

Product Evaluation

RC63 | 1120

Engineering Services Program

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC).

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: RC-63

Effective Date: November 1, 2020

Re-evaluation Date: November 2024

Product Name: Multi-Rib Steel Roof Panels Installed Over a Plywood or OSB Deck

Manufacturer: McElroy Metal, Inc.
P.O. Box 1148
Shreveport, LA 71163
(318) 747-8000

Distributed By: McElroy Metal, Inc.
Metal Mart

General Description:

The multi-rib metal roofing panels are a minimum 26-gauge galvalume steel with an optional paint finish. The 26-gauge metal roofing panels are 0.019" thick. The metal roofing panels are 37.958" in width with an actual coverage of 36". Each metal roofing panel has four (4) major ribs, two (2) at each edge, and two (2) spaced 12" on center across the panel. The ribs are 1.15" deep. The metal roofing panels conform to ASTM A792, with an 80,000 psi yield point for 26-gauge metal panels and a 50,000 psi yield point for 24-gauge or heavier metal panels. The metal roofing panels have an AZ 55 hot-dip aluminum zinc alloy coating. The metal roofing panels are available in lengths up to 40'.

Limitations:

Roof Decking: The multi-rib metal roofing panels must be installed over a minimum 15/32" plywood or 7/16" OSB roof deck.

Roof Framing: The multi-rib metal panels must be installed over one of the following types of roof framing: roofing

- Minimum 15/32" plywood roof deck,
- Minimum 7/16" OSB roof deck,
- Minimum 1x4 No. 2 Southern Yellow Pine wood purlins over 15/32" plywood roof deck,
- Minimum 1x4 No. 2 Southern Yellow Pine wood purlins over 7/16" OSB roof deck

New Roof Deck Attachment: The roof decking must meet or exceed the uplift requirements of the IRC or the IBC and must be installed as required for resistance to lateral wind loads.

Design Wind Pressures: The design pressure uplift load resistance must be as specified in Tables 1-4.

Roof Slope: The metal roof panels may be installed on roofs with a roof slope as low as 1/2:12 if sealant is used on the panel side laps. McElroy Metal recommends that sealant be used on the panel side laps for roof slopes less than 3:12. If sealant is not used on the panel side laps, then the minimum roof slope is 3:12.

Table 1. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 15/32" Plywood Deck.

Design Wind Pressure	Fastener Pattern	Fastener Spacing
-108.5 psf	12"-12"-12"	12" on center

Table 2. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 7/16" OSB deck.

Design Wind Pressure	Fastener Pattern	Fastener Spacing
-56.0 psf	12"-12"-12"	12" on center

Table 3. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 15/32" Plywood Deck

Design Wind Pressure	Fastener Pattern	Panel Fastener Spacing	1x4 Wood Purlin Spacing
-78.5 psf	12"-12"-12"	36" o.c.	36"
-168.5 psf	12"-12"-12"	12" o.c.	12"

Table 4. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 7/16" OSB Deck

Design Wind Pressure	Fastener Pattern	Panel Fastener Spacing	1x4 Wood Purlin Spacing
-71.0 psf	12"-12"-12"	36" o.c.	36"
-116.0 psf	12"-12"-12"	12" o.c.	12"

Installation Over an Existing Roof Covering: Installation over an existing roof covering is limited to a maximum of one existing layer of composition shingles, wood shingles or shakes, built-up roofing, or roll roofing applied over an existing, solid roof deck. The minimum thickness of the roof deck must be either 7/16" OSB or minimum 15/32" plywood, depending on the application used in Tables 1-4 of this evaluation report. Note: Inspection of the existing roof deck must be made prior to the installation of the roof panels. The condition of the existing roof deck must be acceptable to receive the metal roofing panels before the metal roofing panel installation proceeds. NOTE: Underlayment is not required to be installed.

Installation:

General: The multi-rib metal roofing panels must be installed in accordance with the manufacturer's recommended installation instructions and this evaluation report.

Panels: The multi-rib metal roofing panels must be secured to the roof deck as specified in Tables 1-4 and in accordance with this section.

Wood Purlins: The wood purlins must be secured to minimum Southern Yellow Pine rafters or trusses roof framing using two minimum No. 8 x 3" long wood screws at each rafter or truss.

Underlayment: A minimum of one layer of No. 30 (Type II) asphalt felt must be used. The underlayment used must comply with one or more of the following: ASTM D 226, ASTM D 4869, or ASTM D 1970. The underlayment must be installed with minimum 2-inch side laps and minimum 4-inch end laps. The underlayment must be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners must be applied along the overlaps not farther apart than 36 inches on center.

Attachment of Metal Roof Panels to Roof Deck: The multi-rib metal roofing panels must be secured to the roof deck as follows:

Roofing Panels to Plywood Deck (Including Panel Ends and End Laps): Minimum No. 9-15 x 1-1/2" long, Woodgrip HWH screws or WoodZAC Type A screws, with a sealing washer. The fasteners must be long enough to ensure a minimum penetration of 1/4" below the roof deck. (Note: If the metal roofing panels are installed over an existing roof covering, then the fastener length must be increased so that the fasteners are long enough to ensure a minimum penetration of 1/4" below the existing plywood roof decking.) A line of fasteners are to be

installed beginning 2" from the center line of the first major side lap in a 12"-12"-12" pattern as specified in Table 1. The spacing of the line of fasteners along the length of the panel must be 12" on center as specified in Table 1. Refer to Figure 1 of this evaluation report.

Roofing Panels to OSB Deck (Including Panel Ends and End Laps): Minimum No. 14-10 x 1-1/2" long, Woodgrip HWH screws or WoodZAC Type A screws, with a sealing washer. The fasteners must be long enough to ensure a minimum penetration of 1/4" below the roof deck. (Note: If the metal roofing panels are installed over an existing roof covering, then the fastener length must be increased so that the fasteners are long enough to ensure a minimum penetration of 1/4" below the existing plywood roof decking.) A line of fasteners are to be installed beginning 2" from the center line of the first major side lap in a 12"-12"-12" pattern as specified in Table 1. The spacing of the line of fasteners along the length of the panel must be 12" on center as specified in Table 1. Refer to Figure 2 of this evaluation report.

Roofing Panels to 1x4 Wood Purlins (Including Panel Ends and End Laps) – Plywood Decks: Minimum No. 9-15 x 1-1/2" long, Woodgrip HWH screws or WoodZAC Type A screws, with a sealing washer. The required fastener pattern and the maximum allowable spacing of the fastener lines is specified in Table 3. Refer to Figure 3 and Figure 4 for illustrations of the fastener patterns. The wood purlins must be secured to minimum Southern Yellow Pine rafters or trusses roof framing using two minimum No. 8 x 3" long wood screws at each rafter or truss.

Roofing Panels to 1x4 Wood Purlins (Including Panel Ends and End Laps) – OSB Decks: Minimum No. 9-15 x 1-1/2" long, Woodgrip HWH screws or WoodZAC screws, with a sealing washer. The required fastener pattern and the maximum allowable spacing of the fastener lines is specified in Table 4. Refer to Figure 5 and Figure 6 for illustrations of the fastener patterns. The wood purlins must be secured to minimum Southern Yellow Pine rafters or trusses roof framing using two minimum No. 8 x 3" long wood screws at each rafter or truss.

Panel Side Laps: Minimum 1/4-14 x 7/8" hex head screws with a sealing washer. The fasteners must be spaced 20" on center along the length of the side lap.

Trims, Closures, and Accessories: Components, such as the eave trim, rake start trim, rake end, rake tie-in, ridge trim, hi-side tie-in trim, high eave trim, hip trim, and valley trim must be installed as required by the manufacturer.

Note: Keep the manufacturer's installation instructions on the job site during the installation. Use corrosion resistant fasteners as specified in the IRC and the IBC.

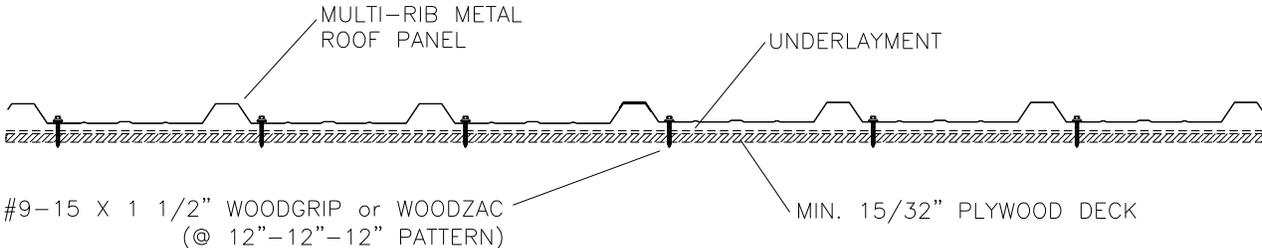


Figure 1. Attachment of Minimum 26-Gauge Multi-Rib Steel Roof Panels to Minimum 15/32" Plywood Deck

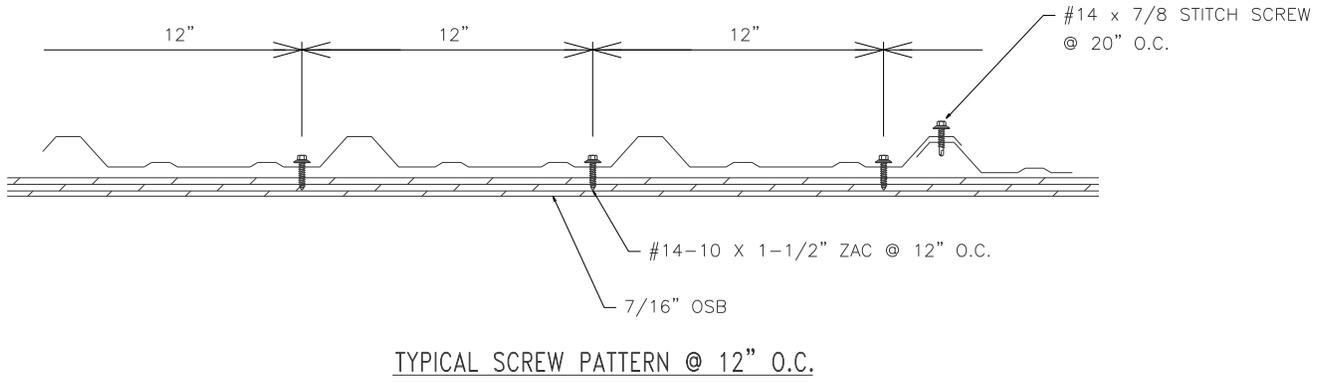


Figure 2. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 7/16" OSB Deck

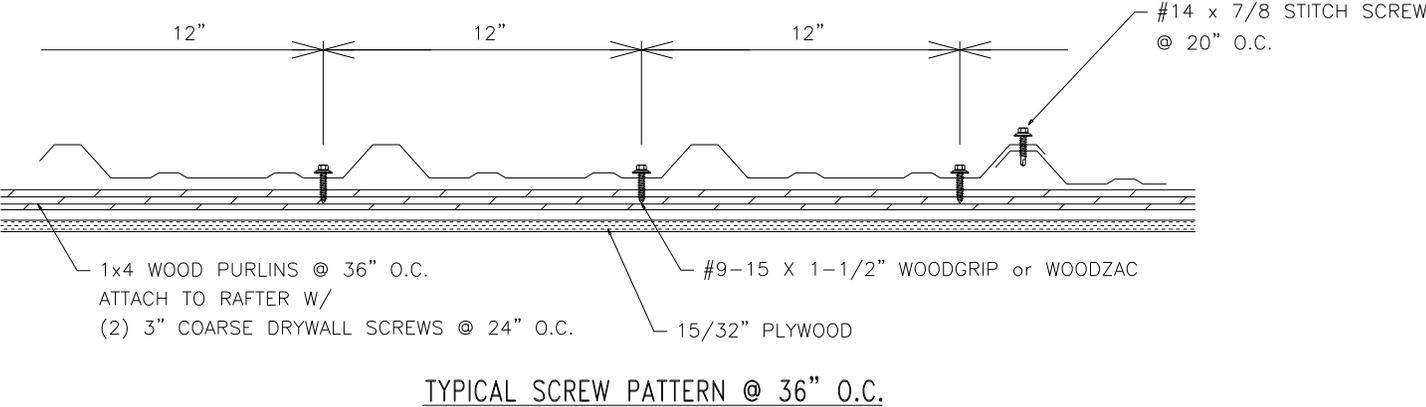


Figure 3. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 15/32" Plywood Deck. Purlin Spacing of 36" on center.

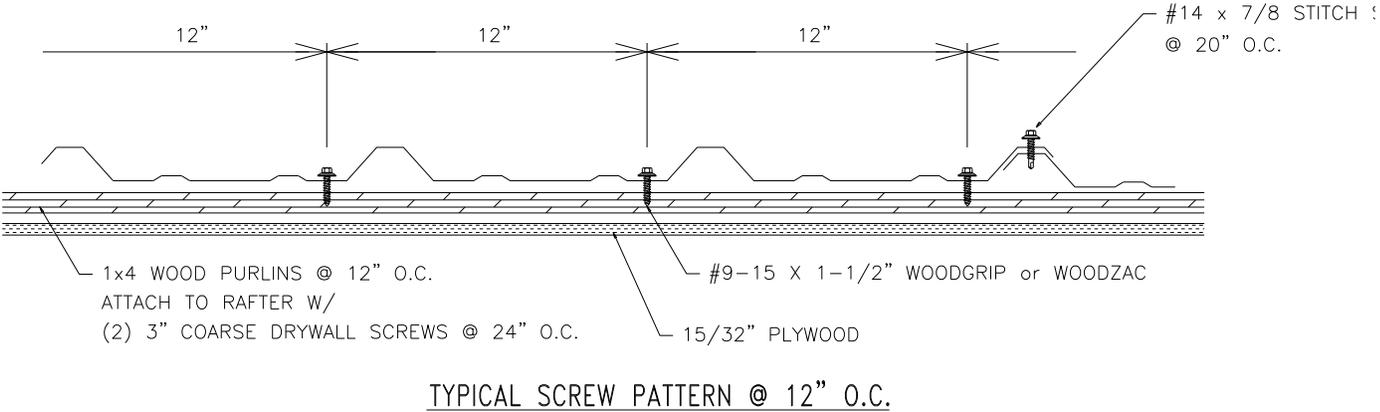


Figure 4. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 15/32" Plywood Deck. Purlin Spacing of 12" on center.

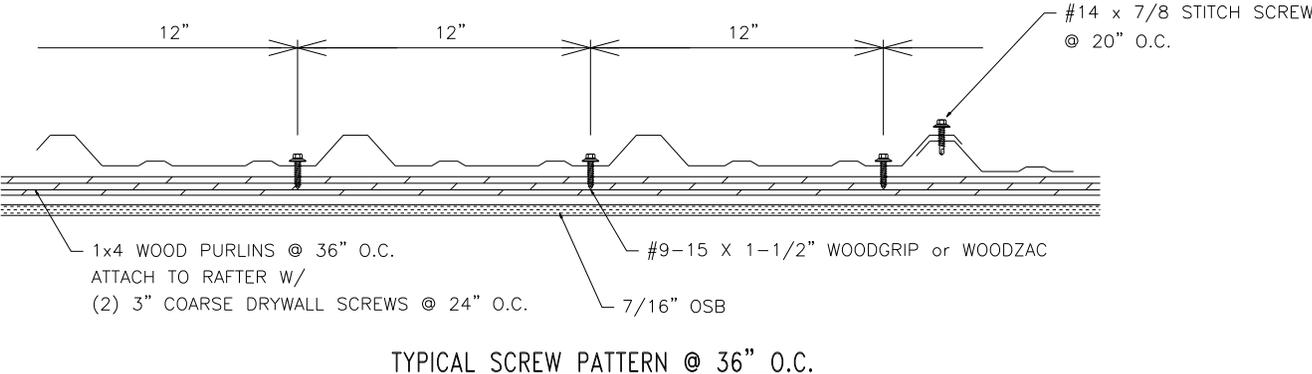


Figure 5. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 7/16" OSB Deck. Purlin Spacing of 36" on center.

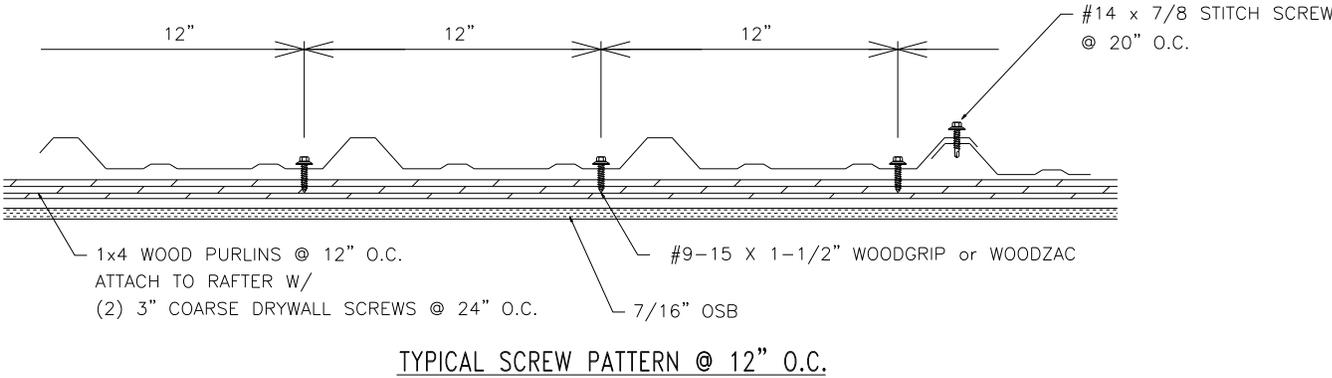


Figure 6. Attachment of Minimum 26-gauge Multi-Rib Steel Roof Panels to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins Over a Minimum 7/16" OSB Deck. Purlin Spacing of 12" on center.