TDI | Texas Department of Insurance

PO Box 12030 | Austin, TX 78711 | 800-578-4677 | tdi.texas.gov

Product Evaluation

RC190 | 0621

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-190

Effective Date: June 1, 2021
Re-evaluation Date: June 2025

Product Name: Corrugated Metal Roofing Panels/CPB Installed Over Wood Purlins

Manufacturer: Mueller, Inc.
Steel Building Systems and Components
1913 Hutchins Avenue
Ballinger, TX 76821
(800) 527-1087

General Description:
This evaluation report is for Corrugated Metal Roofing Panels/CPB that are secured to nominal 1x4 wood purlins. The wood purlins are secured to nominal 15/32" plywood. Thicker wood purlins and thicker plywood may be used; however, the design pressure rating for the metal roofing panels must be as specified in this evaluation report.

The Corrugated Metal Roofing Panels/CPB are 34" in width and have a 36" coverage. The metal roof panels have a 7/8" rib height. The metal roof panels are manufactured from minimum 26-gauge coated steel that conform to ASTM A446, Grade E, with a minimum yield strength of 80,000 psi. The roofing panels have either an AZ 55 hot-dipped aluminum zinc alloy coating or a hot-dipped galvanized coating conforming to ASTM A525.

Limitations:
Roof Framing: The roofing panels must be installed over nominal 1x4 No. 2 Southern Yellow Pine wood purlins that are secured to nominal 15/32" plywood. Roof framing (rafters or trusses) must not exceed 24" on center.

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

Design Wind Pressures: The design pressure uplift load resistance shall be as specified in Table 1.

Roof Slope: The roofing panels may be installed on roofs with a roof slope as low as 3:12. If the laps are sealed with a lap sealant, then the minimum roof slope must be 1/2:12.

Table 1. Attachment of Minimum 26-Gauge Corrugated Metal Roofing Panels/CPB to Minimum 1x4 No. 2 Southern Yellow Pine Wood Purlins

Design Wind Pressure	Fastener Pattern	Fastener Spacing	1x4 Wood Purlin Spacing	1x4 Purlin Screw Spacing into Plywood
-71.0 psf	Type A	24" o.c.	24"	12"
-108.5 psf	Type B	24" o.c.	24"	6"

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 of minimum 15/32" plywood. 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 Instructions:
Underlayment: Titanium-UDL synthetic roofing underlayment or equivalent. 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 2" side laps and with 6" end laps. The underlayment must be applied as required by the manufacturer with corrosion-resistant roofing nails and tin caps spaced a maximum of 12" on center in the field (one row) and 6" on center along the side laps.

Alternative 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 2" side laps and 2" end laps. The underlayment must be applied with corrosion-resistant roofing nails spaced a maximum of 36" on center along the overlap.

Wood Purlins: The wood purlins must be secured to minimum 15/32" plywood using minimum No. 8 x 2-1/2" long wood screws spaced as specified in Table 1. The fasteners must penetrate a minimum of 1/4" below the plywood roof decking. 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.

Attachment of Metal Roofing Panels to the 1x4 Wood Purlins: Minimum No. 12-11 x 1" long, SDT screws with sealing washer, manufactured by Atlas. The required fastener pattern and spacing of the fasteners is specified in Table 1 and are shown in Figure 1.

Trims, Closures, and Accessories: Components, such as the eave trim, rake trim, ridge trim, hip trim, and valley trim must be installed as required by the manufacturer.

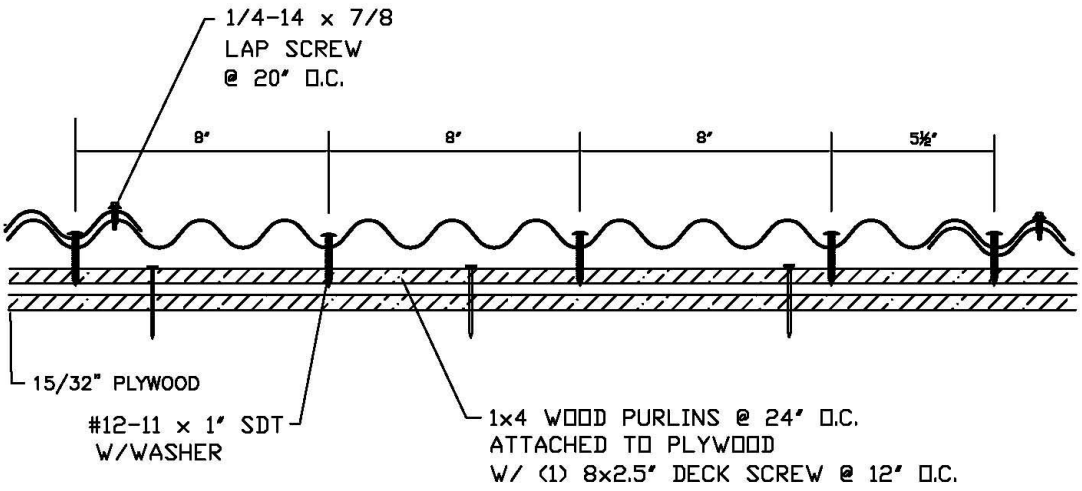
Alternative Fasteners: Substitution of equivalent fasteners must meet the following requirements:

No. 12-11 SDT wafer head screws with sealing washer, manufactured by Atlas

- Ultimate withdrawal (pullout) $\geq$ 435 lbs. in 1/2" plywood

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

FASTENER PATTERN A



FASTENER PATTERN B

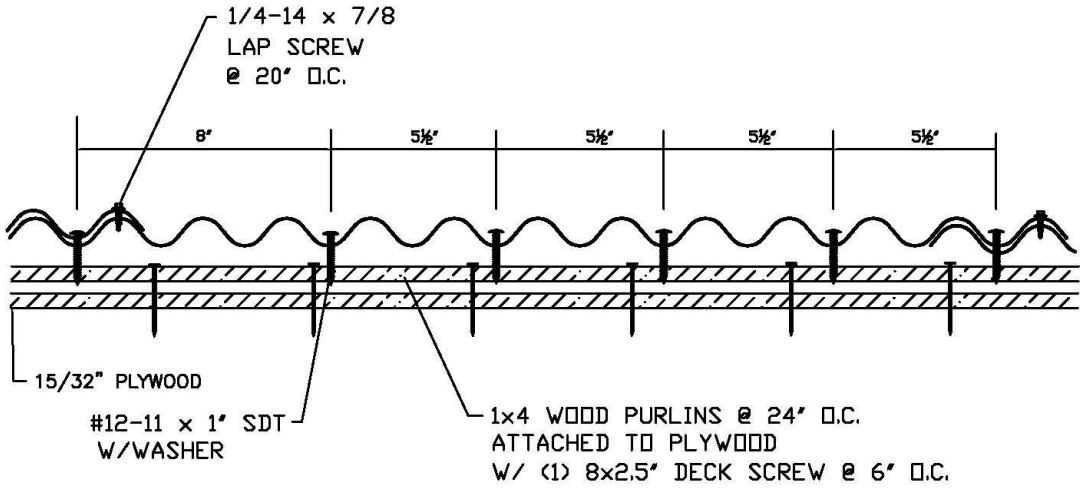


Figure 1. Fastener Pattern A and Fastener Pattern B