for use on roofs that require hips and valleys.



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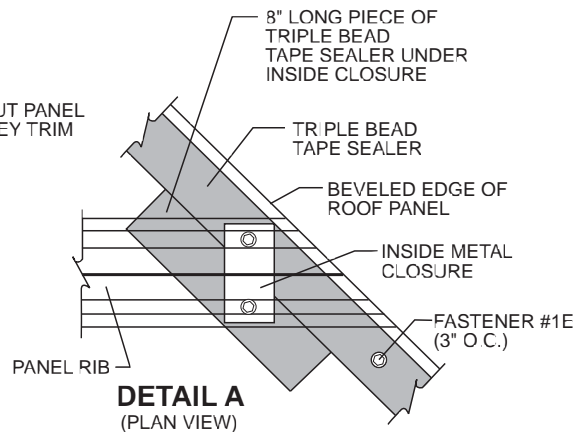
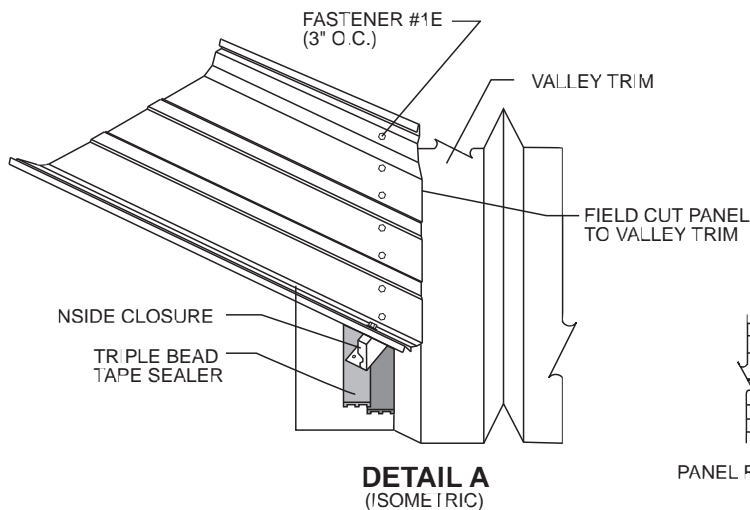
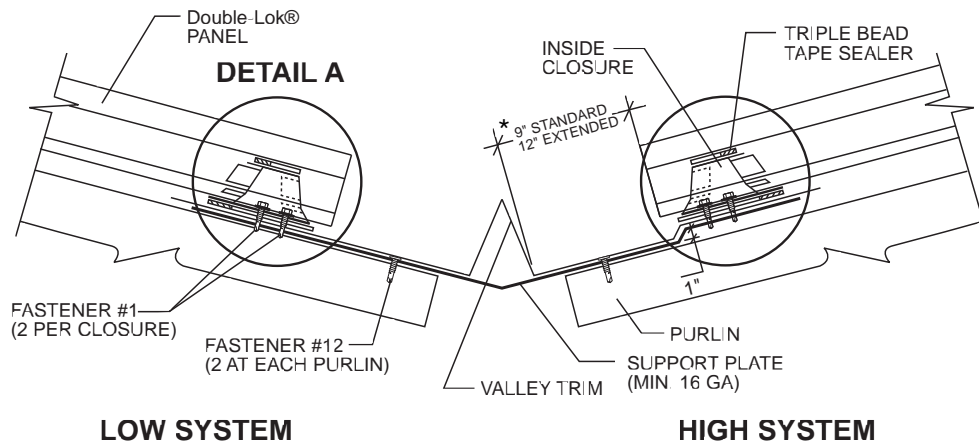
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TRIM DETAILS VALLEY



NOTE
12" Valley dimension must be used in low slope conditions and in valleys longer than 30'-0".

* For valleys over 30'-0" long, use extended valley trim.

CAUTION

All trapezoidal panels are extremely difficult to install at hips and valleys in a weathertight manner. The use of these details should only be attempted by installation crews that are highly experienced. In order to assure weathertightness, MBCI recommends one of its vertical leg standing seam systems for use on roofs that require hips and valleys.

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PROPER HANDLING, STORAGE AND MAINTENANCE OF PAINTED AND GALVALUME PLUS[®] PANELS

PANEL HANDLING

- All panel bundles must be inspected during unloading and carrier must be advised immediately if damage is noted.
- Never unload or move panel bundles that have been opened without adequately clamping them. Without the banding to hold the bundle stable, panels may shift during unloading or movement, causing the bundle to fall.
- Never use wire slings to unload or move panel bundles.
- When unloading or moving panel bundles over 20' long, a spreader bar may be required. It is the erector's responsibility to determine the location and number of lift points required to safely unload or move panel bundles.
- When handling individual panels, always wear protective gloves. OSHA safety regulations must be followed at all times.
- When cutting panels, always wear all required safety equipment including, but not limited to, safety glasses and gloves. Cut panels with nibblers, shears or snips. Do not use abrasive blade saws as these will melt the Galvalume[®] coating causing the panel to edge rust which will void the Galvalume[®] and Paint warranties. Drilling fasteners into panels will create metal filings that will rust and create an unsightly stain. Metal filings must be removed by sweeping or wiping down panels immediately after installation to avoid this occurrence.

PANEL STORAGE

- If water is permitted to enter panel bundles, it is necessary to open bundles, separate the panels and dry all surfaces.
- Store bundled panels off the ground sufficiently high to allow air circulation beneath bundle and to prevent rising water from entering bundle. Slightly elevate one end of bundle.
- Prevent rain from entering bundle by covering with tarpaulin, making provision for air circulation between draped edges of tarpaulin and the ground.
- Prolonged storage of panels in a bundle is not recommended. If conditions do not permit immediate erection, extra care should be taken to protect panels from white rust or water marks. If panels have not been erected within three weeks of receipt, the panels should be removed from the bundle for inspection. Condensation may cause damage to panels. The manufacturer's Paint and Galvalume[®] warranties do not cover damage caused by improper panel storage.

PANEL MAINTENANCE

- Never allow Galvalume[®] panels to come into contact with or water runoff from dissimilar materials such as copper, lead, or graphite. These materials will cause galvanic corrosion of the panels and will void the Galvalume[®] warranty. This includes treated wood and AC condensate, both of which contain copper compounds. This also applies to painted panels.
- Always use long life fasteners in all exposed fastener applications. Non long life fasteners can rust through the panel at each exposed fastener location. Use of non long life fasteners in exposed applications will



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void the Galvalume® and Paint warranties.

- Panels should be protected against exposure to masonry products, strong acids or bases and solvents. Exposure to these agents may etch or stain Galvalume Plus® panels and cause painted panels to blister or peel.
- Never allow anyone to apply any coating or patching material to the panel surface. These products may contain chemicals that will adversely affect the Galvalume Plus® or paint coating. Also, water may become trapped between the coating material and the panel, causing premature corrosion.

If you have any question as to proper methods to use in the handling, storage or maintenance of these panels, call your nearest manufacturer representative.

NOTICE

Uniform visual appearance of Galvalume Plus® coated panels cannot be guaranteed. The Galvalume Plus® coating is subject to variances in spangle from coil to coil which may result in a noticeable shade variation in installed panels. The Galvalume Plus® coating is also subject to differential weathering after panel installation. Panels may appear to be different shades due to this weathering characteristic. If uniform visual appearance is required, the manufacturer recommends that our prepainted Signature® 200 or Signature® 300 panels be used in lieu of Galvalume Plus®. Shade variations in panels manufactured from Galvalume Plus® coated material do not diminish the structural integrity of the product. These shade variations should be anticipated and are not a cause for rejection.

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NOTES



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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, MBCI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. To ensure you have the latest information available, please inquire or visit our website at www.mbc.com. Application details are for illustration purposes only and may not be appropriate for all environmental conditions, building designs or panel profiles. Projects should be designed to conform to applicable building codes, regulations and accepted industry practices. If there is a conflict between this manual and project erection drawings, the erection drawings will take precedence.

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