VALLEY STEEL CFR™ STANDING SEAM ROOF SYSTEM TABLE OF CONTENTS

VALLEY STEEL TRAPEZOIDAL RIB STANDING SEAM ROOF SYSTEM

The Valley Steel CFR™ trapezoidal rib standing seam roof system panel is available as a component of one of Valley Steel Building Systems' Standard Roof Systems.

The Valley Steel CFR™ Standing Seam Roof System presents the building owner with a high quality, economical alternative to other roofing systems. The system is designed to meet the demanding needs of today's building market

The Valley Steel CFR™ system is a functional roof specifically designed for low slopes. This roof system has been extensively tested to ensure the highest level of performance for weather tightness and structural integrity. The panels have been tested and approved by Factory Mutual and Underwriters Laboratories for wind uplift as well as hail and fire resistance. The flexible options offer a number of cost effective design solutions.

The Valley Steel CFR™ system is a raised seam metal roof which is designed to "float" to accommodate thermal expansion and contraction. This is accomplished with concealed sliding clips which allow for up to 3" of expansion and contraction. The panel sidelap has factory-applied mastic and can be completely erected without the use of electric seaming machines. Valley Steel offers a hand-operated crimping tool for the Valley Steel Roll Lock™ installation option.

Information about the available panel and seaming options, panel properties, performance and testing information, and much more is available at the Valley Steel Building Systems website at the below link.

Valley Steel CFR™ Trapezoidal Rib Standing Seam Roof Panel

The following pages outline the different seaming options and span capacities as well as provide Valley Steel standard details for this roof system.

LAST REVISION
DATE: 03/11/15
AAJ CHK: MDK

VALLEY STELL CFR™ PROPERTY AND SPAN TABLE

CFR Roof (24 Gage A792 Grade 50, Class 1 with Fy = 50 ksi, Fu = 65 ksi)									
					Panel Properties per foot of panel width				
Panel Material Information						Top in Compression		Bottom in Compression	
Panel Gage	Thickness (in.)	Yield (Ksi)	Tensile (Ksi)	Panel Wt. (Psf)	Ix (Gross) (in^4)	Sx (eff.) (in^3)	Ma (Kip-in.)	Sx (eff.) (in^3)	Ma (Kip-in.)
24	0.0222	50	65	1.19	0.3640	0.149	4.4465	0.083	2.4905

Allowable Gravity and Wind Pressure (psf): Panel: (Stress, Deflection, and Web Crippling)

Span (Ft)	Simple Span			2 Equal Spans			3 Equal Spans		
	Stress	Deflection		Stress	Deflection		Stress	Deflection	
		L/60	**L/240**		**L/60**	**L/240**		**L/60**	**L/240**
2.0	763	n/c	n/c	763	n/c	n/c	763	n/c	n/c
2.5	489	n/c	n/c	489	n/c	n/c	489	n/c	n/c
3.0	339	n/c	n/c	339	n/c	n/c	339	n/c	n/c
3.5	249	n/c	n/c	249	n/c	n/c	249	n/c	n/c
4.0	191	n/c	n/c	191	n/c	n/c	191	n/c	n/c
4.5	151	n/c	n/c	151	n/c	n/c	151	n/c	n/c
5.0	122	n/c	n/c	122	n/c	n/c	122	n/c	n/c

Allowable Wind Suction (psf): Panel: (Stress and Deflection) - Standard Clip with 2 Fasteners

Span (Ft)	Roll Lock	Vise Lock	Vise Lock 360
2.0	60.3	84.5	107.4
2.5	54.9	77.4	98.4

3.0	49.5	70.4	89.3
3.5	44.1	63.3	80.3
4.0	38.7	56.3	71.3
4.5	33.3	49.3	62.2
5.0	27.9	42.2	53.2

Contact the engineering team for capacities with different panel, fastener, or clip configurations.
Note: n/c indicates that deflection considerations do not control over stress limits.

REVISION
03/11/15
AAJ CHK: MDK

VALLEY STEEL CFR ™ SEAMING OPTIONS

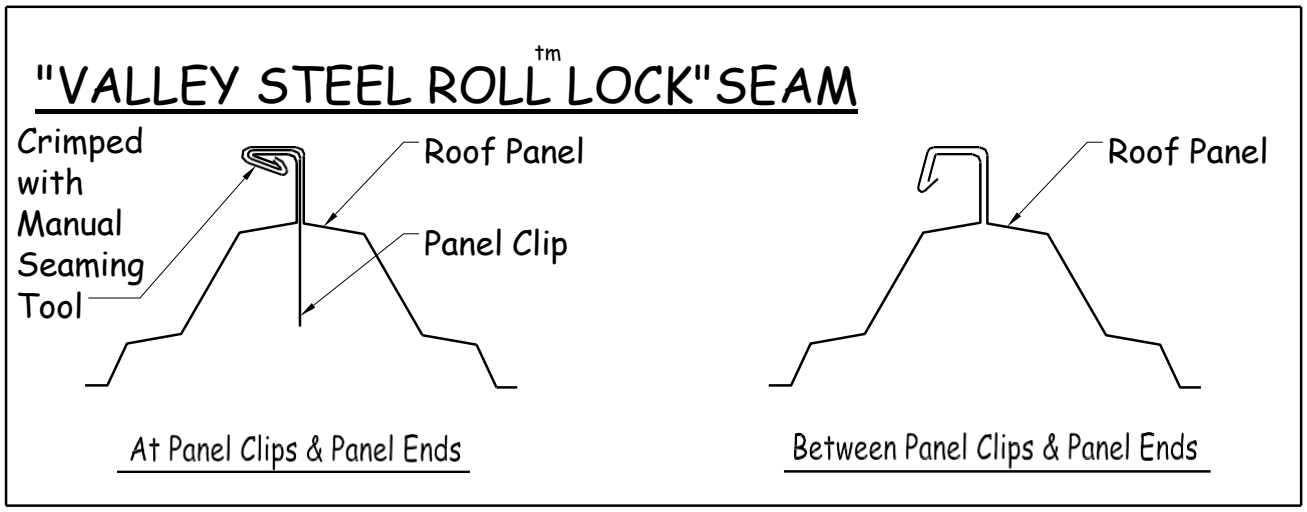
GENERAL

The Valley Steel CFR™ roof system has three seam type options. The project design and performance requirements govern which seam type is required.

Different seam types may be required on specific areas of the roof. In all cases, refer to the erection drawings to determine the required seam type and locations.

VALLEY STEEL ROLL LOCK™ SEAM

The Valley Steel Roll Lock™ seam requires the roof panels be seamed with the manual seaming tool only at the panel clips, the eave, the high side of the roof panels and at the end laps.



VALLEY STEEL CONSTRUCTION INC.

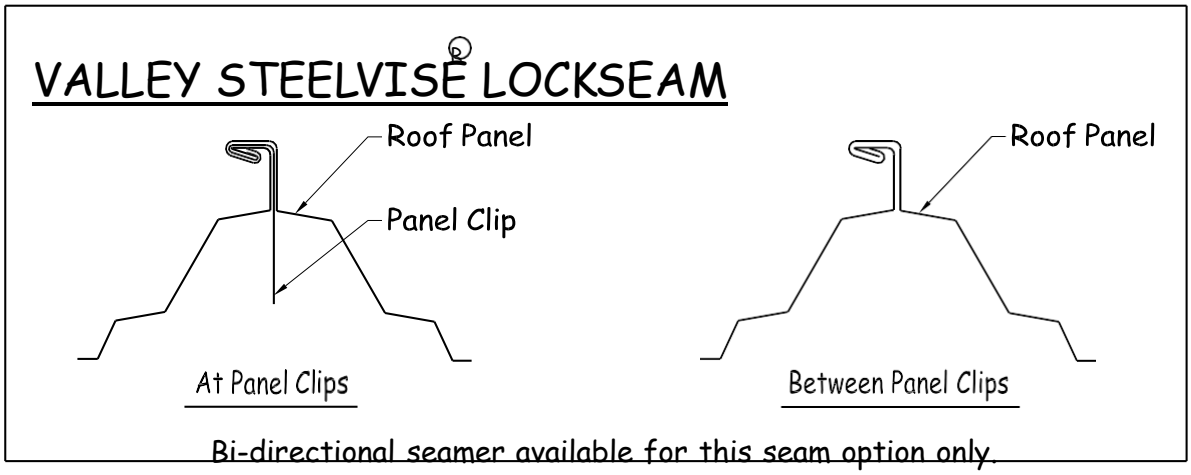
REVISION
02/16/15 AK
CHK: EGB

DETAIL NAME IF APPLICABLE

SSSM0020.DWG

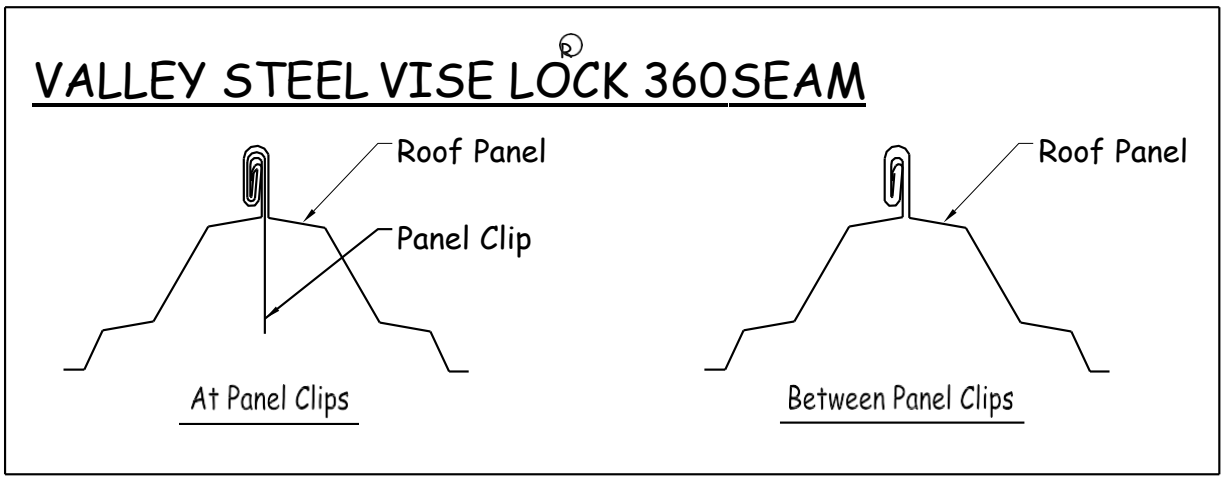
VALLEY STEEL VISE LOCK® SEAM

The Valley Steel Vise Lock® seam requires seaming the roof panel with the manual seaming tool at the starting eave or ridge end of the panels, and at the end laps. Then seaming the full length of the roof panels with the Motorized Seaming Machine.



VALLEY STEEL VISE LOCK 360® SEAM

The Valley Steel Vise Lock 360® seam can be formed with a one pass VL 360 seamer OR two separate seamers, one set-up with Vise Lock tooling and the other set-up with Vise Lock 360 tooling. The Valley Steel Vise Lock 360® seam requires manual seaming at the low eave so that you can start the Motorized Seaming Machine onto the panels.



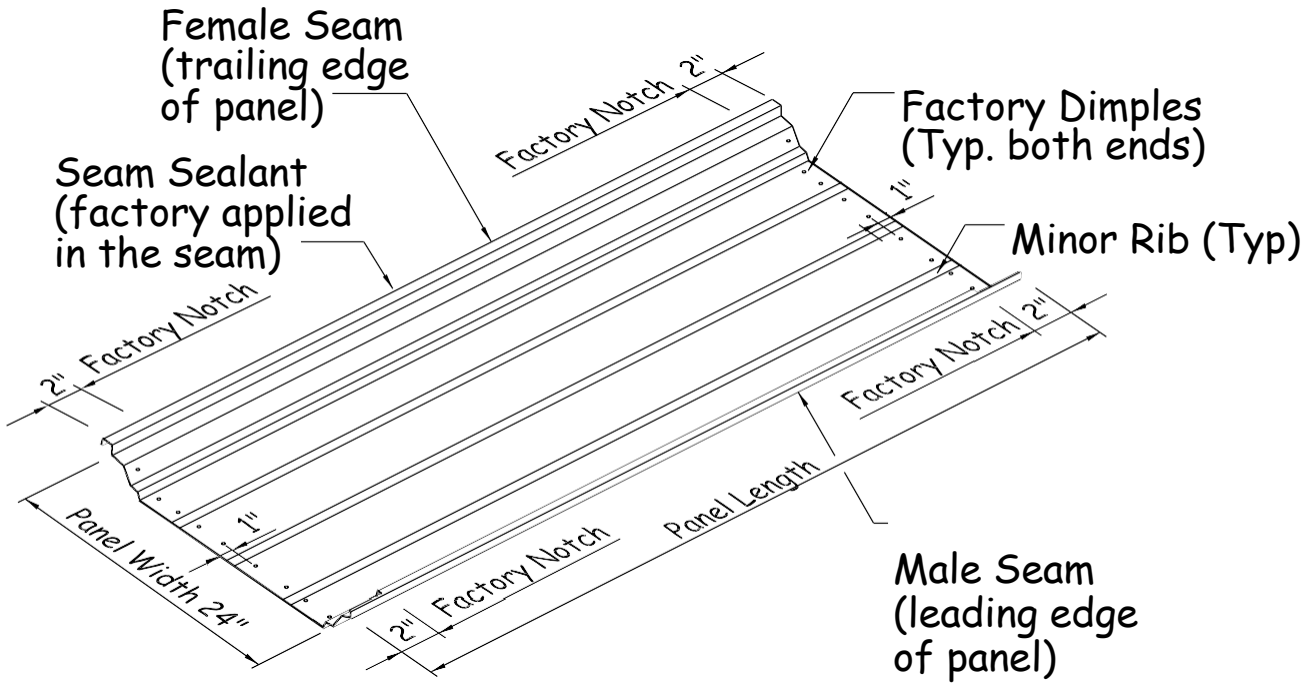
LAST DATE:
BY:

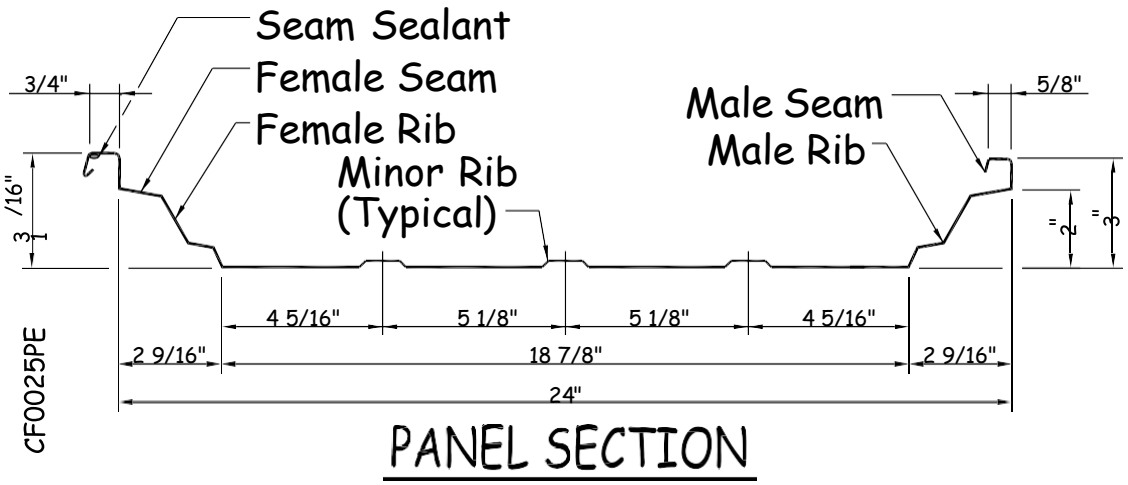
REVISION
3/28/13
EGB CHK: AES

DETAIL NAME IF APPLICABLE
SSSM0020A.DWG & SSSM0020B.DWG

PRODUCT & ENGINEERING MANUAL

CF0025PE – PANEL PROFILE





PANEL SECTION

VALLEY STEEL CONSTRUCTION INC.

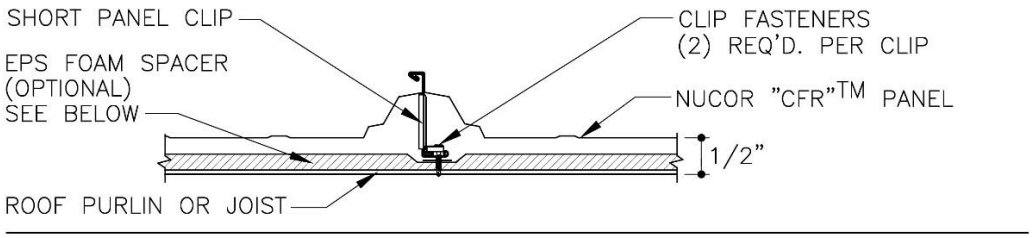
REVISION	DETAIL NAME IF APPLICABLE
02/06/15	
KMC CHK: EGB	**CF0025PE.DWG**

LAST DATE:

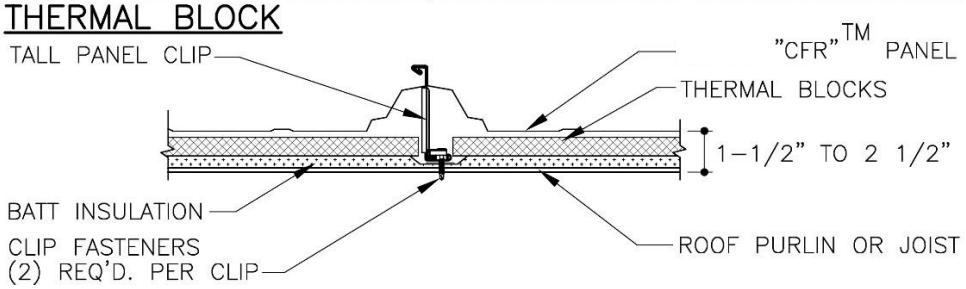
BY:

CF0010PE – VALLEY STEEL CFR™ CLIP SYSTEMS

VALLEY STEEL "CFR"™ PANEL W/SHORT CLIP & EPS FOAM SPACER



VALLEY STEEL "CFR"™ PANEL W/TALL OR SUPER TALL CLIP & THERMAL BLOCK



CLIP AND INSULATION APPLICATIONS:

1. Valley Steel Building Systems recommends that insulation be used in all CFR roof applications to avoid problems with condensation formation. Insulation also provides a buffer between the purlins and the CFR roof to reduce noise and possible damage due to metal-to-metal contact. Insulation requirements are as follows:

   Short Clips: 2" to 4" of insulation compressing to 1/2" over roof purlins. EPS foam spacers are available for limited use in un-insulated areas.

   Tall Clips: 4" to 6" of insulation compressing to 3/4" thickness under thermal block at roof purlin locations. Thermal blocks are required when tall clips are used. 1 ½" thermal blocks with adhesive are available for limited use in un- insulated roof areas.

   Tall Clips: Maximum of 8" of single layer batt insulation is allowed, which requires special attention to maintain panel modularity and thermal performance.

   Super Tall Clips Maximum of 12" combined layers of batt insulation is allowed, which requires special attention to maintain panel modularity and thermal performance. 2 ½" thermal blocks with adhesive are available for limited use in un-insulated roof areas.(Spl order)

2. Fixed or floating clips may be used as determined by the following:

Roof Structural Type	Panel Run </= 80'-0"	Panel Run > 80'-0"

Purlins Joists | Fixed Clips Floating Clips | Floating Clips Floating Clips

REVISION

12/29/17

EGB KMC

DETAIL NAME IF APPLICABLE

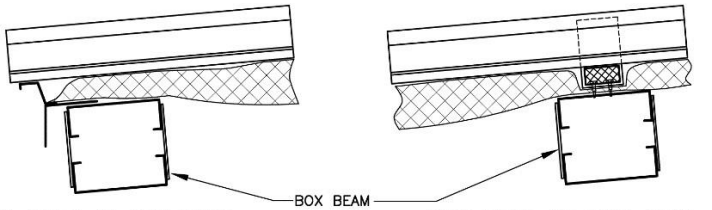
CF0010PE.DWG

EA6022 – THERMAL BLOCK – TALL CLIPS

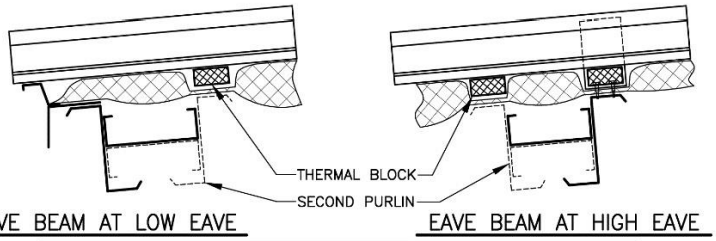
LAST DATE:

BY: CHK:

SPECIAL CONDITION AT A BOX BEAM

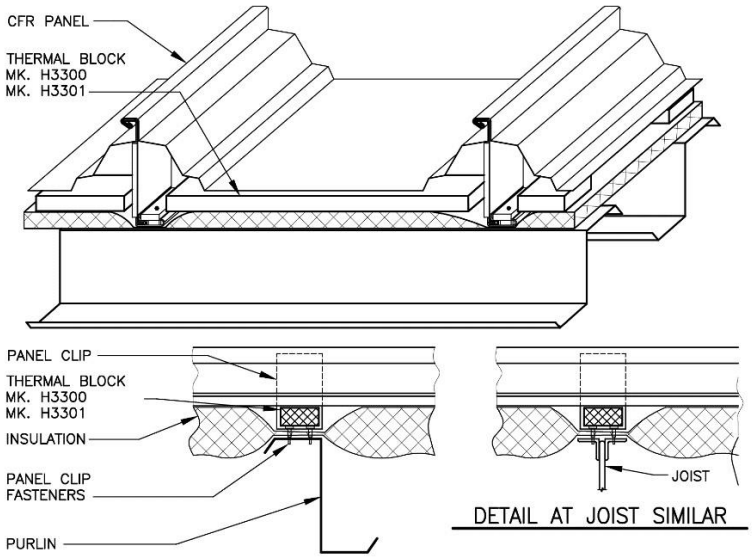


SPECIAL CONDITION AT AN EAVE BEAM



IF THIS PROJECT HAS AN EAVE BEAM WITH (2) PURLINS, AS SHOWN, DO NOT ATTACH ROOF CLIPS TO THE "SECOND" PURLIN. HOWEVER, THERMAL BLOCKS ARE PROVIDED FOR INSTALLATION AT THE SECOND PURLIN.

INSULATION TIE-OFF AT THE EAVES VARIES BASED ON THE EAVE CONDITION. REFER TO THE ROOF PANEL ERECTION MANUAL FOR DETAILS.



THERMAL BLOCK DETAIL AT TALL / SUPER CFR CLIPS

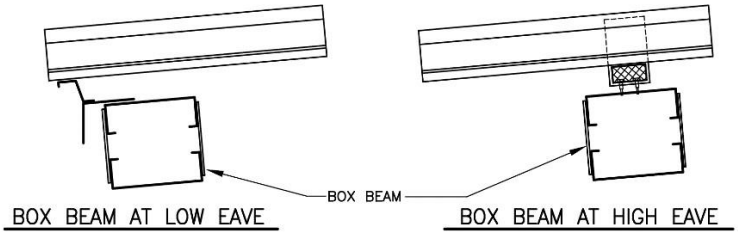
CFR ROOF WITH BATT INSULATION

EA6022

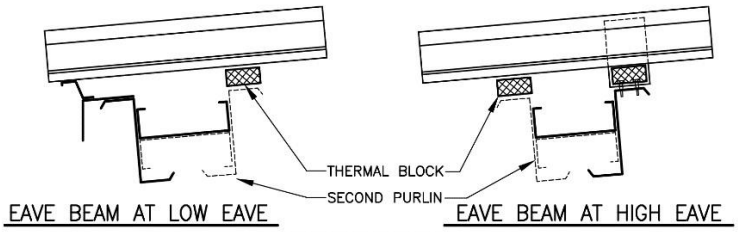
REVISION	DETAIL NAME IF APPLICABLE
12/29/17 EGB KMC	EA6022.DWG

EA6023 – THERMAL BLOCK – TALL CLIPS WITHOUT INSULATION

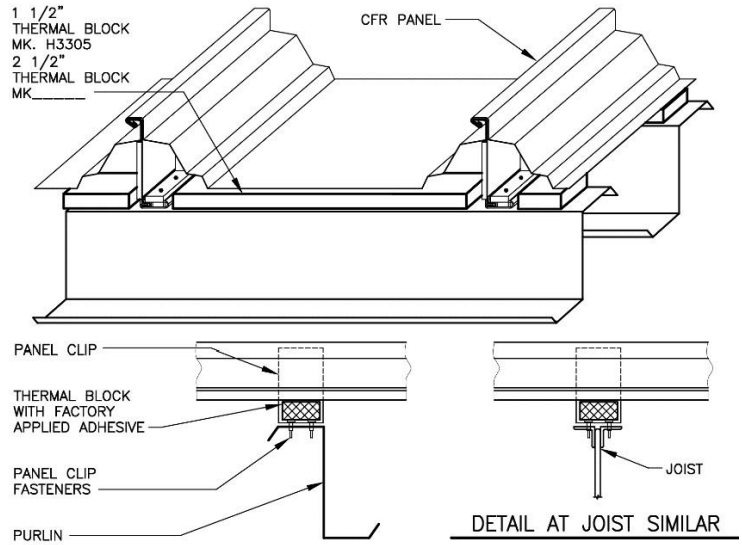
SPECIAL CONDITION AT A BOX BEAM



SPECIAL CONDITION AT AN EAVE BEAM



IF THIS PROJECT HAS AN EAVE BEAM WITH (2) PURLINS, AS SHOWN, DO NOT ATTACH ROOF CLIPS TO THE "SECOND" PURLIN. HOWEVER, THERMAL BLOCKS ARE PROVIDED FOR INSTALLATION AT THE SECOND PURLIN.



THERMAL BLOCK DETAIL AT TALL\SUPER TALL CFR CLIPS

CFR ROOF WITHOUT INSULATION

EA6023

REVISION

DETAIL NAME IF APPLICABLE

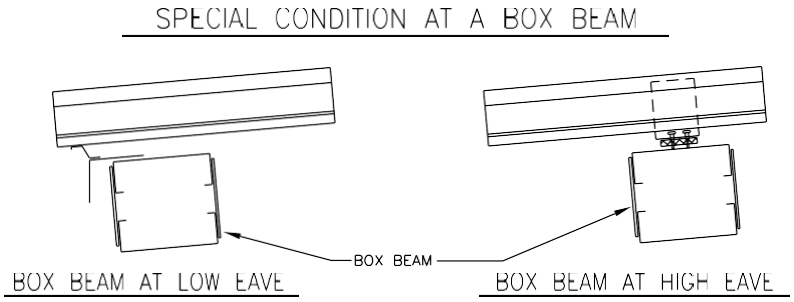
LAST DATE: **5.0.13**
BY: CHK:

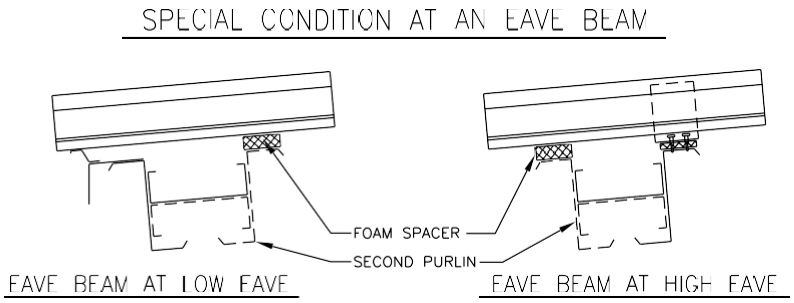
12/29/17

EGB KMC

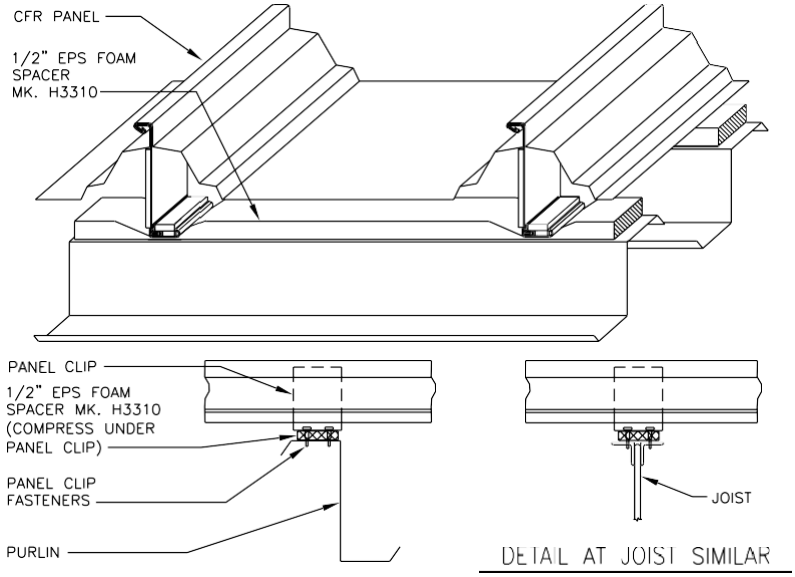
EA6023.DWG

EA6024 – THERMAL BLOCK – SHORT CLIPS WITHOUT INSULATION





IF THIS PROJECT HAS AN EAVE BEAM WITH (2) PURLINS, AS SHOWN, DO NOT ATTACH ROOF CLIPS TO THE "SECOND" PURLIN. HOWEVER, EPS FOAM SPACER IS PROVIDED FOR INSTALLATION AT THE SECOND PURLIN.



FOAM SPACER DETAIL AT SHORT CLIPS
CFR ROOF WITHOUT INSULATION
EA6024

LAST REVISION
02/16/15
BY: AK CHK: EGB

DETAIL NAME IF APPLICABLE
EA6024.DWG

DATE:

EA6025 – GUIDANCE TO INSTALLING SINGLE OR MULTI LAYERS OF INSULATION

SEE CFR ERECTION MANUAL FOR PROPER INSTALLATION INSTRUCTIONS

ERECTION MANUAL QUICK REFERENCE:

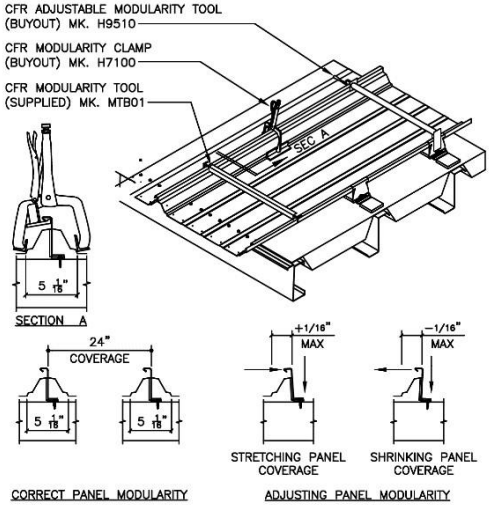
SECTION(S)	DESCRIPTION
10.6	INSULATION INSTALLATION
13.2	PRE-DRILLING FOR FULL PANEL MODULARITY
13.3	PANEL MODULARITY

THE INSTALLATION OF THE SYSTEM REQUIRES SPECIAL ATTENTION TO MAINTAIN PROPER PANEL MODULARITY AND THERMAL PERFORMANCE AS NOTED BELOW:

USE MODULARITY CLAMP(S) TO HOLD PANEL TRAPEZOID AT 5 1/16" WIDE ALONG FULL LENGTH OF PANEL SEAM, SEE SECTION A.

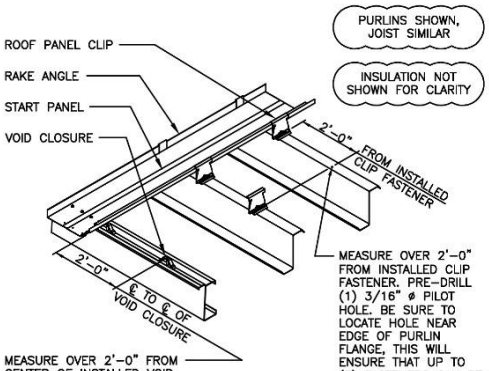
USE MODULARITY TOOL(S) TO HOLD PANEL CLIPS IN PLACE, PRIOR TO FASTENING, TO MAINTAIN A CONSTANT 24" WIDE PANEL COVERAGE.

DO NOT ADJUST THE PANEL WIDTH BY MORE THAN ± 1/8" ON ANY PANEL.

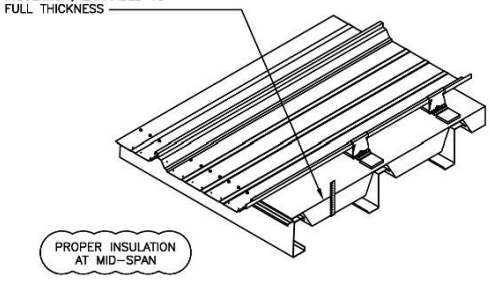


PRE-DRILL ONE PILOT HOLE FOR ROOF PANEL CLIPS AT MID-SPANS, HIGH SIDE OR RIDGE AND PANEL END LAPS, IF ANY.

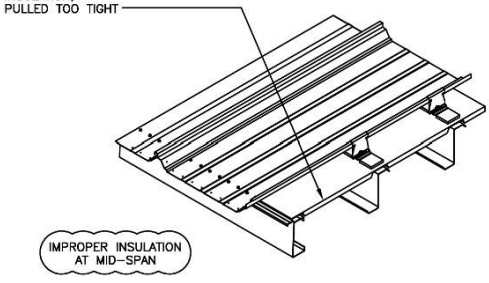
INSTALL NEXT VOID CLOSURE AT BUILDING EAVE.



ENSURE THE INSULATION IS PERMITTED TO SAG AT MID-SPAN BETWEEN ROOF SECONDARY MEMBERS AND EXPANDED TO THE FULL THICKNESS.



DO NOT PULL THE INSULATION TAUT AS THIS WILL SIGNIFICANTLY REDUCE THE THERMAL PERFORMANCE OF THE ROOF SYSTEM AND COULD CAUSE ROOF PANEL MODULARITY ISSUES.



GUIDANCE TO INSTALLING SINGLE OR MULTI LAYERS OF INSULATION WITH "CFR" ROOF

SPECIAL ATTENTION TO ABOVE STEPS TO MAINTAIN PROPER PANEL MODULARITY AND THERMAL PERFORMANCE IS CRITICAL, FAILURE TO DO SO WILL RESULT IN UNSIGHTLY PANEL APPEARANCE.

EA6025

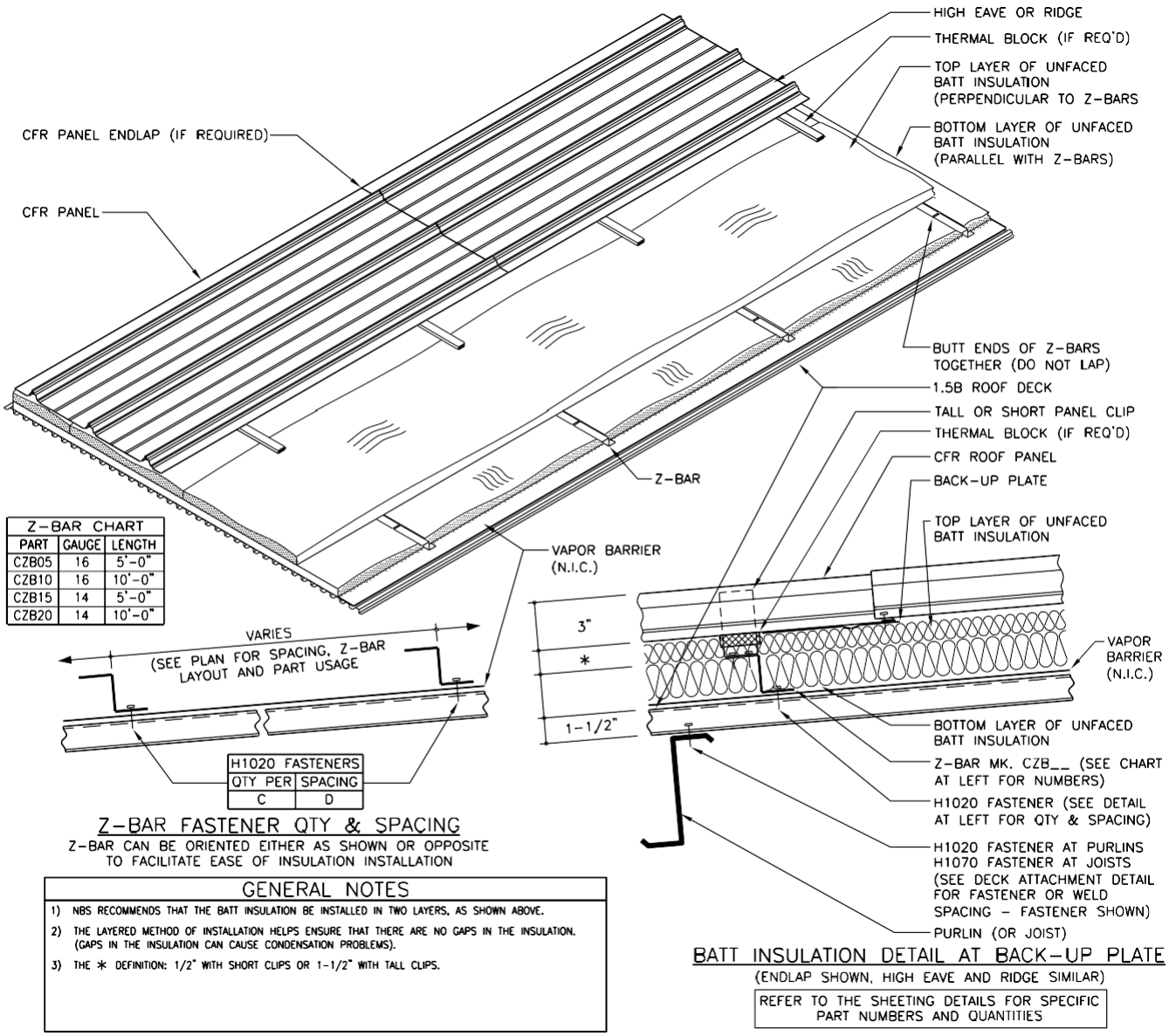
BY: EGB CHK: SAA

EA6025.DWG

VALLEY STEEL COMPOSITE CFR™ OPTIONS:

FA6003 – BATT INSULATION WITH Z-BARS

- Z-bars are 16 gage material and spaced either 4 or 5 foot apart, depending on insulation width.
- Panel clips attach directly to z-bars with standard self-drilling screws.
- Overall batten insulation thickness allowed: 5” min and 12” max.
- For UL90 requirements, please contact NBS.



Z-BAR CHART		
PART	GAUGE	LENGTH
CZB05	16	5'-0"
CZB10	16	10'-0"
CZB15	14	5'-0"
CZB20	14	10'-0"

H1020 FASTENERS	
QTY PER	SPACING
C	D

Z-BAR FASTENER QTY & SPACING

Z-BAR CAN BE ORIENTED EITHER AS SHOWN OR OPPOSITE TO FACILITATE EASE OF INSULATION INSTALLATION

BATT INSULATION DETAIL AT BACK-UP PLATE

(ENDLAP SHOWN, HIGH EAVE AND RIDGE SIMILAR)

REFER TO THE SHEETING DETAILS FOR SPECIFIC PART NUMBERS AND QUANTITIES

GENERAL NOTES

1) NBS RECOMMENDS THAT THE BATT INSULATION BE INSTALLED IN TWO LAYERS, AS SHOWN ABOVE.
2) THE LAYERED METHOD OF INSTALLATION HELPS ENSURE THAT THERE ARE NO GAPS IN THE INSULATION. (GAPS IN THE INSULATION CAN CAUSE CONDENSATION PROBLEMS).
3) THE * DEFINITION: 1/2" WITH SHORT CLIPS OR 1-1/2" WITH TALL CLIPS.

COMPOSITE CFR BATT INSULATION INSTALLATION RECOMMENDATION DETAIL Z-BARS AND 1.5B DECK

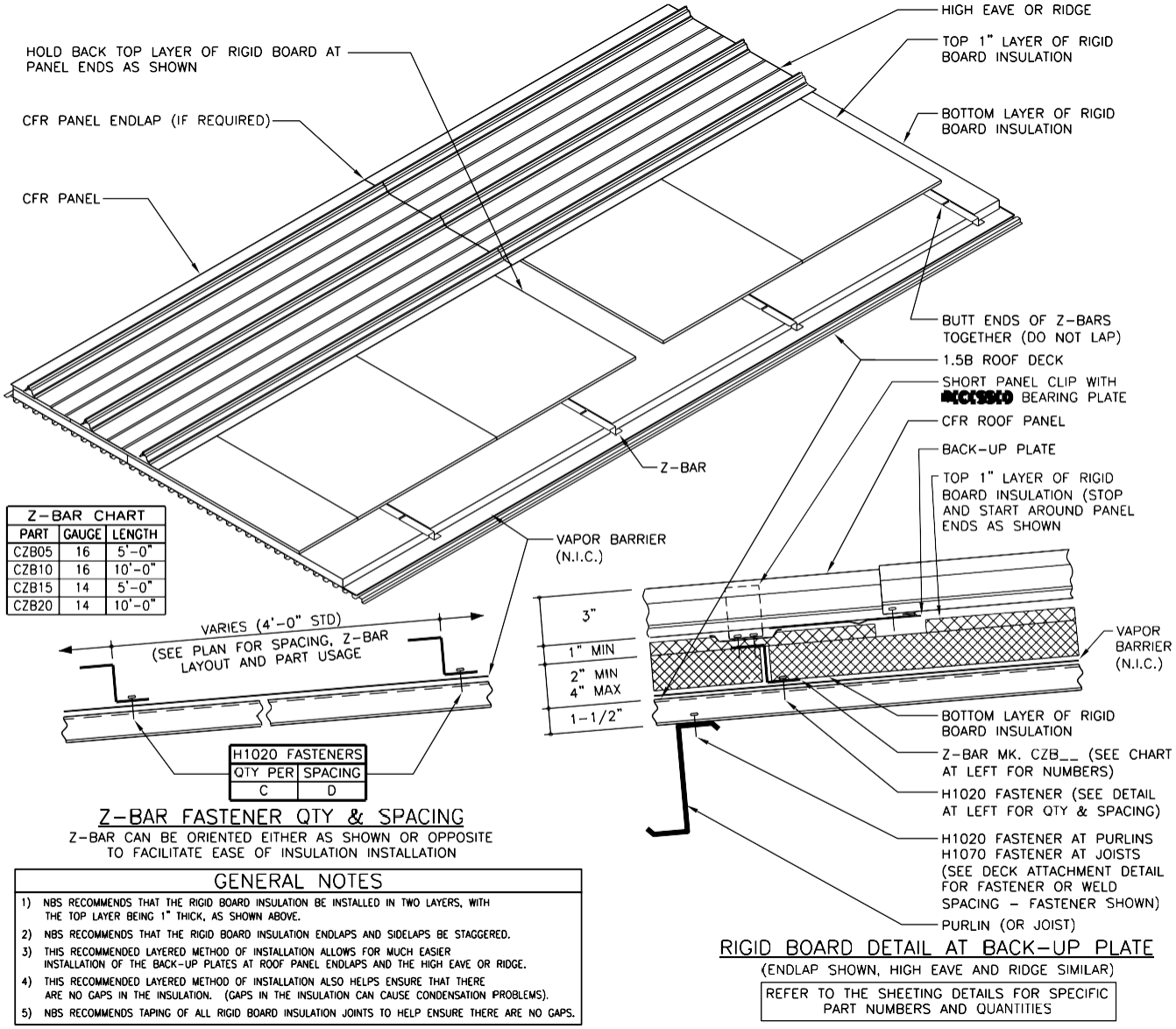
FA6003

NAME IF

FA6003.DWG

FA6004 – RIGID BOARD INSULATION WITH Z-BARS

- Z-bars are 16 gage material and typically spaced 4 foot apart.
- Panel clips attach directly to z-bars with self-drilling screws and bearing plates.
- Overall rigid board insulation thickness allowed: 3” min and 10” max.
- For UL90 requirements, please contact NBS.



Z-BAR CHART		
PART	GAUGE	LENGTH
CZB05	16	5'-0"
CZB10	16	10'-0"
CZB15	14	5'-0"
CZB20	14	10'-0"

H1020 FASTENERS	
QTY PER	SPACING
C	D

Z-BAR FASTENER QTY & SPACING

Z-BAR CAN BE ORIENTED EITHER AS SHOWN OR OPPOSITE TO FACILITATE EASE OF INSULATION INSTALLATION

RIGID BOARD DETAIL AT BACK-UP PLATE

(ENDLAP SHOWN, HIGH EAVE AND RIDGE SIMILAR)

REFER TO THE SHEETING DETAILS FOR SPECIFIC PART NUMBERS AND QUANTITIES

GENERAL NOTES

1) NBS RECOMMENDS THAT THE RIGID BOARD INSULATION BE INSTALLED IN TWO LAYERS, WITH THE TOP LAYER BEING 1" THICK, AS SHOWN ABOVE.
2) NBS RECOMMENDS THAT THE RIGID BOARD INSULATION ENDLAPS AND SIDELAPS BE STAGGERED.
3) THIS RECOMMENDED LAYERED METHOD OF INSTALLATION ALLOWS FOR MUCH EASIER INSTALLATION OF THE BACK-UP PLATES AT ROOF PANEL ENDLAPS AND THE HIGH EAVE OR RIDGE.
4) THIS RECOMMENDED LAYERED METHOD OF INSTALLATION ALSO HELPS ENSURE THAT THERE ARE NO GAPS IN THE INSULATION. (GAPS IN THE INSULATION CAN CAUSE CONDENSATION PROBLEMS).
5) NBS RECOMMENDS TAPING OF ALL RIGID BOARD INSULATION JOINTS TO HELP ENSURE THERE ARE NO GAPS.

COMPOSITE CFR RIGID BOARD INSTALLATION RECOMMENDATION DETAIL
Z-BARS AND 1.5B DECK

FA6004

LAST REVISION DETAIL
DATE: 02/16/15
BY: AK CHK: EGB

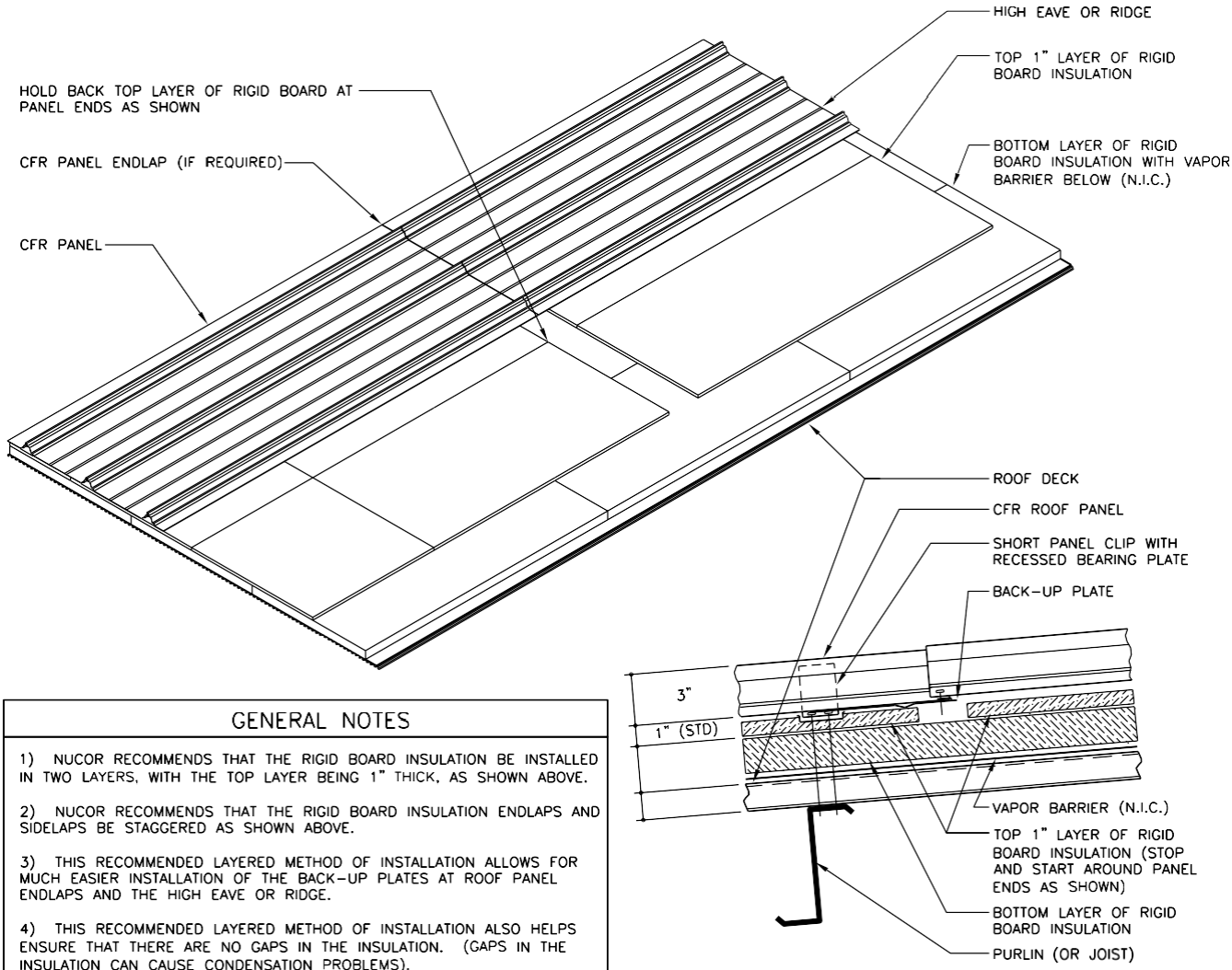
APPLICABLE

NAME IF

FA6004.DWG

FA6005 – RIGID BOARD INSULATION

- Panel clips attach directly to secondary member with extra-long self-drilling screws and bearing plates.
- Overall rigid board insulation thickness allowed: 2” min and 5” max.
- UL90 requirements: 5’-0” max purlin spacing, 5’-6” max joist spacing.



RIGID BOARD DETAIL AT BACK-UP PLATE

(ENDLAP SHOWN, HIGH EAVE AND RIDGE SIMILAR)

REFER TO THE SHEETING DETAILS FOR SPECIFIC PART NUMBERS AND QUANTITIES

GENERAL NOTES

1) NUCOR RECOMMENDS THAT THE RIGID BOARD INSULATION BE INSTALLED IN TWO LAYERS, WITH THE TOP LAYER BEING 1" THICK, AS SHOWN ABOVE.

2) NUCOR RECOMMENDS THAT THE RIGID BOARD INSULATION ENDLAPS AND SIDELAPS BE STAGGERED AS SHOWN ABOVE.

3) THIS RECOMMENDED LAYERED METHOD OF INSTALLATION ALLOWS FOR MUCH EASIER INSTALLATION OF THE BACK-UP PLATES AT ROOF PANEL ENDLAPS AND THE HIGH EAVE OR RIDGE.

4) THIS RECOMMENDED LAYERED METHOD OF INSTALLATION ALSO HELPS ENSURE THAT THERE ARE NO GAPS IN THE INSULATION. (GAPS IN THE INSULATION CAN CAUSE CONDENSATION PROBLEMS).

5) NUCOR RECOMMENDS TAPING OF ALL RIGID BOARD INSULATION JOINTS TO HELP ENSURE THERE ARE NO GAPS IN THE INSULATION.

COMPOSITE CFR RIGID BOARD INSTALLATION RECOMMENDATION DETAIL

FA6005

NAME IF

5.0.13

FA6005.DWG