



Installation Instructions

The information contained herein has been prepared to assist the Design Professional and Contractor Manufacturer with the proper application of the roll-formed Sentrigard Metal Roofing System. Due to the fact that each project represents unique applications specific to that project, this information is intended to be used as a guide line and in no way ensures the proper application of the Sentrigard Metal Roofing System.

Basic Design Criteria

Sentrigard Metal Panels are types of roll-formed standing seam roofing panels. This means that the roof panel remains free to engage a continuous hem in the panels to permit movement from thermal expansion and contraction and freeze-thaw cycles, yet still retain complete securement. Screws attach panel clips to the substrate. Clip screws for standing seam panels require a “pancake” head. Therefore, to ensure compatibility, Sentriclad clips and screws as purchased through the NB Handy Company are required for all Sentrigard Metal Roofing Systems.

In order to control thermal expansion and contraction, panel securement to the substrate is required at ridges, eaves, or in the center, in a line perpendicular to the slope. Generally, standing seam roofing systems are fixed to the substrate at either the ridge or the eave and panel expansion and contraction is accommodated along the opposite flashing condition. The perimeter flashing detail where the expansion occurs utilizes a field hem of the panel or flashing component installed in conjunction with a continuous cleat or flashing component. The hem and cleat permit the panel end to move along the plane of the roof while holding the panel flat and secure. Because there is movement between the hem and the cleat, concealed, non-shrinking butyl sealant or sealant tape is utilized along this flashing condition.

Thermal movement also requires proper design of the hem and cleat. The length of the hem required at the end of the panel varies with the temperature range the panel experiences and the panel length. Unless a more exact analysis of the temperature during installation compared to the anticipated temperature range is conducted, use the following equation and Thermal Movement Table. During panel installation, leave enough room at the end of the panel to accommodate movement for the “starting gap” which is the required air space (X) between the panel and cleat. The hem should not be installed tightly against the cleat unless the panel temperature occurs during the coldest temperature the panels will experience. Do not install the lower edge of the hem in a condition where it will contact any underlying flashings when the panels contract. Similarly, the hem must not engage the cleat too little to prevent disengagement of the panel from the cleat or flashing component. Proper placement of the panels, cleats and flashing components allows the metal roofing assembly to function and move in accordance with the project design.

Note: Never fasten both ends of the same panel. Always use a sliding ridge with a fixed eave. Always use a fixed ridge with a sliding eave.

Formula for calculating Thermal Movement and Hem Size:

Where length of anticipated thermal movement (Expansion or Contraction) = “E”



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To determine the overall length of the lower leg of the hem: $E \times 2 + 1''$

For example: If the anticipated movement is $\frac{3}{8}''$, then $\frac{3}{8}'' \times 2 = \frac{6}{8}''$ or $\frac{3}{4}'' + 1'' = 1\text{-}\frac{3}{4}''$ length of the lower leg of the hem. When installing the cleat or flashing into the hem, a $\frac{3}{8}''$ gap is left between the inside break of the hem and the edge of the cleat or flashing. This allows the panel to expand and contract $\frac{3}{8}''$ and still maintain a minimum of 1'' engagement onto the cleat or flashing component.

THERMAL MOVEMENT TABLE

Panel and Substrate Materials	10' Panel Length	50' Panel Length	100' Panel Length
Steel on Rigid Insulation	$\frac{3}{32}''$	$\frac{13}{32}''$	$\frac{25}{32}''$
Steel on Wood	$\frac{1}{16}''$	$\frac{3}{8}''$	$\frac{5}{8}''$
Steel on Steel	$\frac{1}{16}''$	$\frac{3}{8}''$	$\frac{13}{32}''$
Steel on Concrete	$\frac{1}{16}''$	$\frac{3}{8}''$	$\frac{15}{32}''$
Aluminum on Rigid Insulation	$\frac{5}{32}''$	$\frac{25}{32}''$	$1\text{-}\frac{9}{16}''$
Aluminum on Wood	$\frac{5}{32}''$	$\frac{11}{16}''$	$1\text{-}\frac{3}{8}''$
Aluminum on Steel	$\frac{1}{8}''$	$\frac{19}{32}''$	$1\text{-}\frac{5}{32}''$
Aluminum on Concrete	$\frac{1}{8}''$	$\frac{5}{8}''$	$1\text{-}\frac{7}{32}''$

This Table Assumes a Temperature Change of 100 Degrees for the panel and 50 Degrees for the Substrate

Where movement occurs between the panel and the substrate, a seal is required to prevent infiltration of air and moisture. Use only a non-shrinking butyl sealant or butyl sealant tape to create this seal. Do not install butyl sealants in applications exposed to ultraviolet radiation. Use butyl sealants only in concealed applications. Design and fabricate perimeter and penetration flashing components to also accommodate thermal movement of metal roof panels. The finished metal roof panel assembly should “float” as a system during thermal cycles. Prevent panels from floating independently from one another.

PROPER STORAGE

If coil or panel material is not to be used immediately, it should be stored in a dry place where as little moisture as possible can affect it. Moisture (from rain, snow, condensation, etc.) trapped between pieces of material may cause water stains or white rust. Store the material in a well ventilated, dry area.



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If outdoor storage is unavoidable, protect the material with a breathable canvas tarp. Leave the bottom of the cover loose to allow air circulation. Do not use plastic to cover material as plastic will induce condensation. Break steel strapping bands used for shipment, and store the stacks of material in an inclined position with an insulator, such as wood. It is the responsibility of the Contractor-Manufacturer to insure that all materials are properly stored at the jobsite.

PROPER HANDLING

1. Panel crates and coils must be lifted at bundle block locations.
2. Do not lift material with ropes or wires.
3. Do not lift panels longer than 25' without a spreader bar.
4. Do not lift panels from end while flat. Do lift panels from the edge.
5. Lift panels on edge with one worker for each 10' throughout the length of the panel.

GENERAL NOTES

The installer must be familiar with all erection instructions before starting work. Before beginning installation of the panels, the installer must examine the substrate to ensure that all supporting members are straight level, plumb and true in accordance with minimum tolerances. The Contractor-manufacturer should report any variations and potential problems with the structural substrate to the General Contractor or Design Professional prior to commencement of work. Do not commence work until all unsatisfactory conditions are corrected.

Install the roofing/fascia system plumb, straight and true to adjacent work. Horizontal panel end lap joints are not acceptable. Caulk all metal closures around their perimeter. Specified design loads will dictate the longitudinal spacing of clips. Do not install panels, flashings, or trim unless otherwise specifically shown on the detail drawings. Hem all cut edges of metal panel, flashing or trims leaving no cut edge exposed to the elements. Utilize Sentriclad components for all flashings, trim and accessories necessary to provide a weather tight Sentrigard Metal Roofing System installation. Consult NB Handy Sentrigard Metal Roofing Systems Technical Department for approval of any installation procedures not specifically indicated in the Sentrigard Metal Roofing Systems printed specification, installation instructions, details, or approved shop drawings, etc.

Utilize high grade polyurethane sealant or clear acrylic sealants for all exposed sealant applications. Utilize non-drying, non-toxic and non-shrinking sealant, with a serviceable temperature of -50 degrees farenheight to 212 degrees farenheight, at concealed locations under constant compression. Install sealant continuously without skips or voids to ensure weather-tightness.

Utilize the current edition of Sentrigard Metal Roofing Systems printed specification, installation instructions, details, etc. recommended for installation of materials. Submit proposed alternative details to NB Handy Sentrigard Metal Roofing Systems Technical Department for approval of any installation procedures not specifically indicated in the Sentrigard Metal Roofing Systems printed Detail Drawings. It may be necessary to perform field-cutting, forming and fitting of panels and flashings, as well as make



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minor corrections of material throughout the construction period. This is an acceptable practice and is part of normal construction work. Perform all workmanship in accordance with the best industry standards, by trained and experienced sheet metal roofing craftsmen. Specifications and details published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA), current edition will govern as the industry standard for material and workmanship not shown. Oil Canning in metal roofing panels is common to the sheet metal roofing industry and shall not be a cause for rejection or refusal of the product or system. We strongly recommend the use of stiffening ribs, striations and low gloss finishes reducing the effect of Oil Canning on finished panel surfaces.

INSTALLATION

1. Thoroughly observe the existing roof deck substrate to be sure all supports are installed straight, square and in plane.
2. Install specified underlayments in accordance with the manufacturer's and Sentrigard Metal Roofing systems standard specifications and details. Install underlayment in shingle fashion, beginning at the eave, working up slope.
3. Install all eave fascia and flashing components as detailed in the contract documents and in accordance with Sentrigard Metal Roofing Systems standard specifications and details.
4. Commence installation of metal panels so that sheets are held true, plumb and straight.
Note that all panel width dimensions are nominal. Properly position panels to prevent roof penetrations from intersecting with standing seams. Space clips and fasteners as required to resist project design uplift and in accordance with minimum Building Code and Local Regulatory Agency requirements. Periodically verify panel width along the substrate at the top and bottom during installation to ensure that panels are not gaining or losing width.
5. Install panels from the gable end and work each succeeding panel to the opposite gable, or utilize a "starter" panel, with two male legs, in the center of the roof area and work in both directions.
6. Install Sentriclad clips and fasteners, compatible with the panel profile and substrate at the specified clip spacing and fastener density along the panel length.
7. Position the next panel over the under lap (male) leg. Starting at the eave, apply pressure to the overlap (female) rib until it locks into position. Continue up the slope along the length of the panel.
8. Do not use undue pressure to engage panel seams together during installation. Do not force, push or punch panels together. A camber or outward bowing may be forced into the flat area of the panel as the clip and fasteners are installed to reduce wavy oil canning appearance and to increase the aesthetics of the finished roof assembly.
9. Furnish and install flashings at all perimeters and penetrations in accordance with Sentrigard Metal Roofing Systems standard specifications and details.
10. Sentrigard Metal Roofing Systems/NB Handy Company is not responsible for the adequacy of attachment of its framing members to other surface conditions. All fasteners for such attachments are the responsibility of others and Sentrigard Metal Roofing Systems/NB Handy Company are held harmless on such connections.



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11. Protect the completed roof assembly to ensure that any acid residue from clean up of stucco (hard coat or EIFS) at adjacent building areas is not washed down directly over the previously installed panels. This condition could be detrimental to the metal roofing surface, finishes or coating.
12. Avoid damage or scratching of exterior metal panel, flashing and trim surfaces. Promptly remove any metal debris filings and shavings from all panel, flashing and trim surfaces to prevent surface rust that could compromise the metal finish.
13. Lap sections of flashing components a minimum of 6" with a double bead of non-shrinking butyl sealant or tape and secure in accordance with Sentrigard Metal Roofing System standard specifications and details.
14. Utilize non-shrinking butyl sealant or butyl sealant tape as a gasket within joints between sections of metal and under constant compression. Always use butyl sealant or butyl sealant tape between roofing and flashing components subject to movement. Never use butyl sealant or butyl sealant tape in applications where it may become exposed to sun light and ultraviolet radiation.
15. Utilize high grade polyurethane or clear acrylic sealant in exposed applications to seal open joints between sections of metal.

MAINTENANCE BY CONTRACTOR-MANUFACTURER PRIOR TO LEAVING JOBSITE

1. Remove metal filings, shavings and metal waste clippings from panels, flashings and trim at the end of each work period. Filings from drilling, grinding and cutting can rust overnight. At the end of the project, make a final check for any filings. Rust spots from filings may be removed with a non-abrasive cleaner such as Soft Scrub. Do not use abrasive cleaners.
2. Utilize Sentriclad Touch-up paint on any compromised pre-finished metal surfaces, such as scratches or scuffs. Utilize touch up paint sparingly. If scratched compromise the underlying zinc coating on galvanized/galvalume material, apply a rich zinc primer prior to application of touch up paint.
3. Clean or power wash panels as necessary upon project completion. Remove any excess, unsightly sealant or caulking, utilizing mineral spirits if necessary. Rinse any residue with clean water.
4. Remove all debris, crating material and dunnage from the jobsite and dispose of in a legal manner.

ROUTINE MAINTENANCE FOR METAL ROOFING THROUGHOUT BUILDING LIFE

1. File All Job Records, including project plans, specifications, shop drawings, engineering calculations, applicable warranties, etc. for future reference.
2. Implement an observation and maintenance schedule, utilizing a qualified, trained and insured roofing professional. Perform condition assessments and quality assurance observations twice annually, once in the spring and once in the autumn.
3. Keep gutters, downspouts and other drainage components clear of all debris that could possibly impede water drainage.
4. Immediately remove any vegetation or debris in contact with metal roofing panels, flashings or trim, including tree branches, leaves, weeds, grass, etc.



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5. Clean metal panels as necessary with a solution of 5% commonly used commercial and industrial detergent mixed with clean water. Use a cloth, soft bristle brush or pressure washer. Rinse completely with water. When surfaces are dulled by heavy deposits of dirt or other contaminants, mix 1/3 cup of heavy-duty dry powdered laundry detergent (such as Tide) with water, followed by a water rinse. Mildew may be removed with a solution of 1/3 cup of dry powdered laundry detergent; 2/3 cup tri-sodium phosphate (such as Soliax); 1 quart sodium hypochlorite 5% solution (bleach); mixed with 3 quarts of water. (Note: Do not use Bleach on Galvalume). Tar, grease or oil may be removed by using denatured alcohol, isopropyl alcohol or mineral spirits followed by a water rinse. Proceed with caution as aggressive cleaning with the above-described cleaners and procedures may damage the coating and thus void the finish warranty.
6. Repair damage that may have occurred to panels with caulking, sealant or touch-up paint, etc.
7. Correct any signs of corrosion or deterioration as necessary.

ADDITIONAL ROUTINE MAINTENANCE FOR METAL ROOFS

1. Eliminate any conditions of ponding water on finished roofing surfaces.
2. Re-seal curbs, drainage components, flashings, trim, closures, penetrations, etc. as necessary to maintain the weather-tightness of the system. We strongly recommend this work be performed by utilizing a qualified, trained and insured roofing professional.
3. Remove salt deposits in salt spray environments with a fresh water rinse.