



a **NUCOR** company

STANDING SEAM ROOF SYSTEM
NUCOR CFR™



NUCOR CFR™ STANDING SEAM ROOF SYSTEM



Nucor CFR™ is a standing seam roof system designed to withstand a diverse range of climates and demanding roof conditions presenting the building owner with a high quality, economical alternative to many other roofing systems. It is well-known within the industry as one of the best roof systems available for performance and weathertightness.

Our panels float on a system of sliding clips that allows it to accommodate thermal expansion and contraction, creating a roof system that satisfies four basic principles:

- Weathertightness
- Strength
- Erector Friendliness
- Cost Effectiveness

The Nucor CFR system is a functional roof that has been extensively tested to ensure the highest level of performance for weathertightness as well as structural integrity. When it comes to performance, Nucor CFR panels have been tested and approved by Factory Mutual®, Miami-Dade, and Underwriters Laboratories® for wind uplift as well as hail and fire resistance.

The flexible options of the Nucor CFR system offer a number of cost effective design solutions. While designed to withstand the most extreme weather conditions, they are also aesthetically pleasing, providing a clean, attractive look for nearly any application.

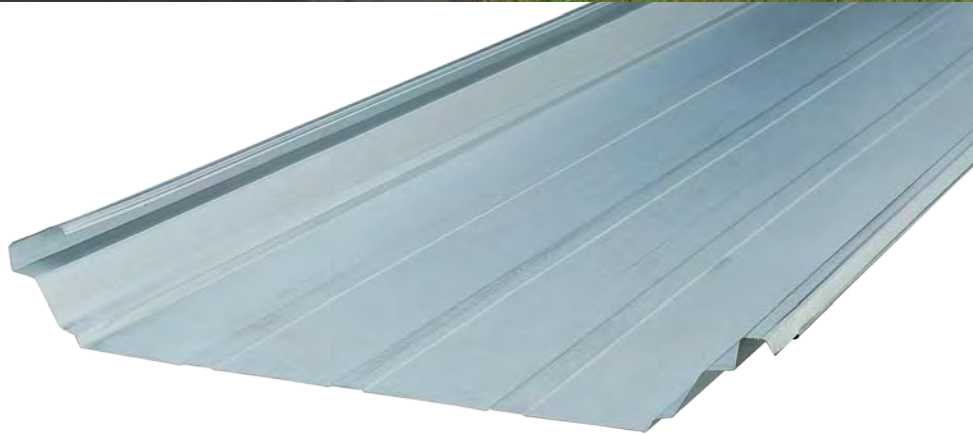
Building Green

NBS buildings are created from over 70% recycled steel, and all of our manufacturing plants have achieved ISO14001:2015 certification by undergoing a rigorous auditing process. Our SP & PVDF paint systems utilize cool coating technology, offering superior quality, durability, and a reduction in energy costs compared to other roof systems.



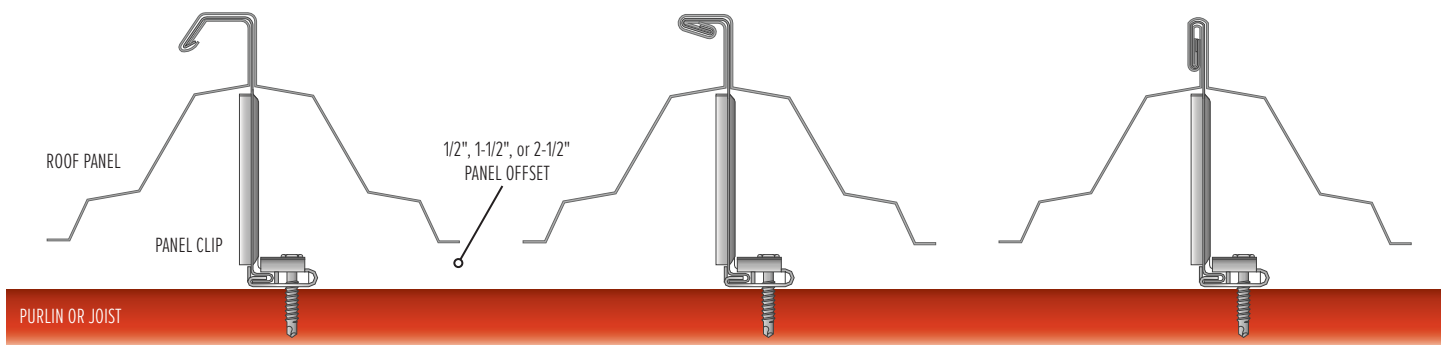
State of the Art Design

Nucor CFR™ 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 with or without the use of electric seaming machines.



Flexible Seaming Options

Nucor CFR may be installed without the use of electric seaming machines. However, an electric machine is available for use after roof installation, when required, due to high uplift conditions or specified criteria, but the seamer does not have to be run as the panels are installed. This seaming machine allows you to achieve the Nucor Vise Lock® and Nucor Vise Lock 360® installation options. In all cases, the roof is installed and hand crimped leaving the electric seaming to be accomplished safely and efficiently as one of the last steps of construction.



Nucor Roll Lock™ Seam

- Hand Crimped at Clips - UL Rated
- Low Eave, Endcap and Ridge

Nucor Vise Lock® Seam

- Mechanically Seamed - UL Rated
- FM Approved (1/2" & 1-1/2" clips only)

Nucor Vise Lock 360® Seam

- Mechanically Seamed - UL Rated
- FM Approved (1/2" & 1-1/2" clips only)
 - Enhanced Uplift Capacity



Non-Handed System

Nucor CFR is designed to allow the installer to erect the roof in either direction, providing flexibility to choose the most efficient starting points on the roof. Additionally, in most cases the installer has the option to install either the roof or wall system first.

Insulation Options

Nucor CFR is designed to work with a variety of insulation systems including fiberglass batt, rigid board with the use of a liner panel or decking. For increased thermal performance, consider adding our R-Boost insulation system. With R-Boost's secondary layer of blanket insulation, you can double the insulation capacity in your roof.

These insulation options offer the builder and owner flexibility when choosing the best system to meet the functional needs of the building. It is recommended that some type of insulation be used with all CFR systems to prevent wind flutter or damage due to the effects of condensation.

Unique Fastener Locations

At the eave and ridge locations, fasteners are uniquely placed outside the building envelope, greatly reducing the chance for water penetration into the building.

Panel Splice Detail

Panel splices have been designed to occur away from the purlin or joist so that normal tolerance found in construction will not hinder installation of the system. The continuous endlap design provides continuity as well as reduced handling of panels during installation.



Factory Dimpled and Notched

Nucor CFR panels are factory dimpled and notched to aid the installer in providing a weathertight fit. Dimples indicate fastener placement at the end lap and aid against fastener walking.

Solid Seam Design

Our seam profile is intentionally stout to provide flexibility in the field as well as a positive lock by the electric seamer, when the seamer is required. This all but eliminates the possibility of the seamer malfunctioning and damaging the seam.

Roof Top Units

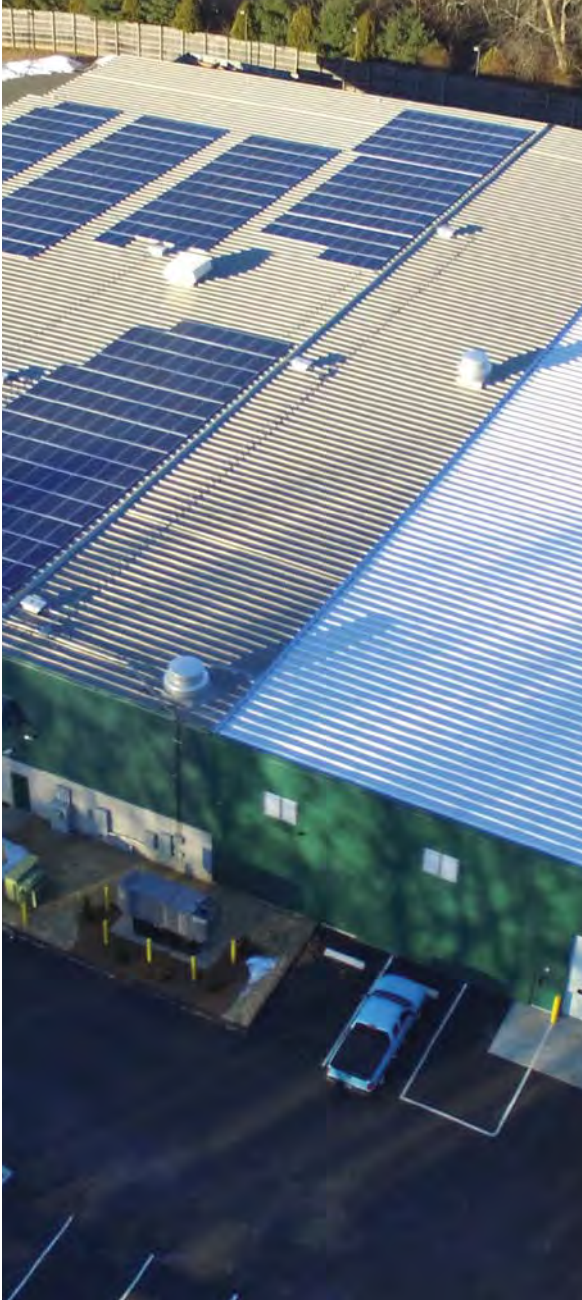
Roof top units and roof penetrations are allowed but should be kept to a minimum and be clearly identified on the Nucor order documents including size, location, and weight.

Refer to the NBS Product & Engineering Manual for specific information concerning framing and flashing options, at www.nucorbuildingsystems.com.

High-Performance Finishes

Nucor CFR is Galvalume® and multiple high-performance painted finishes, as a standard, with custom colors available as special-order. Consult your local NBS plant for specifics.

Accessories, including gutter brackets and end dams, are provided in standard finishes.



NUCOR CFR™ WARRANTIES



Nucor CFR Warranties

As a supplier of material, Nucor Building Systems provides high quality products and services designed for a wide range of applications. NBS warranties describe the expected results of our product under normal conditions. Following are warranties available for Nucor CFR:

- 25 Year Galvalume® Finish
- 25 Year SP Paint Finish
- 35 Year PVDF Paint Finish
- 20 Year Weathertightness (optional)

For detailed information regarding the warranties available, visit our website: nucorbuildingsystems.com/warranties

CLIP & INSULATION OPTIONS

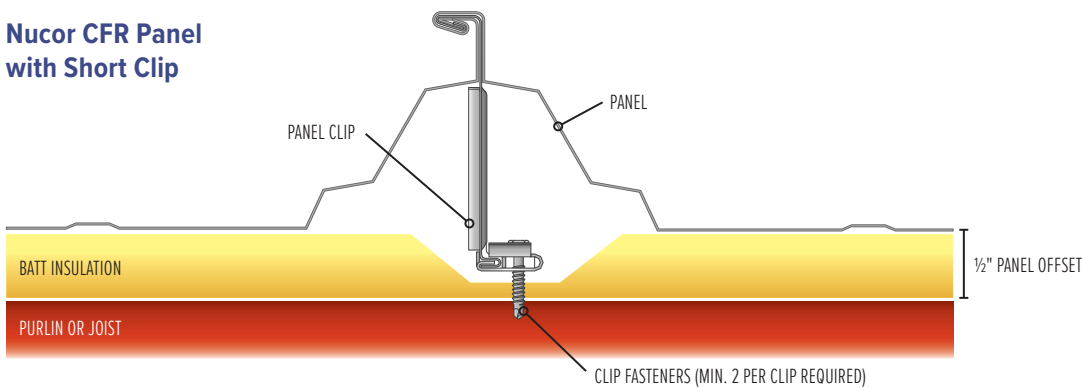


Insulation Requirements

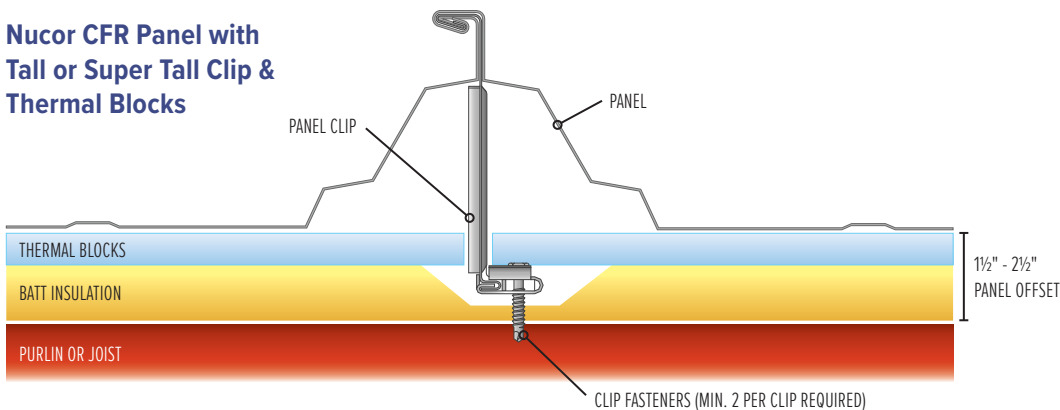
We recommend that insulation be used in all Nucor CFR applications to avoid problems with condensation. Insulation provides a buffer between the purlins and the roof, reducing noise and possible damage due to metal-to-metal contact. Our Super Tall CFR Roof Panel clip allows up to 12" of insulation and is capable of providing higher R-values necessary to meet more stringent energy codes. It offers a competitive solution to costly insulated metal panels, or liner systems.

Insulation requirements are as follows:

Nucor CFR Panel with Short Clip



Nucor CFR Panel with Tall or Super Tall Clip & Thermal Blocks



Nucor CFR Clip Applications

Roof Structural	Panel Run ($\leq 120'-0''$)	Panel Run (>math>\geq 120'-0''</math>)
Purlins	Fixed Clip	Floating Clip
Joists	Floating Clip	Floating Clip

Short Clips

2" to 4" of batt insulation. EPS foam spacer available for limited use in non-insulated areas.

Tall Clips

4" to 8" of batt insulation. Thermal blocks are required when tall clips are used.



Super Tall Clips

Greater than 8" and up to 12" of insulation. Thermal blocks are required when super tall clips are used.

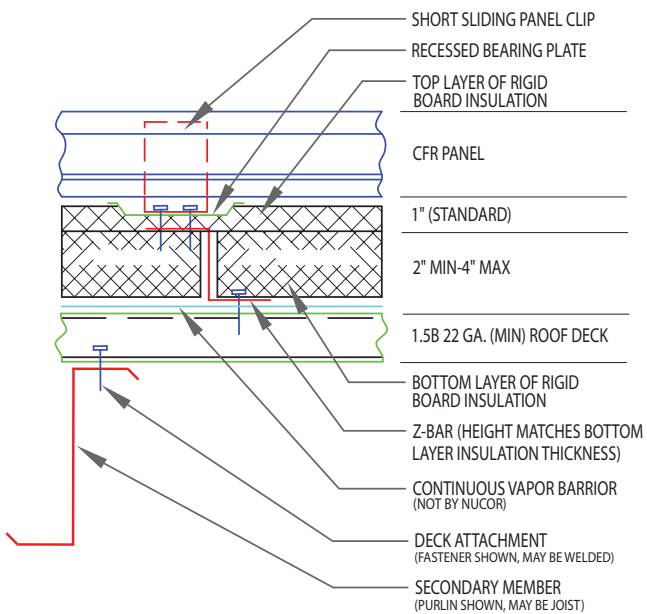
**Nucor not responsible for energy code compliance. Contact your representative for more information.*

COMPOSITE CFR OPTIONS



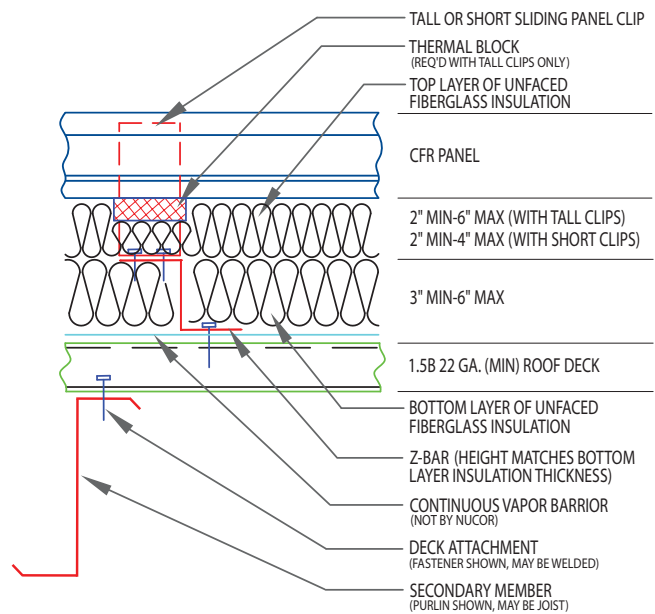
Rigid Board Insulation with Z-Bars

- NBS recommends that either the rigid board* or fiberglass insulation be installed in two layers, as shown below. This layered method of insulation helps ensure that there are no gaps in the insulation, which can cause condensation problems.
- Roof deck is fabricated in accordance with Steel Deck Institute (SDI) specifications and tolerances. Nucor does not warranty liner decking.



Fiberglass Insulation with Z-Bars

- Panel clip fasteners must engage the Z-bar member. Self-drilling fasteners without a washer are utilized.
- A vapor barrier* is required in all Composite CFR applications to avoid condensation.
- Z-bars (16 gage min.) are spaced 4'-0" apart to accommodate rigid board insulation widths, and 4'-0" or 5'-0" apart to accommodate standard fiberglass insulation roll widths.
- For UL Class 90 requirements, please contact Nucor.

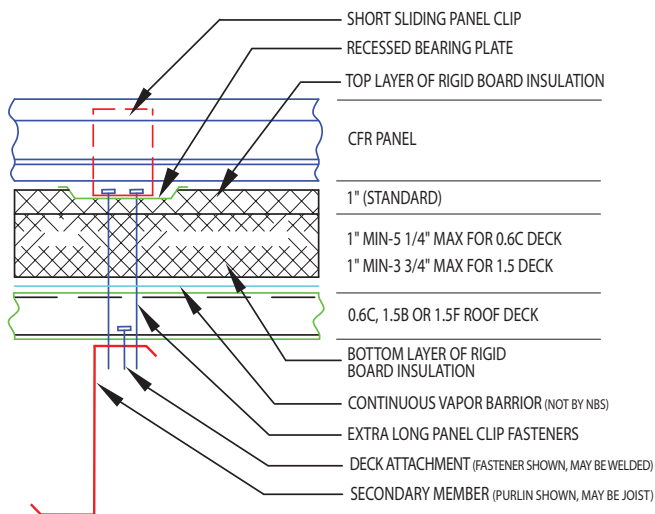


*Not provided by Nucor.



Rigid Board Insulation

- NBS recommends that the rigid board insulation* be installed in two layers, with the top layer being 1" thick, as shown. This layered method of insulation helps ensure that there are no gaps in the insulation, which can cause condensation problems.
- Roof deck is fabricated in accordance with SDI specifications and tolerances. Nucor does not warranty liner decking.
- Panel clip fasteners must engage the roof secondary member. Self-drilling fasteners without a washer are utilized. Nucor recommends the deck and roof secondary member be pre-drilled for the panel clip fasteners to help avoid fastener drill point breakage.
- A vapor barrier* is required in all Composite CFR applications to avoid condensation.
- For UL Class 90 requirements, please contact Nucor.



*Not provided by Nucor.



PRODUCT SPECIFICATIONS



Nucor CFR™ Standing Seam Roof Panels

- Standard 24" width by 3" nominal height
- Standard 24 ga. Galvalume - 50 KSI steel
- Standard SP & PVDF painted colors
- Minimum roof slope: 1/4:12
- Custom lengths 6'-0" to 55'-0"
- Designed for use with fiberglass batt or rigid board insulation
- Panels rated for UL Class 90, Miami-Dade, and Factory Mutual uplift approval
- Standard roof line trim & flashing to be 26 ga.
- Factory applied mastic in panel sidelap

Nucor CFR™ Translucent Panel

- No through-fasteners (fully adhered system)
- UL Class 90 approved
- Shipped preassembled for easy installation
- Endlap splices are dimpled for easy & proper installation
- Weathertight system

IMPORTANT - Never walk, step, or stand on a translucent panel. Injury or death could result.





Nucor CFR panels have been rigorously tested and approved by Factory Mutual®, Miami-Dade, and Underwriters Laboratories® for wind uplift as well as hail and fire resistance.

Performance & Testing Summary

Classification	Gauge	Secondary	Spacing	Seam Option
Factory Mutual 1-120	24	Purlins or Joists	5'-0"	Nucor Vise Lock 360
Factory Mutual 1-90	24	Purlins or Joists	5'-0"	Nucor Vise Lock
UL Class 90 - Listing #552, 552A, 552B & 590	24	Purlins or Joists	5'-0"	Nucor Roll Lock

ASTM & AISI Testing

ASTM E 1592 Uplift Testing; AISI Purlin Stability Base Testing; ASTM E 1680 Air Infiltration; ASTM E 1646 Water Infiltration; ASTM E 2140 Water Penetration; ASTM E 108 Flame Spread

Nucor CFR™ Translucent Panel Technical Specifications

Property	ASTM Standard	Value
Tensile Strength	D-638	25,772 psi
Tensile Modulus	D-638	1.52 x 10 ⁶ psi
Flexural Strength	D-790	24,306 psi
Flexural Modulus	D-790	.79 x 10 ⁶ psi
Compressive Strength	D-695	28,905 psi
Barcol Hardness	D-2583	40 - 50
Uniform Building Code Class	D-635	CC2
Smoke Developed Burning Rate	E-84 / D-635	< 450 / < 2.5" min.
U Factor with Film Coefficients	NFRC 102-2004	1.08 btu/hr ft 2° F





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Nucor Building Systems has been a leader in the design and manufacture of custom-engineered metal building systems for over three decades. With four locations and a network of over 1,200 Authorized Builders serving all of North America, our focus is on customer service, price, and quality. We are also dedicated to providing sophisticated building solutions for our customers that are energy efficient and environmentally friendly.

nucorbuildingsystems.com



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