

# TEXAS DEPARTMENT OF INSURANCE

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## PRODUCT EVALUATION RC-204

Effective July 1, 2009

*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 shall be subject to reevaluation in **July 2013**.*

*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.*

### **U Panel Metal Roofing Panels** manufactured by

**Building Components Inc.**  
**11919 North Garden**  
**Houston, Texas 77071**  
**Telephone: (713) 995-9224**

will be accepted for use in areas along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

## PRODUCT DESCRIPTION

This evaluation report is for U panel metal roofing panels. The U Panel metal roofing panels have a 36" coverage. The metal roof panels have a  $\frac{3}{4}$ " rib height spaced 6 inches on center. The metal roof panels are manufactured from minimum 26 gauge Galvalume steel that conform to ASTM A792, Grade 80, with a minimum yield strength of 80,000 psi.

## LIMITATIONS

**Roof Framing:** The metal roofing panels shall be installed over one of the following types of roof framing:

- Minimum  $\frac{15}{32}$ " plywood roof deck
- 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 shall meet or exceed the uplift requirements of the International Residential Code or International Building Code and shall be installed as required for resistance to wind loads.

**Design Wind Pressures:** The design pressure uplift load resistance shall be as specified in Tables 1-3.

**Roof Slope:** The metal roofing panels may be installed on roofs with a roof slope as low as  $\frac{1}{2}$ :12 if sealant is used on the panel side laps. 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 U panel metal roofing panels to minimum  $1\frac{5}{32}$ " plywood roof deck

Design Wind Pressure	Attachment to Plywood
-56 psf	Fastener Pattern #1 @ 24" o.c.
-146 psf	Fastener Pattern #2 @ 12" o.c.

**Table 2**

Attachment of minimum 26 gauge U panel metal roofing panels to Minimum 1x4 No. 2 Southern Yellow Pine wood purlin

Design Wind Pressure	Attachment to 1x4 Wood Purlins	Number of Screws Per Purlin to Truss/Rafter
-55.0 psf	Fastener Pattern #1 @ 24" o.c.	Two (2) No. 8 x 2 $\frac{1}{2}$ "
-110.0 psf	Fastener Pattern #2 @ 12" o.c.	Two (2) No. 8 x 2 $\frac{1}{2}$ "

**Table 3**

Attachment of minimum 26 gauge U panel metal roofing panels to Minimum 2x4 No. 2 Southern Yellow Pine wood purlin

Design Wind Pressure	Attachment to 2x4 Wood Purlins	Number of Screws Per Purlin to Truss/Rafter
-56.0 psf	Fastener Pattern #1 @ 24" o.c.	Two (2) No. 8 x 3"
-146.0 psf	Fastener Pattern #2 @ 12" o.c.	Two (2) No. 8 x 3"

**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  $1\frac{5}{32}$ " 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

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

**Panels:** The metal roofing panels shall be secured to the roof framing as specified in Tables 1-3 and in accordance with this section.

**Wood Purlins:** The wood purlins shall be secured to minimum Southern Yellow Pine rafters or trusses roof framing using minimum No. 8 x 2  $\frac{1}{2}$ " long wood screws as specified in Table 2 for 1x4 purlins and minimum No. 8 x 3" long wood screws as specified in Table 3 for 2x4 purlins.

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

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

**Roofing Panels to Plywood Deck:** Minimum No. 10-16/8" x 1" long, Kwikseal Woodbinder screws, manufactured by Sealtite. The fasteners shall be long enough to ensure a minimum penetration of  $\frac{1}{4}$ " below the roof deck. (Note: If the metal roofing panels are installed over an existing roof covering, then the fastener length shall be increased so that the fasteners are long enough to ensure a minimum penetration of  $\frac{1}{4}$ " below the existing plywood roof decking.) The required fastener pattern as well as the maximum allowable spacing for the pattern is specified in Table 1. Refer to Figure 1 for an illustration of the required fastener pattern.

**Roofing Panels to the 1x4 Wood Purlins:** Minimum No. 10-16/8" x 1" Kwikseal Woodbinder screws, manufactured by Sealtite. The required fastener pattern as well as the maximum allowable spacing for the pattern is specified in Table 2. Refer to Figure 2 for an illustration of the required fastener pattern.

**Roofing Panels to the 2x4 Wood Purlins:** Minimum No. 10-16/8" x 1" long, Kwikseal Woodbinder screws, manufactured by Sealtite. The required fastener pattern as well as the maximum allowable spacing for the pattern is specified in Table 3. Refer to Figure 3 for an illustration of the required fastener pattern.

**Panel Side Laps:** Minimum  $\frac{1}{4}$ "-14 x  $\frac{7}{8}$ " long, hex head screws with a sealing washer. The fasteners shall be spaced 20 inches on center along the length of the side lap.

**Panel Ends and End Laps:** Minimum No. 10-16/8 x 1" long, Kwikseal Woodbinder screws, manufactured by Sealtite. The fasteners shall be long enough to ensure a minimum penetration of  $\frac{1}{4}$ " below the roof deck. (Note: If the metal roofing panels are installed over an existing roof covering, then the fastener length shall be increased so that the fasteners are long enough to ensure a minimum penetration of  $\frac{1}{4}$ " below the existing plywood roof decking.) The fastener pattern shall match the required fastener pattern for the attachment of the panels to the deck. Refer to Figures 1-3 for the required fastener patterns.

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

**Alternative Fasteners:** Substitution of equivalent fasteners shall meet the following requirements:

No. 10-16/8 Kwikseal Woodbinder screws, manufactured by Sealtite.

- Ultimate withdrawal (pullout)  $\geq$  400 lbs. in minimum  $1\frac{5}{32}$ " plywood

No. 8 x 2  $\frac{1}{2}$ " Dec-King screws, manufactured by Buildex

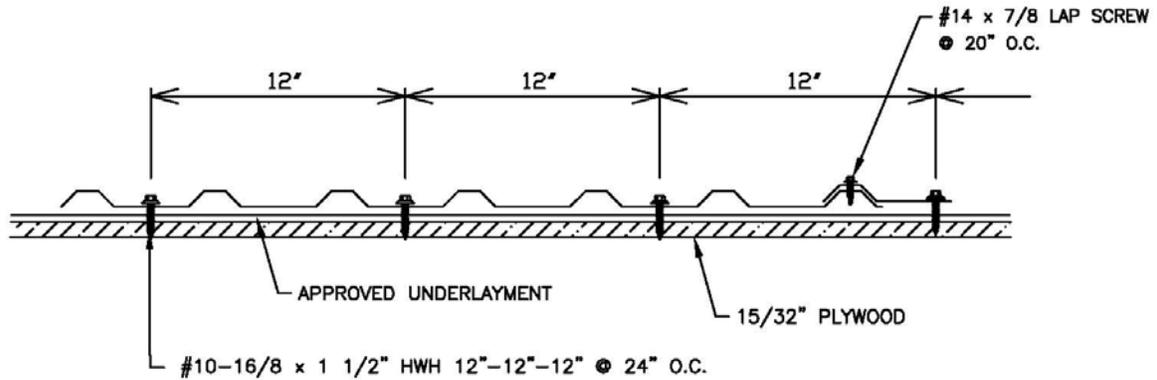
- Ultimate withdrawal (pullout)  $\geq$  630 lbs. in Southern Yellow Pine (minimum 1  $\frac{1}{4}$ " embedment)

No. 8 x 3" Dec-King screws, manufactured by Buildex

- Ultimate withdrawal (pullout)  $\geq$  645 lbs. in Southern Yellow Pine (minimum 1  $\frac{1}{4}$ " embedment)

**Note:** The manufacturer's installation instructions shall be available on the job site during the installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.

## FASTENER PATTERN #1



## FASTENER PATTERN #2

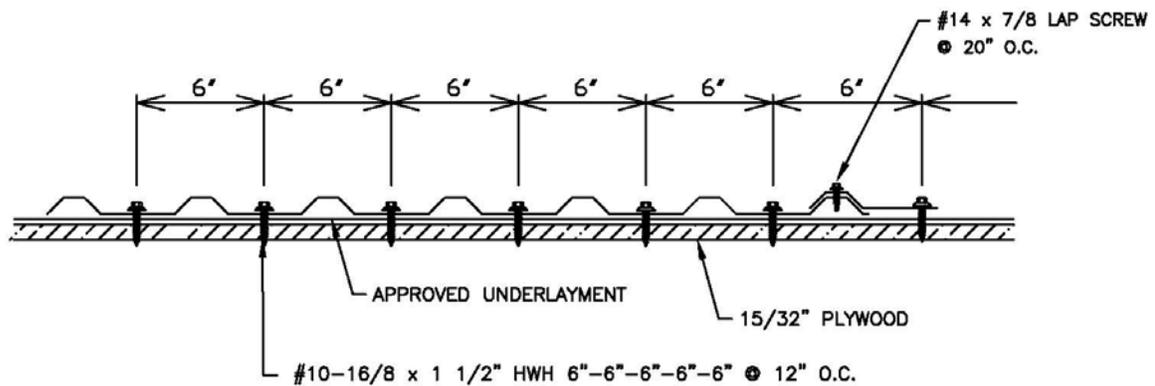
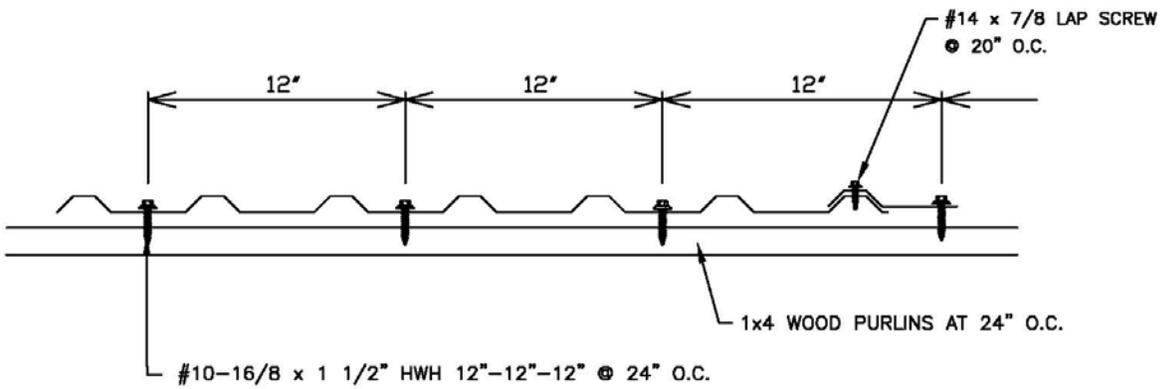


Figure 1. U Panel Metal Roofing Panel Secured to a  $\frac{15}{32}$ " Plywood Deck

## FASTENER PATTERN #1



## FASTENER PATTERN #2

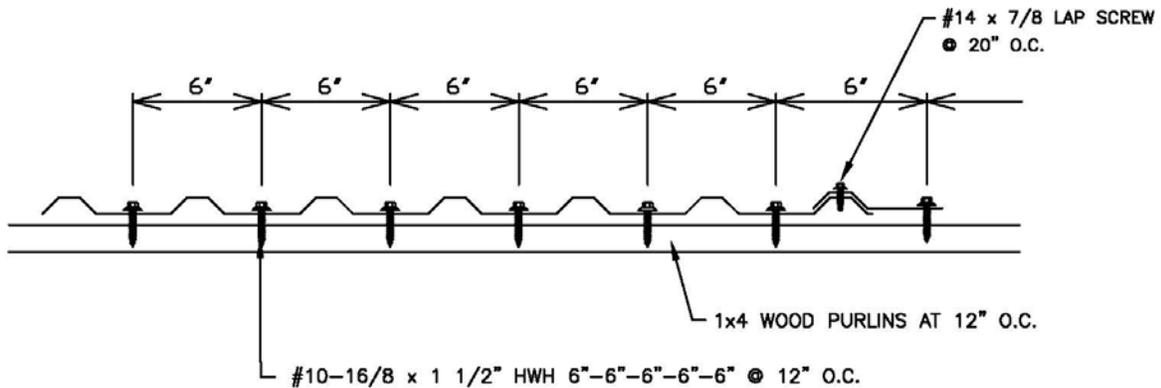
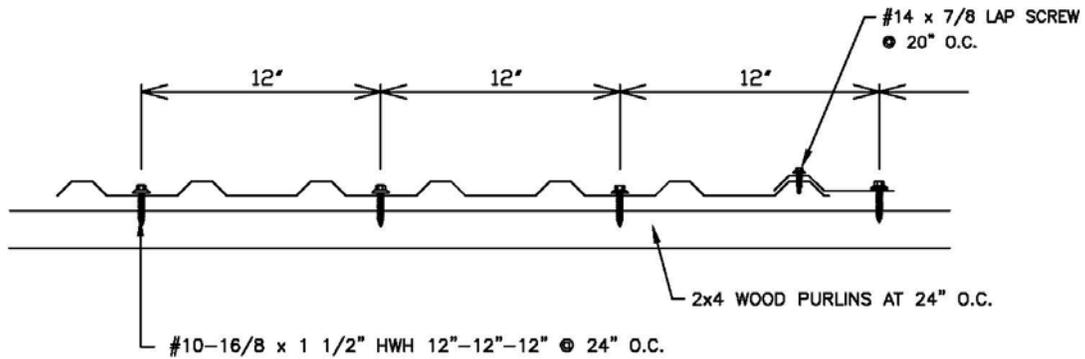


Figure 2. U Panel Metal Roofing Panel Secured to 1 x 4 Wood Purlins

## FASTENER PATTERN #1



## FASTENER PATTERN #2

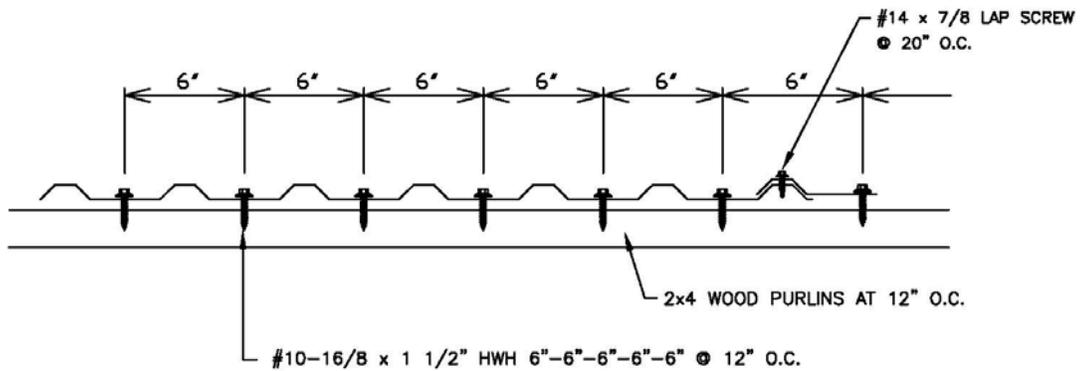


Figure 3. U Panel Metal Roofing Panel Secured to 2 x 4 Wood Purlins