

NUCOR CFR™ STANDING SEAM ROOF SYSTEM TABLE OF CONTENTS

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NUCOR CFR™ TRAPEZOIDAL RIB STANDING SEAM ROOF SYSTEM

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

The Nucor 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 Nucor 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 Nucor 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. Nucor offers a hand-operated crimping tool for the Nucor 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 Nucor Building Systems website at the below link.

Nucor CFR™ Trapezoidal Rib Standing Seam Roof Panel

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



NUCOR CFR™ PROPERTY AND SPAN TABLE

CFR Roof (24 Gage A792 Grade 50, Class 1 with Fy = 50 ksi, Fu = 65 ksi)									
Pan					Panel Prope	rties per foo	t of panel w	idth	
Panel Material Information				Top inBottom inCompressionCompression		om in ression			
Panel Gage	Thickness (in.)	Yield (Ksi)	Tensile (Ksi)	Panel Wt. (Psf)	Ix (Gross) (in ⁴)	$\frac{\text{Sx (eff.)}}{(\text{in}^3)}$	Ma (Kip-in.)	$\frac{\text{Sx (eff.)}}{(\text{in}^3)}$	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		Stragg	Deflection		Strong	Deflection	
		L/60	L/240	Suess	L/60	L/240	Suess	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.



NUCOR CFR[™] SEAMING OPTIONS

GENERAL

The Nucor 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.

NUCOR ROLL LOCK[™] SEAM

The Nucor Roll LockTM 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.



DETAIL NAME IF APPLICABLE SSSM0020.DWG



NUCOR VISE LOCK[®] SEAM

The Nucor 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.



NUCOR VISE LOCK 360[®] SEAM

The Nucor 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 Nucor Vise Lock 360[®] seam requires manual seaming at the low eave so that you can start the Motorized Seaming Machine onto the panels.





CF0025PE - PANEL PROFILE



DETAIL NAME IF APPLICABLE CF0025PE.DWG



CLIP AND INSULATION APPLICATIONS:

1. Nucor 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 ¹/₂" thermal blocks with adhesive are available for limited use in uninsulated 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 ¹/₂" 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:

<u>Roof</u>	Structural Type	<u>Panel Run <!--= 80'-0"</u--></u>	<u> Panel Run > 80'-0"</u>
	Purlins	Fixed Clips	Floating Clips
	Joists	Floating Clips	Floating Clips
	DETA	IL NAME IF APPLICABLE	
BY: <u>EGB</u> CHK: <u>KMC</u>		CF0010PE.DWG	5.0.7



EA6022 - THERMAL BLOCK - TALL CLIPS



LAST REVISION DATE: <u>12/29/17</u> BY: <u>EGB</u> CHK: <u>KMC</u>

EA6022.DWG



EA6023 - THERMAL BLOCK - TALL CLIPS WITHOUT INSULATION



DETAIL NAME IF APPLICABLE EA6023.DWG



EA6024 – THERMAL BLOCK – SHORT CLIPS WITHOUT INSULATION

SPECIAL CONDITION AT A BOX BEAM No. BOX BEAM BOX BEAM AT LOW EAVE BOX BEAM AT HIGH EAVE SPECIAL CONDITION AT AN EAVE BEAM \otimes al al XXXX FOAM SPACER -SECOND PURLIN EAVE BEAM AT LOW EAVE EAVE BEAM AT HIGH EAVE IF THIS PROJECT HAS AN EAVE BEAM WITH (2) PURLINS, AS SHOWN, $\underline{\text{DO}}$ NOT ATTACH ROOF CLIPS TO THE "SECOND" PURLIN. HOWEVER, EPS FOAM SPACER IS PROVIDED FOR INSTALLATION AT THE SECOND PURLIN. CFR PANEL 1/2" EPS FOAM SPACER MK. H3310-----PANEL CLIP 1/2" EPS FOAM SPACER MK. H3310 (COMPRESS UNDER PANEL CLIP) PANEL CLIP FASTENERS -JOIST PURLIN DETAIL AT JOIST SIMILAR FOAM SPACER DETAIL AT SHORT CLIPS CFR ROOF WITHOUT INSULATION EA6024

DETAIL NAME IF APPLICABLE

EA6024.DWG

LAST REVISION DATE: <u>02/16/15</u> BY: <u>AK</u>CHK: <u>EGB</u>

5.0.10



EA6025 – GUIDANCE TO INSTALLING SINGLE OR MULTI LAYERS OF INSULATION



DETAIL NAME IF APPLICABLE EA6025.DWG



NUCOR 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.





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.



DETAIL NAME IF APPLICABLE 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.



COMPOSITE CFR RIGID BOARD INSTALLATION RECOMMENDATION DETAIL

FA6005

LAST REVISION DATE: <u>02/16/15</u> BY: <u>AK</u> CHK: <u>EGB</u>

DETAIL NAME IF APPLICABLE FA6005.DWG