

ICC-ES Evaluation Report


ESR-4368

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<p>DIVISION: 06 00 00— WOOD, PLASTICS, AND COMPOSITES</p> <p>Section: 06 05 23— Wood, Plastic, and Composite Fastenings</p>	<p>REPORT HOLDER:</p> <p>JENWEST ENTERPRISES LLC DBA ADVANCED CONNECTOR SYSTEMS</p>	<p>EVALUATION SUBJECT:</p> <p>TFW TOP-MOUNT FIREWALL HANGERS</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, and 2015 [International Building Code® \(IBC\)](#)
- 2021, 2018, and 2015 [International Residential Code® \(IRC\)](#)

Property evaluated:

- Structural

2.0 USES

The Advanced Connector Systems’ TFW top-mount firewall hangers described in this report are used as wood framing connectors in accordance with Section 2304.10.3 of the 2021 IBC, Section 2304.10.3 of the 2018 and 2015 IBC. The TFW firewall hangers may also be used in structures regulated under the IRC when an engineered design is submitted to, and approved by, the code official, in accordance with Section R301.1.3 of the IRC

3.0 DESCRIPTION

3.1 General:

The TFW top mount firewall hangers are designed for connecting wood members, as noted in Section 3.2.2 of this report, to minimum double-ply 2-by-4 (38.1 mm by 88.9 mm) wall top plates of wood frame walls constructed with wood studs spaced at a maximum 16 inches (406 mm) on-center spacing, double-ply 2-by (38.1 mm) sawn lumber headers, or double-ply 2-by-4 sawn lumber nailer plates structurally attached to the top surface of top flange of steel I-beams. The TFW firewall hangers are designed for installation prior to installation of two layers of 5/8-inch-thick (15.9 mm) gypsum boards and installed in between wall studs.

The TFW top mount firewall hangers consist of stirrups and brackets that are fabricated by using different gages of steel, as noted in Section 3.2.1 of this report. Each TFW top mount firewall hanger is assembled together by connecting stirrups to brackets using a 1/2-inch-diameter (12.8 mm) standard hex bolt, complying with ANSI/ASME Standard B18.2.1, and installed with common nails, as noted in Section 3.2.3. The TFW top mount firewall hangers are available in widths (W) of 1 9/16 to 3 1/2 inches (15.9 mm to 88.9 mm) and heights (H) of 9 1/4 to 24 inches (235 mm to 610 mm). See [Table 1](#) for model numbers, dimensions, and the associated joist sizes. [Figure 1](#) depicts a TFW top mount firewall hanger and the typical installations of the TFW top mount firewall hangers.

3.2 Materials:

3.2.1 Steel: The TFW top mount firewall hangers described in this report are formed from galvanized steel complying with ASTM A653, Grade 40, SS steel, and having a minimum G90 zinc coating specification and minimum specified yield and tensile strengths, F_y and F_u , respectively, of 40,000 psi (276 MPa) and 55,000 psi (379 MPa). Minimum base-steel thicknesses are as follows:

PART	NOMINAL THICKNESS (gage)	BASE STEEL THICKNESS (inches)
Stirrup	No. 14	0.0685
Hanger	No. 12	0.0975

For SI: 1 inch = 25.4 mm.

Hangers used in contact with preservative treated or fire-retardant treated lumber must, as minimum, comply with Section 2304.10.6 of the 2021 IBC (Section 2304.10.5 of the 2018 and 2015 IBC) or Section R317.3 of the IRC, as applicable. The lumber treater, this evaluation report holder (JenWest Enterprises, LLC), or both, should be contacted for recommendations on minimum corrosion resistance and connection capacities of fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

3.2.2 Wood: Wood members used with the TFW top mount firewall hangers must be dimension sawn lumber or structural engineered wood products, such as structural glued laminated timber, prefabricated wood I-Joists with dimension sawn lumber flanges, or wood trusses, having a minimum specific gravity of 0.50. For structural composite lumber (SCL) and prefabricated wood I-Joists with SCL flanges, a minimum equivalent specific gravity must be 0.50. Wood members must have a maximum moisture content of 19 percent (16 percent for SCL), except as noted in Section 4.1. The wood members must have a thickness equal to or greater than the length of the fasteners specified in [Table 1](#) of this report. For installations in SCL, minimum allowable nail spacing and end distance must be as specified in an applicable ICC-ES evaluation report for the approved structural composite lumber.

3.2.3 Fasteners: Nails used for TFW Firewall Hangers described in this report must be bright or hot-dipped galvanized carbon steel nails complying with material requirements, physical properties, tolerances, protective coating and finishes, workmanship, and packaging requirements specified with ASTM F1667; and have the following minimum fastener dimensions and bending yield strength, F_{yb} , as shown in the following table:

COMMON NAIL SIZE	SHANK DIAMETER (inches)	NAIL LENGTH (inches)	F_{yb} (psi)
10d x 1 $\frac{1}{2}$	0.148	1 $\frac{1}{2}$	90,000
10d	0.148	3	90,000

For SI: 1 inch = 25.4 mm, 1 psi = 6.895 kPa

Fasteners used in contact with preservative treated or fire-retardant treated lumber must, as minimum, comply with Section 2304.10.6 of the 2021 IBC (Section 2304.10.5 of the 2018 and 2015 IBC) or Section R317.3 of the IRC, as applicable. The lumber treater, this evaluation report holder (JenWest Enterprises, LLC), or both, should be contacted for recommendations on minimum corrosion resistance and connection capacities of fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable loads shown in [Table 2](#) of this evaluation report are based on allowable stress design (ASD). These values include the load duration factor, C_D , corresponding to the applicable loads in accordance with the NDS, for cases in which the allowable load is governed by the calculated lateral or withdrawal load of the fasteners. Tabulated allowable loads are for applications in which the hangers are fastened to wood members used under continuous dry interior conditions, and where sustained temperatures are 100°F (37.8°C) or less. When the hangers are fastened to wood members having a moisture content greater than 19 percent

(16 percent for engineered wood products), or where wet service is expected, the allowable loads must be adjusted by the wet service factor, C_M , specified in the NDS for dowel-type fasteners. When hangers are installed in wood members that will experience sustained exposure to temperatures exceeding 100°F (37.8°C), the allowable loads in this evaluation report must be adjusted by the temperature factor, C_t , specified in the NDS.

4.2 Installation:

Installation of TFW firewall hangers must be in accordance with this evaluation report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.0 CONDITIONS OF USE:

The TFW firewall hangers described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The TFW firewall hangers must be manufactured, identified, and installed in accordance with this report and the manufacturer's published installation instructions. A copy of the instructions must be at the jobsite at all times during construction.
- 5.2 Calculations showing compliance with this report must be submitted to the code official. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3 Adjustment factors noted in Section 4.1 of this report and the applicable codes must be considered, where applicable.
- 5.4 Connected wood members and fasteners must comply, respectively, with Sections 3.2.2 and 3.2.3 of this evaluation report.
- 5.5 Use of the TFW firewall hangers and fasteners in this evaluation report with preservative-treated and fire-retardant-treated lumber must be in accordance with Section 3.2.1 and Section 3.2.3 of this evaluation report.
- 5.6 The wood frame walls supporting the TFW firewall hangers must be designed to resist the combined download and induced bending moment from the TFW firewall hangers.
- 5.7 The double top plate of wood frame walls supporting the TFW firewall hangers must be attached to wall studs by using two 0.131-inch-diameter-by-31/4-inch-long ((3.33 mm by 83 mm) nails installed into top end of wall studs through the lower double top plate and two 0.131-inch-diameter-by-31/4-inch-long ((3.33 mm by 83 mm) nails installed through upper double top plate into lower double top plate at 16 inches (406 mm) on center.
- 5.8 The TFW firewall hangers are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices \(AC13\)](#), dated October 2018 (editorially revised December 2020).

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4368) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 In addition, each TFW firewall hanger described in this report is identified with a die-stamped label or an adhesive label, indicating the model number.
- 7.3 The report holder's contact information is the following:

**JENWEST ENTERPRISES LLC DBA ADVANCED
CONNECTOR SYSTEMS
3518 WEST BOULDEN BOULEVARD
BLUFFDALE, UTAH 84065
(801) 735-1178
jenwestutah@hotmail.com
www.connectwithacs.com**

TABLE 1—TFW FIREWALL HANGERS AND ASSOCIATED JOIST SIZES

JOIST SIZE	MODEL NUMBER	HANGER DIMENSION (in.)		JOIST SIZE	MODEL NUMBER	HANGER DIMENSION (in.)	
		Width (W)	Height (H)			Width (W)	Height (H)
2 x 8	TFW28	1 ⁹ / ₁₆	7 ¹ / ₈	2½ x 11⅝	TFW2.56/11.88	2 ⁵ / ₈	11 ¹³ / ₁₆
2 x 10	TFW210	1 ⁹ / ₁₆	9 ¹ / ₈	2½ x 14	TFW2.56/14	2 ⁵ / ₈	14
2 x 12	TFW212	1 ⁹ / ₁₆	11 ¹ / ₈	2½ x 16	TFW2.56/16	2 ⁵ / ₈	16
1¾ x 11⅞	TFW1.75/11.88	1 ¹³ / ₁₆	11 ¹³ / ₁₆	2½ x 18	TFW2.56/18	2 ⁵ / ₈	18
1¾ x 14	TFW1.75/14	1 ¹³ / ₁₆	14	2½ x 20	TFW2.56/20	2 ⁵ / ₈	20
1¾ x 16	TFW1.75/16	1 ¹³ / ₁₆	16	2½ x 22	TFW2.56/22	2 ⁵ / ₈	22
2 x 11⅞	TFW2.1/11.88	2 ¹ / ₈	11 ¹³ / ₁₆	2½ x 24	TFW2.56/24	2 ⁵ / ₈	24
2 x 14	TFW2.1/14	2 ¹ / ₈	14	3½ x 11⅞	TFW3.62/11.88	3 ⁵ / ₈	11 ¹³ / ₁₆
2 x 16	TFW2.1/16	2 ¹ / ₈	16	3½ x 14	TFW3.62/14	3 ⁵ / ₈	14
2 ¹ / ₁₆ x 11⅞	TFW2.1/11.88	2 ¹ / ₈	11 ¹³ / ₁₆	3½ x 16	TFW3.62/16	3 ⁵ / ₈	16
2 ¹ / ₁₆ x 14	TFW2.1/14	2 ¹ / ₈	14	3½ x 18	TFW3.62/18	3 ⁵ / ₈	18
2 ¹ / ₁₆ x 16	TFW2.1/16	2 ¹ / ₈	16	3½ x 20	TFW3.62/20	3 ⁵ / ₈	20
2 ⁵ / ₁₆ x 11⅞	TFW2.37/11.88	2 ³ / ₈	11 ¹³ / ₁₆	3½ x 22	TFW3.62/22	3 ⁵ / ₈	22
2 ⁵ / ₁₆ x 14	TFW2.37/14	2 ³ / ₈	14	3½ x 24	TFW3.62/24	3 ⁵ / ₈	24
2 ⁵ / ₁₆ x 16	TFW2.37/16	2 ³ / ₈	16				
2 ⁵ / ₁₆ x 18	TFW2.37/18	2 ³ / ₈	18				
2 ⁵ / ₁₆ x 20	TFW2.37/20	2 ³ / ₈	20				

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

TABLE 2—FASTENING SCHEDULE AND ALLOWABLE LOADS FOR TFW FIREWALL HANGERS

MODEL SERIES	JOIST DEPTH (in.)	FASTENER			I-JOIST WEB STIFFNER REQUIRED	ALLOWABLE LOADS (lbf.)			
		Top Plate/Header		Joist		Uplift	Download		
		Top	Face				C _D = 1.60	C _D = 1.0	C _D = 1.15
TFW	5 ½ to 11 ½	(8) 0.148 x 3	—	(6) 0.148 x 1½	—	1,055	1,765	1,765	1,765
	11 ⅞ to 24	(8) 0.148 x 3	(2) 0.148 x 3	(2) 0.148 x 1½	No	290	1,220	1,220	1,220
		(8) 0.148 x 3	—	(6) 0.148 x 1½	Yes	415	2,020	2,020	2,020

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

¹Allowable loads have been adjusted for load duration factors, C_D, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.

²Allowable loads shown are for installations on wood members complying with Section 3.2.2. Wood members must have a minimum reference compression perpendicular to grain design value, F_{c-perp}, of 625 psi (4.31 MPa).

³TFW firewall hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the carried member at which the lateral movement of the top or bottom of the carried member with respect to the vertical position is 0.125 inch (3.2 mm). Trusses of all depths shall be braced to prevent rotation and to provide lateral stability as specified in the contract documents based on the requirements of the code.

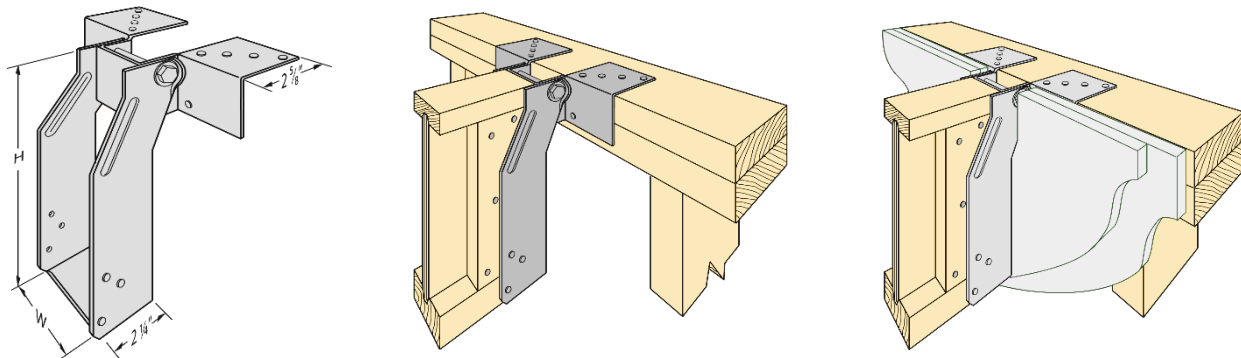


FIGURE 1—TFW FIREWALL HANGER AND TYPICAL INSTALLATIONS