Reinforcer Technologies

Run Utilities Right Through Conventional Floor Joists

Metwood Joist Reinforcers are engineered light gauge steel attachments for engineered I-Joists or conventional framing. By allowing larger openings in Floor Joists, the Joist Reinforcer simplifies the routing and installation of utilities

Strength
Metwood Joist Reinforcers restore the strength of Floor Joists weakened by the placement of large holes or cut-outs.

Simplifies Construction
Allows utilities to be placed through the floor system rather than routing them below and decreasing ceiling height. Eliminates the need for bulkheads, chases and special engineering.

Easy Installation
Metwood Joist Reinforcers are simply glued and screwed to the side of the Floor Joist (screws included).

Environmental Data - The Average Recycled Steel Content of Metwood Products (% of Total Weight) is 70% or greater and are 100% recyclable.

METWOOD BUILDING SOLUTIONS

Reinforcer™ Technologies

by Metwood

BEST OF IBS™ AWARDS 2020

WINNER MOST INNOVATIVE BUILDING MATERIAL

NAHB IBS

819 Naff Road.
Boones Mill, VA. 24065
Ph: 540-334-4294
Tf: 866METWOOD
Fx: 540-334-4293

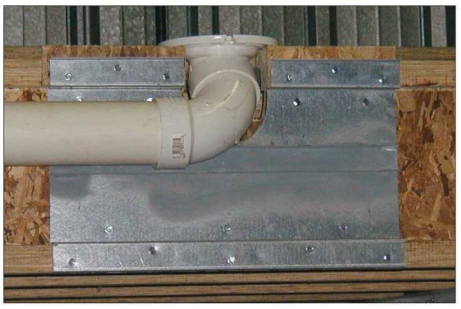
www.metwood.com

HOSPITALITY / RESORTS | SENIOR / ASSISTED LIVING | UNIVERSITY / MILITARY LIVING | MIXED-USE / URBAN INFILL | CONDOS | MULTI-FAMILY

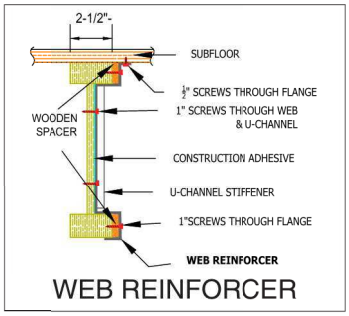
Reinforcer™
Technologies

by Metwood

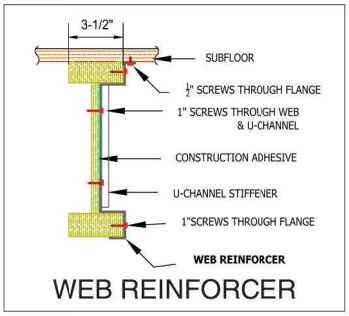
Reinforcer Technologies



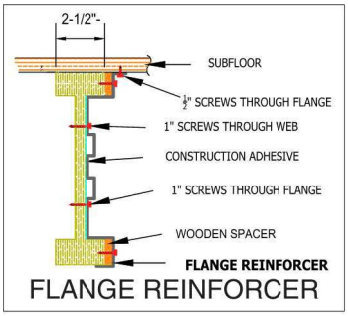
I-Joist Flange Reinforcer		I-Joist Web Reinforcer		Hole Reinforcer		Notch Reinforcer		Beam Reinforcer	
									
Joist Depth	Notch Size	Joist Depth	Hole Size	Size	Hole Size	Size	Notch Size	Size	Opening Size
9-1/2”	3-1/4”H x 5”W	9-1/2”	5-1/2”H x 12”W	2” x 8”	4”	2” x 10”	3-1/2”H x 5”W	Opening sizes and locations are determined by load and span on a per project basis	
11-7/8”	4”H x 5”W	11-7/8”	7-7/8”H x 12”W	2” x 10”	6”				
14”	4”H x 5”W	14”	10”H x 16”W	2” x 12”	6”				
16”	4”H x 5”W	16”	12”H x 16”W						



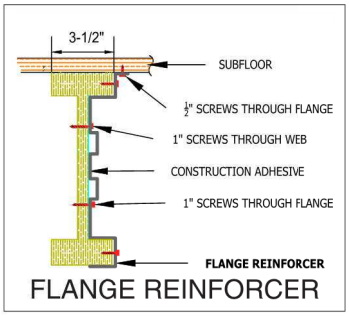
WEB REINFORCER



WEB REINFORCER



FLANGE REINFORCER



FLANGE REINFORCER

Environmental Data - The Average Recycled Steel Content of Metwood Products (% of Total Weight) is 70% or greater and are 100% recyclable.

2810HR Joist Reinforcer

CODE COMPLIANCE

Intertek
CCRR-0279

METWOOD BUILDING SOLUTIONS
819 Naff Road. Boones Mill, VA. 24065
Ph: 540-334-4294 Tf: 866METWOOD Fx: 540-334-4293
www.metwood.com

Code Compliance Research Report
CCRR-0279

Issue Date: 10-11-2018
Revision Date: 09-27-2020
Renewal Date: 10-31-2021

DIVISION: 06 00 00 – WOOD, PLASTICS, AND COMPOSITES
Section: 06 05 23 – Wood, Plastic, and Composite Fastenings

REPORT HOLDER:
METWOOD, INC.
819 Naff Road
Boones Mill, VA 24065
540-334-4294
www.metwood.com

REPORT SUBJECT:
2810HR Joist Reinforcer

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2018, 2015 *International Building Code®* (IBC)
- 2018, 2015 *International Residential Code®* (IRC)

NOTE: This report references 2018 Code sections with [2015] Code sections shown in brackets where they differ.

1.2 Metwood Joist Reinforcers have been evaluated for the following properties:

- Structural Properties
- Corrosion Protection

1.3 Metwood Joist Reinforcers have been evaluated for the construction in accordance with the IRC and Type VB of the IBC.

2.0 STATEMENT OF COMPLIANCE

Metwood Joist Reinforcers comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

3.0 DESCRIPTION

3.1 2810HR Conventional Wood Joist Reinforcers consist of 2 cold-formed steel components fabricated from 14 gauge, galvanized (G90) sheet steel with yield strength of 50 ksi.

3.2 Subject to the conditions specified within this report, use of the Metwood Joist Reinforcer allows a maximum 6 inch diameter hole to be placed in any location along the length of a nominal 2x10 wood joist except within 12 inches of a support.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Conventional 2x10 solid sawn lumber installed with a 6 inch diameter hole reinforced with a 2810HR joist reinforcer has equivalent design strength and stiffness to the same framing member with a code permitted hole size of 3 inches, unreinforced. See Section 5.0 for Installation and Section 6.0 for Conditions of Use.

5.0 INSTALLATION

Metwood Joist Reinforcers must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.1 Metwood 2810HR Joist Reinforcer is installed with 30 SFS Intec #12-8 XG (0.133" shank dia.), 1-1/2" long, pancake head, carbon steel wood screws in the designated pre-drilled holes. See Figure 2 for fastening pattern.

5.2 Metwood Joist Reinforcers may be installed at any location along the span of the wood joist, with the holes located no less than 12" of the closest support or edge.

6.2 Holes in the joists, where the Metwood 2810HR Joist Reinforcer is installed, shall be limited to a maximum size of 6" in diameter located at the center of the joist height. Holes shall not be located within 12 inches from supports to the center of the hole.

6.3 The Metwood Joist Reinforcers shall be limited to use with nominal 2x10 solid sawn Southern Pine (G=0.50), Spruce-Pine-Fir (G=0.42) or, other graded wood species with a specific gravity (G) no less than 0.42.

6.4 A maximum of one Metwood Joist Reinforcer shall be used in a single joist.

6.5 Installation of the Metwood Joist Reinforcer is limited to dry conditions, where the moisture content of the lumber is 19% or less.

6.6 Use with preservative treated lumber is outside the scope of this report.

6.7 The Metwood Joist Reinforcers are manufactured under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM D198-15, Standard Test Methods of Static Tests of Lumber in Structural Sizes.

7.2 Engineering Analysis of the fastening in accordance with the National Design Specification for Wood Construction and Supplement, American Forest & Paper Association (ANSI/AF&PA NDS-2015), signed and sealed by a professional engineer.

7.3 Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.

8.0 IDENTIFICATION

The Metwood Joist Reinforcers produced in accordance with this report shall be identified by the following information:

8.1 An imprint on the bracket identifying the name and/or trademark of manufacturer on the product, and text "Intertek CCRR-0279".

8.2 Packaging with a label with the Intertek Compliance Research Report mark and number (CCRR-0279).

CODE COMPLIANCE
ETL US
Intertek
CCRR-0279

9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

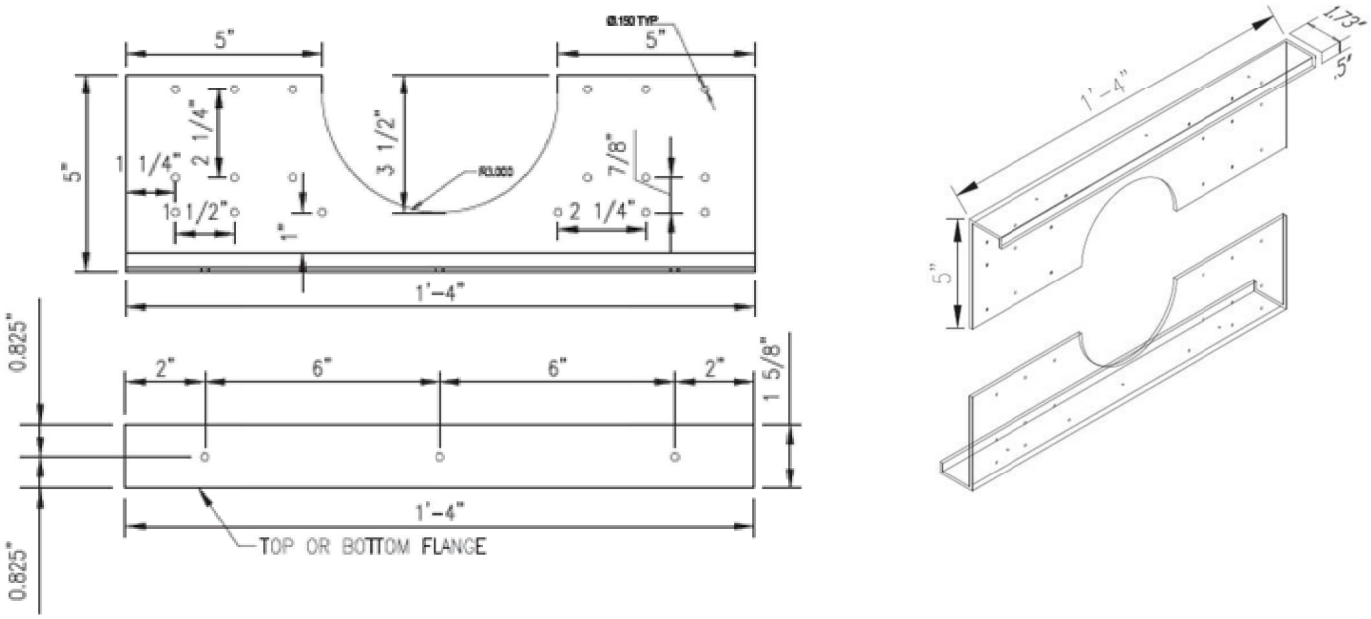


FIGURE 1 – 2810HR JOIST REINFORCER

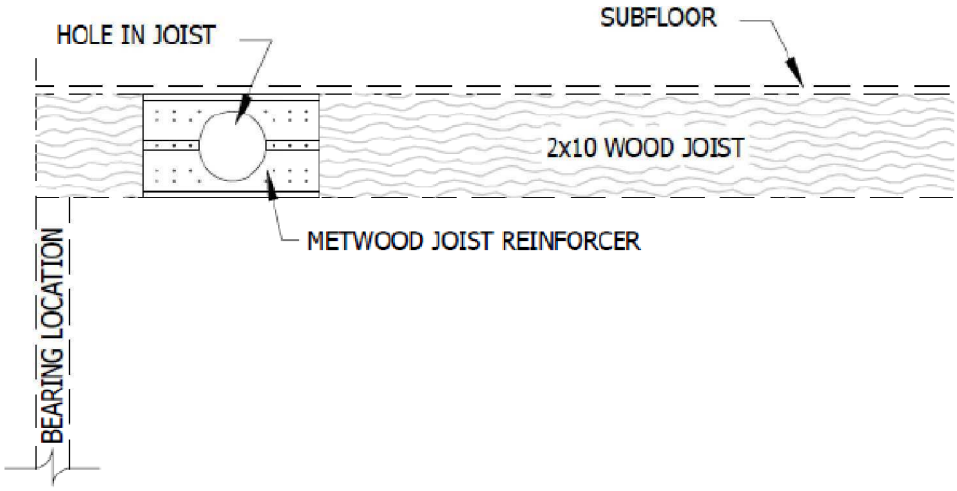


FIGURE 2 – INSTALLATION DIAGRAM OF 2810HR JOIST REINFORCER

Metwood Building Solutions
819 Naff Road
Boones Mill, VA 24065
www.metwood.com
Ph: 540-334-4294

Installation Instructions for 2810HR Joist Reinforcer

CODE COMPLIANCE
Intertek
CCRR-0279

Use the 2810HR Joist Reinforcer to allow placement of up to 6" holes in 2x10 wood joists and 4" holes in 2x8's. The 2810HR Joist Reinforcer has 2 identical pieces which are simultaneously attached to a joist to accommodate a hole in the joist which may have pipes, conduit, wires, etc., already in place.

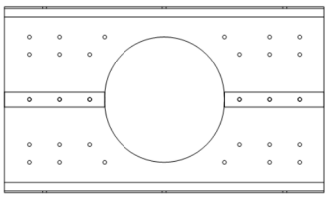
****CCRR-0279 covers use on 2x10 solid sawn described in Section 6.3. All other species and sizes will require an engineered letter.**

Installation Instructions

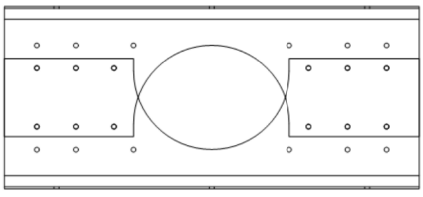
1. Locate position of desired hole in joist, place the 2810HR halves in the orientation shown in the sketch below on the joist, and, using the hole in the 2810HR as a template, mark the opening onto the joist. Keep the bottom half flush with the bottom of the joist and the upper half positioned with the alignment holes (see sketch) aligned. There are 4 alignment holes used on a 2x10 and 8 on a 2x8. Take away the 2810HR halves and cut the hole in the joist as marked.

2. Place the lower piece onto the bottom of the joist and attach it to the joist below the alignment holes with screws supplied with the 2810HR, leaving the alignment holes open. Drive the screws tight against the metal.

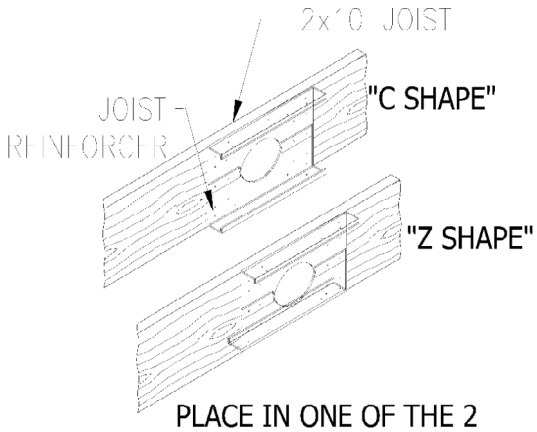
3. Place the upper half onto the joist, lapping over the lower half with the alignment holes aligned. Drive screws through alignment holes, through both halves, into the joist, 6 screws in the 2x10, 12 screws in the 2x8. Then drive screws through the remaining holes, into the joist. Total number of screws in a 2x10 is 30 and 24 in a 2x8. The finished installation **must have a screw in every hole.**



2x10 VIEW



2x8 VIEW



PLACE IN ONE OF THE 2 CONFIGURATIONS (EITHER ONE WILL WORK)

Installation Limitations

- **Hole Size:** Hole sizes may not exceed 6" diameter in 2x10's and 4" in 2x8's
- **Number of 2810HR's:** One 2810HR may be applied per joist.
- **Non-Compliant Installations:** It is often possible to use a 2810HR in conditions not complying with these Limitations. Contact Metwood for additional product and engineering support.

Patents: 5,519,997 / 7,347,031 / Patent Pending

intertek
Total Quality. Assured.

Intertek
130 Derry Court
York, PA 17406

Tel +1 717 764 7700
Fax +1 717 764 4129
Kendall.leaman@intertek.com
intertek.com/building

Issue Date: October 3, 2018

Letter Report No: H6968.01-117-14

Shawn Callahan
Metwood Inc.
819 Naff Road
Boones Mill, VA 24065

Subject: Summary Review Letter for Metwood 2810HR CCRR-0279

Dear Mr. Callahan,

Intertek has received supporting documentation from Metwood to address requirements of the 2015 International Building and Residential Codes. The documentation reviewed to-date is listed below.

I. Intertek Evaluation Plan for 2810HR Joist Reinforcer, H0997.01-117-38, dated 6/30/2017

Method of evaluation involves comparison of 2x10 framing strength with and without holes. Framing members with holes are reinforced with the Metwood 2810HR joist reinforce.

II. Intertek Test Report No. H9231.02-106-31, dated 10/3/2018 (ASTM D198 Testing)

The structural performance of the 2810HR joist reinforcer installed on 2x10 No.2 grade dimensional lumber (SYP and SPF) with a 6 inch hole was evaluated for comparison to 2x10 No.2 grade dimensional lumber (SYP and SPF) without holes or with code permitted holes. Fifteen foot and six foot test spans were selected to evaluate bending strength and stiffness and, shear strength, respectively.

Consistent with wood framing design values, evaluation of strength properties uses lower 5% exclusion values. Stiffness evaluation is based on average values with load at L/360 deflection data.

i. For evaluating bending strength and stiffness, 2x10 dimensional lumber was tested at a 15 foot span for both with and without the 2810HR joist reinforcer for each wood species. Summary of the bending test data analysis is below.

Product	Specimen Quantity	Strength (ultimate, lbf)		Stiffness (L/360, lbf)		
		min - max	Lowest 5%	min - max		Average
2x10 SYP	28	2020 - 4820	1890	320 - 1,180		705
2x10 SYP with 2810HR	23	1950 - 4830	2226	482 - 1,190		801
2x10 SPF	28	1920 - 4060	1696	497 - 876		649
2x10 SPF with 2810HR	12	2110 - 3230	2155	629 - 786		690

Intertek Intertek Intertek

The data was reviewed and concludes the bending strength and stiffness performance for the 2x10 dimensional lumber with a 6 inch hole, reinforced with the 2810HR joist reinforcer, is comparable to 2x10 dimensional lumber.

ii. For evaluating shear strength, 2x10 dimensional lumber was tested at a 6 foot span for both with and without the 2810HR joist reinforcer for each wood species. Summary of the shear test data analysis is below.

Product	Specimen Quantity	Shear (lbf)		
		min	max	Lowest 5%
2x10 SYP	22	3,820	10,900	5,110
2x10 SYP with 2810HR	22	6,080	11,200	5,519
2x10 SPF	17	4,350	8,030	4,202
2x10 SPF with 2810HR	17	3,620	7,330	4,063[1]

(1) The 2x10 SPF with the 2810HR joist reinforcer yielded results less than the 2x10 SPF without the joist reinforcer, however the difference (3%) is insignificant and deemed comparable.

(2) The 2810HR joist reinforcers are installed no less than 12 inches from the edge of the joist reinforcer to the closest support.

The data was reviewed and concludes the shear strength performance for the 2x10 dimensional lumber with a 6 inch hole, reinforced with the 2810HR joist reinforcer, is comparable to 2x10 dimensional lumber.

III. Structural Analysis – 14 Gauge Galvanized Metwood Joist Reinforcer, prepared by Lakdas/Yohalem Engineering, Inc. Consulting Engineers, 7/27/2016

IV. Factory Audit Manual No. H6973.01-117-38, dated 5/10/2018

The intent of this letter is to provide you with a current summary of our review. Our evaluation has been completed and the data satisfies the evaluation requirements for recognition of the 2810HR Joist Reinforcer in an Intertek CCRR.If you have any questions regarding this letter report, please do not hesitate to contact the undersigned.

Sincerely,

INTERTEK TESTING SERVICES NA, INC.

Reported by:

Digitally Signed by: Kendall A. Leaman
Kendall A Leaman
Project Engineer

Digitally Signed by: Craig H. Wagner
Craig H Wagner, PE
Chief Engineer

Intertek Intertek Intertek