

Product Evaluation

RC173 | 0120

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-173

Effective Date: January 1, 2020

Re-evaluation Date: January 2024

Product Name: Royal Span 26-Gauge Steel Roofing Panels Installed over either a Plywood Deck or Wood Purlins

Manufacturer: Royal Metal Building Components
2031 Amistad Drive
San Benito, TX 78586
(956) 399-2271

General Description:

The Royal Span metal roofing panels are steel roofing panels. The metal roofing panels have a maximum 36" of coverage. The metal roof panels have 1-1/4" tall ribs spaced 12" on center. The metal roofing panels are manufactured from minimum 26-gauge galvalume steel that conforms to ASTM A792 AZ50, with a minimum yield strength of 80,000 psi.

Limitations:

Roof Framing: The metal roofing panels must be installed over one of the following types of roof decks:

- Minimum 15/32" plywood
- Minimum 1x4 No. 2 Southern Yellow Pine wood purlins
- Minimum 2x4 No. 2 Southern Yellow Pine wood purlins

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 must be as specified in Tables 1-3.

Table 1

Attachment of minimum 26-gauge Royal Span steel roofing panels to plywood deck

Design Wind Pressure	Deck	Attachment of Panel to Deck
-41.7 psf	Minimum 15/32" Plywood	Fastener Pattern #1 @ 24" o.c.
-138.5 psf	Minimum 15/32" Plywood	Fastener Pattern #2 @ 12" o.c.

Table 2

Attachment of minimum 26-gauge Royal Span steel roofing panels to minimum 1x4 No. 2 Southern Yellow Pine wood purlins

Design Wind Pressure	Attachment to 1x4 Purlins	Number of Screws Per Purlin to Truss/Rafter
-41.7 psf	Fastener Pattern #1 @ 24" o.c.	Two No. 8 x 2-1/2"
-110.0 psf	Fastener Pattern #2 @ 12" o.c.	Two No. 8 x 2-1/2"

Table 3

Attachment of minimum 26-gauge Royal Span steel roofing panels to minimum 2x4 No. 2 Southern Yellow Pine wood purlins

Design Wind Pressure	Attachment to 2x4 Purlins	Number of Screws Per Purlin to Truss/Rafter
-41.7 psf	Fastener Pattern #1 @ 24" o.c.	Two (2) No. 8 x 3"
-138.5 psf	Fastener Pattern #2 @ 12" o.c.	Two (2) No. 8 x 3"

Roof Slope: The metal roofing panels may be installed on roofs with a roof slope as low as 1/2:12 if the metal roofing panels have an applied lap sealant. The metal roofing panels may be installed on roofs with a roof slope as low as 3:12 without the use of an applied lap sealant.

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:

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

Panels: The metal roofing panels must be secured to the roof framing as specified in Tables 1-3 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 minimum No. 8 x 2-1/2" wood screws as specified in Table 2 for 1x4 purlins and minimum No. 8 x 3" wood screws as specified in Table 3 for 2x4 purlins.

Underlayment: A minimum of one layer of No. 30 (Type II) asphalt must be used. The underlayment must comply with one of the following: ASTM D 226, ASTM D 4869, or ASTM D 1970. The felt must be installed with minimum 2" side laps and minimum 2" end laps. The felt must be fastened to the roof deck with corrosion resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners to be applied along the overlaps a maximum of 36" on center.

Attachment of Metal Roofing Panels to the Roof Deck: The metal roofing panels must be secured to the roof framing in one of the following ways:

Metal Roofing Panels to the Plywood Deck: Minimum #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite. The fasteners must be long enough to ensure a minimum penetration of 1/4" below the wood 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 a minimum penetration of 1/4" below the existing roof deck). The required fastener pattern must be as specified in Table 1. An illustration of each fastener pattern is shown in Figure 1.

Metal Roofing Panels to the 1x4 Purlins: Minimum #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite. The required fastener pattern must be as specified in Table 2. An illustration of each fastener pattern is shown in Figure 2.

Metal Roofing Panels to the 2x4 Purlins: Minimum #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite. The required fastener pattern must be as specified in Table 3. An illustration of each fastener pattern is shown in Figure 2.

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

Panel Ends and End Laps: Minimum #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite. Fastener Pattern #2 as specified in Tables 1-3 must be used. Refer to Figure 1 and Figure 2 for illustrations of Fastener Pattern #2. For solid wood decks, the fasteners must be long enough to ensure a minimum penetration of 1/4" below the wood 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 a minimum penetration of 1/4" below the existing roof deck).

Panel Edges: Minimum #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite. Along the edge of the panel, the fasteners must be spaced the same spacing as for the line of fasteners in Table 1. For solid wood decks, the fasteners must be long enough to ensure a minimum penetration of 1/4" below the wood 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 a minimum penetration of 1/4" below the existing roof deck).

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:

- #10-16 x 1-1/2" Kwikseal II Woodbinder screws, manufactured by Sealtite
 - Ultimate withdrawal (pullout) \geq 400 lbs in minimum 15/32" plywood
- #8 x 2-1/2" Dec-King screws, manufactured by Buildex
 - Ultimate withdrawal (pullout) \geq 630 lbs in SYP (minimum 1-1/4" embedment)
- #8 x 3" Dec-King screws, manufactured by Buildex
 - Ultimate withdrawal (pullout) \geq 645 lbs in SYP (minimum 1-1/4" embedment)

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

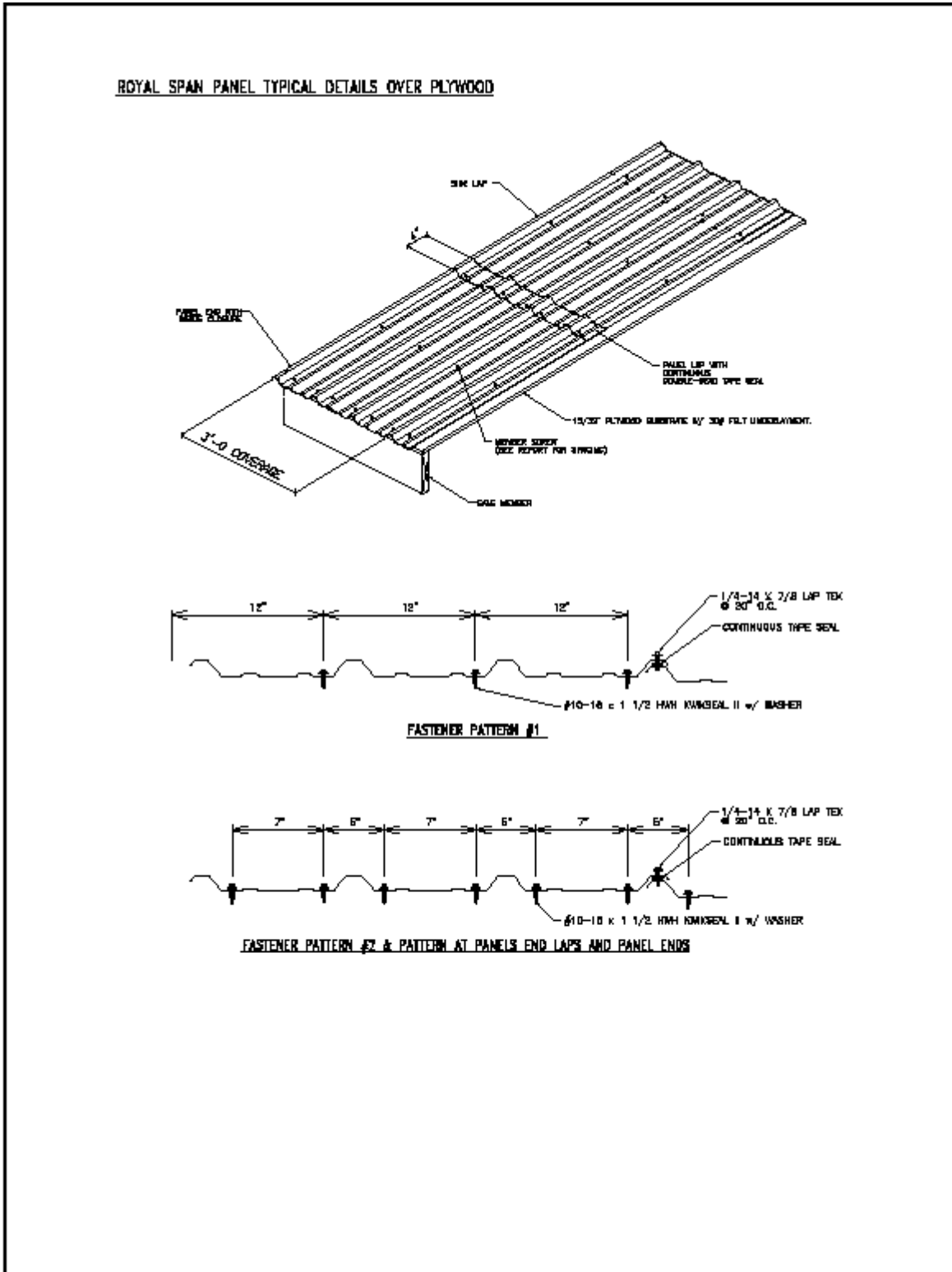


Figure 1. Royal Span Panel Secured to Minimum 15/32" Plywood

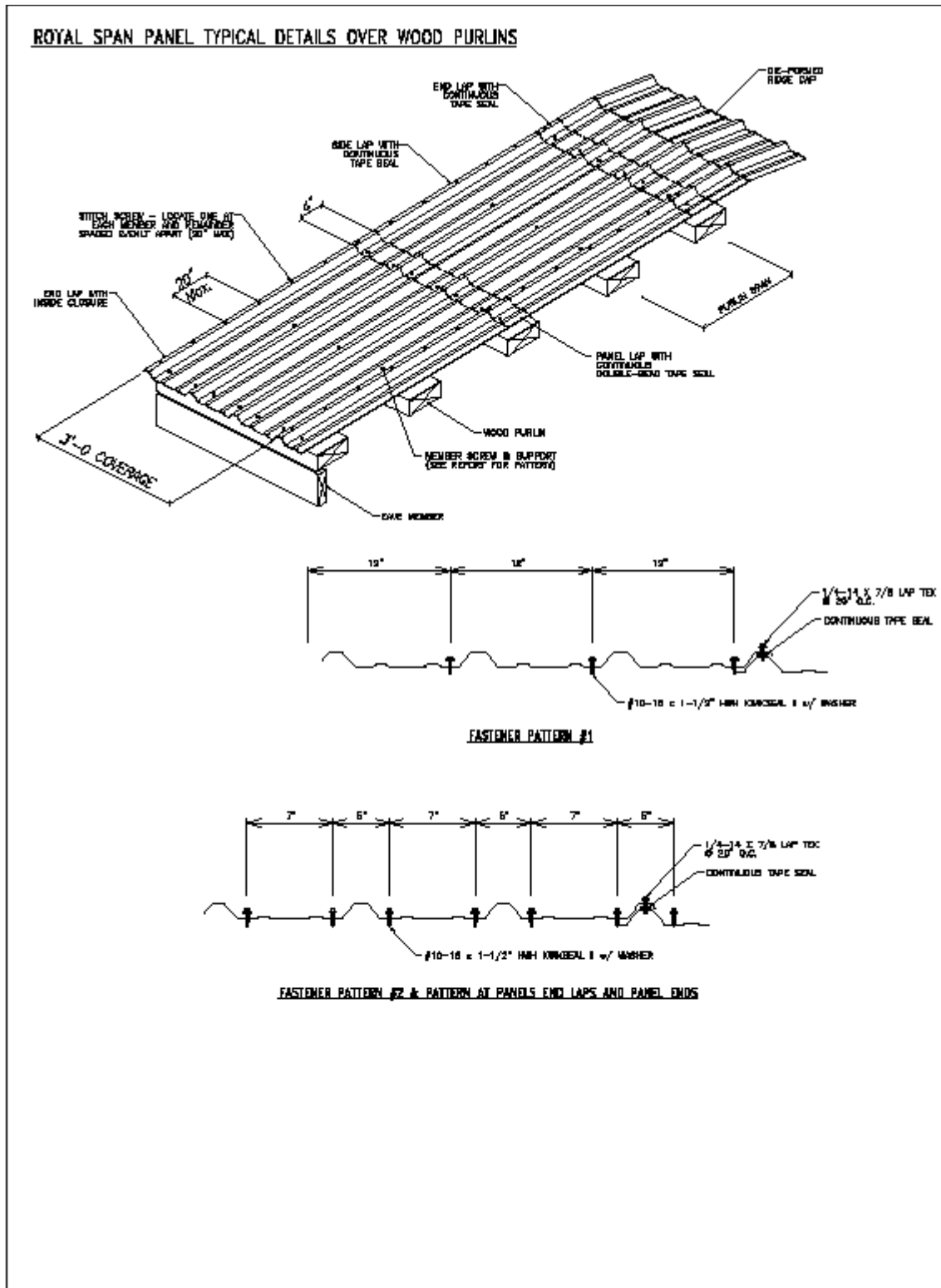


Figure 2. Royal Span Panel Secured to Wood Purlins