ICC-ES Evaluation Report

ESR-4711

Reissued January 2024

Subject to renewal January 2025

This report also contains:

- FBC Supplement

- LABC Supplement

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES Section: 06 05 23—Wood, Plastic and Composite Fastenings	REPORT HOLDER: OMG, INC.	EVALUATION SUBJECT: EVO™ JOIST STRUCTURAL FRAMING CONNECTOR	

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)

Properties evaluated:

- Structural
- Durability
- Strength and corrosion resistance of screws

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-4711 LABC and LARC Supplement.

2.0 USES

The EVO™ Joist Structural Framing Connector is used to connect wood joists to supporting wood members in exterior deck construction in Type V construction under the IBC. The hangers are alternates to the metal joist hangers addressed in 2021 IBC Sections 2303.5 and 2304.10.4 (2018 and 2015 IBC Sections 2303.5 and 2304.10.3). The assemblies may also be used in exterior deck construction regulated under the IRC when an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 Product Description:

The EVO™ Joist Structural Framing Connector is comprised of two components, a U-shaped seat and a bearing flange, which are joined together in the field using set screws. The bearing flange can move vertically in relation to the seat, to accommodate variation in joist depths and to ease alignment with the top of the ledger during installation. Each EVO™ Joist Structural Framing Connector is supplied with four proprietary wood screws which are installed through the seat component at a 45-degree angle to the side face of the joist and into the side face of the supporting beam. EVO™ Joist Structural Framing Connectors are available in single connector sets and packages of 16 connector sets, which include the associated proprietary wood screws. The EVO™ Joist Structural Framing Connector and associated screws are black in color.

3.1.1 EVO™ Joist Structural Framing Connector: The two factory assembled components of the EVO™ Joist Structural Framing Connector are injection molded from glass-fiber-reinforced polymer complying with

the manufacturer's specifications. They are sized to accommodate both nominal 2-by-8 and 2-by-10 [actual $1^1/_2$ by $7^1/_4$ and $1^1/_2$ by $9^1/_4$ inch (38 by 184 and 38 by 235 mm)] wood joists. See Figure 1 for an image of the hanger.

3.1.2 Screws: The screws used with the EVO™ Joist Structural Framing Connector are proprietary, self-drilling, partially threaded screws complying with the report holder's specifications. The screws have a hex washer head with a diameter of 0.455 inch (11.6 mm). The minor diameter, shank diameter and major diameter of the screw are 0.172, 0.188 and 0.260 inch (4.4, 4.8 and 6.6 mm), respectively. The screws are 5 inches (127 mm) long and have a thread length of 2 inches (51 mm). The screws have a proprietary coating that is black in color. See Figure 2 for an image of the screw.

3.2 Wood Members:

Wood members must be sawn lumber joists having the applicable assigned specific gravity (ASG) noted in Tables 1 and 2. Wood members must have a maximum moisture content of 19 percent, except as noted in Section 4.1.1. Supporting wood members must be a minimum of $1^1/_2$ inches (38 mm) wide and must be at least as deep as the supported joists.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Allowable Loads: Allowable loads for the EVO™ Joist Structural Framing Connector assemblies subject to short term loads are shown in Table 1. At the allowable load, the movement of the top of the joist relative to the top of the supporting member does not exceed 0.125 inch (3.2 mm). The allowable loads for connectors which are subject to sustained loading which may result in creep effects, are shown in Table 2. Wood blocking must be installed between the joists, such that the joist hanger will not be subjected to torsional moments.

Tabulated allowable loads are for use in ASD and must not be increased, such as for wind or seismic loading. They apply to products used with dry wood (moisture content ≤ 19 percent) where sustained temperatures are 100°F (37.8°C) or less. When the hangers are used with wood that is expected to have a moisture contend greater than 19 percent, the allowable loads must be adjusted by the wet service factor for dowel type fasteners, C_M, specified in the NDS. When the hangers are used with wood that will experience sustained exposure to temperatures over 100°F (37.8°C), the allowable loads must be adjusted by the temperature factor for connections, C_t, specified in the NDS.

4.1.2 Use with Treated Wood: The proprietary screws used with the EVO™ Joist Structural Framing Connector may be used in ACQ-D treated wood, with a maximum retention of 0.40 pcf (6.4 kg/m^3), or treated wood known to be less corrosive, for the exposure conditions described in Table 3.

4.2 Installation:

The EVO™ Joist Structural Framing Connector must be installed in accordance with this report and the report holder's published installation instructions. A copy of these instructions must be available on the jobsite at all times during installation.

The two components of the EVO™ Joist Structural Framing Connector must be adjusted vertically to allow placement over the end of the joist and must fit tightly around the joist. The set screws must then be tightened to fix the position of the bearing flange component relative to the seat component of the connector. The joist must be positioned between the two supporting beams, with the hanger flanges bearing on the tops of the supporting beams. Four proprietary wood screws are installed at each joist end, through the guideposts on either side of the seat component of the connector. Predrilling of the wood is not required. The top flange of the hanger may remain in place or may be removed.

5.0 CONDITIONS OF USE:

The EVO™ Joist Structural Framing Connector described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The EVO™ Joist Structural Framing Connector must be installed in accordance with this report and the published installation instructions. In the case of a conflict between the published installation instructions and this report, the more restrictive requirements govern.

5.2 Construction documents and calculations demonstrating that the design loads do not exceed the available strengths must be submitted to the code official. The calculations must be prepared by a registered design professional when required by statutes of the jurisdiction in which the project is to be constructed.

5.3 Design loads for the EVO™ Joist connector assemblies must not exceed the applicable allowable loads described in Section 4.1.

5.4 Determination of sustained loading that needs to be considered for creep evaluation is the responsibility of the registered design professional.

5.5 Use in interior applications is outside the scope of this report.

5.6 The EVO™ Joist Structural Framing Connector and associated screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with applicable portions of the ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices (AC13), Approved October 2018 (editorially revised December 2020), with modification.

6.2 Reports of durability testing of the connector material, including UV exposure, freeze-thaw cycling and high temperature exposure.

6.3 Reports of testing to confirm that the proprietary wood screws comply with the report holder's specifications.

6.4 Data in accordance with the ICC-ES Acceptance Criteria for Corrosion-resistant Fasteners and Evaluation of Corrosion Effects of Wood Treatments (AC257), Approved October 2009 (editorially revised October 2022).

6.5 Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10).

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4711) along with the name, registered trademark, or registered logo of the report holder must be included in the product label. [Electronic labeling is the ICC-ES web address (www.icc-es.org); specific URL related to the report; or the ICC-ES machine-readable code placed on the aforementioned items.]

7.2 In addition, packages of connectors are identified with the product name (EVO™ Joist Structural Framing Connector), the batch number for the hanger material and the lot number for the screws.

7.3 The EVO™ Joist Structural Framing Connector is formed with the product name.

7.4 The heads of the proprietary wood screws are marked with "F EVO5".

7.5 The report holder's contact information is the following:

OMG, INC.
153 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01010
(800) 633-3800
www.fastenmaster.com

TABLE 1—ALLOWABLE LOADS FOR EVO™ JOIST ASSEMBLIES

ALLOWABLE DOWNWARD LOAD (lbf)		
Spruce-Pine-Fir (*ASG* = 0.42)	**Douglas Fir-Larch (*ASG* = 0.50)**	**Southern Pine (*ASG* = 0.55)**
1,124	1,410	1,558

For **SI:** 1 lbf = 4.45 N.

TABLE 2—ALLOWABLE LOADS FOR EVO™ JOIST ASSEMBLIES SUBJECT TO SUSTAINED LOADING

ALLOWABLE DOWNWARD LOAD (lbf)		
Spruce-Pine-Fir (*ASG* = 0.42)	**Douglas Fir-Larch (*ASG* = 0.50)**	**Southern Pine (*ASG* = 0.55)**
674	847	935

For **SI:** 1 lbf = 4.45 N.

TABLE 3—EVALUATED EXPOSURE CONDITIONS FOR PROPRIETARY WOOD SCREWS USED IN EVO™ JOIST ASSEMBLIES

EXPOSURE CONDITION	TYPICAL APPLICATIONS	LIMITATIONS
1	Treated wood in dry use applications	Limited to use where equilibrium moisture content of the chemically treated wood meets the dry service conditions as described in the NDS.
3	General construction	Limited to freshwater and chemically treated wood exposure, e.g., no saltwater exposure.

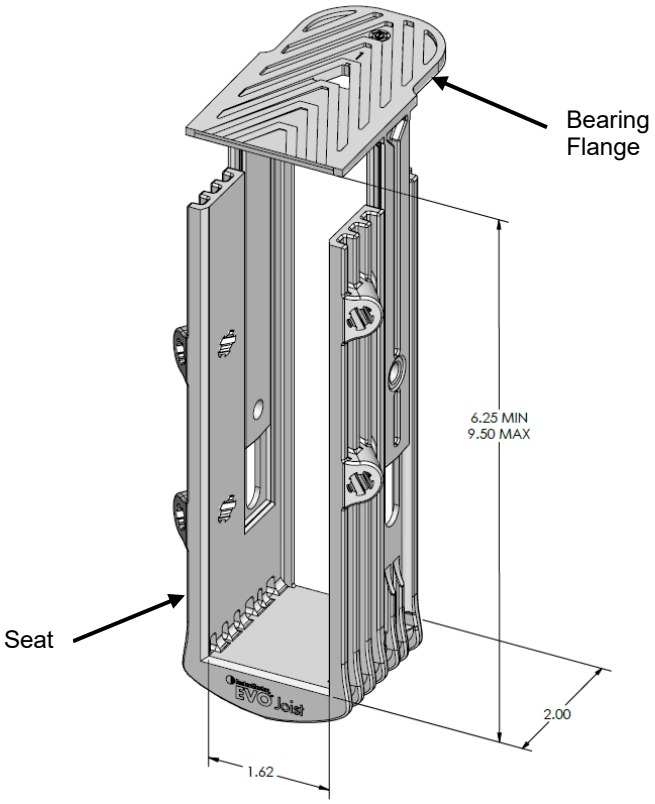

FIGURE 1—EVO™ JOIST STRUCTURAL FRAMING CONNECTOR

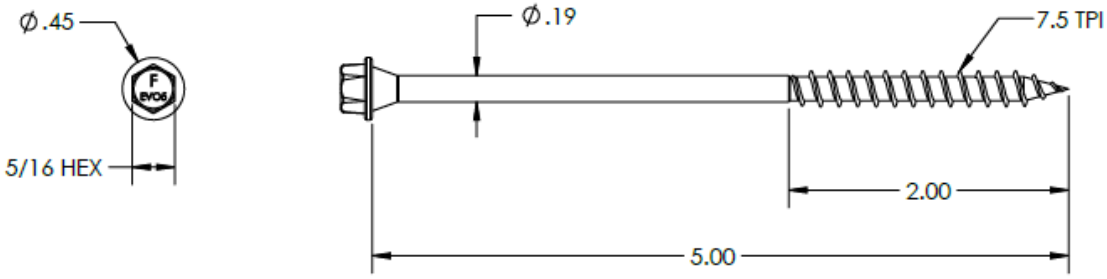

FIGURE 2—STRUCTURAL SCREW USED WITH THE EVO™ JOIST STRUCTURAL FRAMING CONNECTOR

ICC-ES Evaluation Report

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

REPORT HOLDER:

OMG, INC.

EVALUATION SUBJECT:

EVO™ JOIST STRUCTURAL FRAMING CONNECTOR

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the EVO™ Joist Structural Framing Connector, described in ICC-ES evaluation report ESR-4711, has also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The EVO™ Joist Structural Framing Connector, described in Sections 2.0 through 7.0 of the evaluation report ESR-4711, complies with the LABC Chapter 23, and the LARC, and is subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The EVO™ Joist Structural Framing Connector described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-4711.
- The design, installation, conditions of use and identification of the EVO™ Joist Structural Framing Connector are in accordance with the 2018 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-4711.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and 23, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued January 2024.

ICC-ES Evaluation Report

ESR-4711 FBC Supplement

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the EVO™ Joist Structural Framing Connector, addressed in ICC-ES evaluation report ESR-4711, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2020 *Florida Building Code—Building*
- 2020 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The EVO™ Joist Structural Framing Connector, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4711, complies with the *Florida Building Code—Building* or the *Florida Building Code—Residential.* Design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4711 for the 2018 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable.

Use of the EVO™ Joist Structural Framing Connector for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

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