

2012 INTERNATIONAL RESIDENTIAL CODE FIRE PROTECTION OF FLOORS



Most Widely Accepted and Trusted

ICC-ES Evaluation Report

ESR-1405

Reissued November 1, 2013

This report is subject to renewal December 1, 2015.

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A Subsidiary of the International Code Council®

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 33—Wood I-joists

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EVALUATION SUBJECT:

PERFORMANCE RATED I-JOISTS

ADDITIONAL LISTEES:

ANTHONY EACOM CO.
1195 PEOPLES ROAD
SAULT STE. MARIE, ONTARIO
CANADA

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6855 CHESTNUT RIDGE ROAD
BEACH CITY, OHIO 44608

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012 and 2009 International Building Code® (IBC)
- 2012 and 2009 International Residential Code® (IRC)

Properties evaluated:

- Structural
- Fire resistance

2.0 USES

The prefabricated wood I-joists described in this report are used as floor joists, roof rafters and blocking to support code-required loads. The wood I-joists comply with Section 2303.1.2 of the IBC, and Section R502.1.4 of the IRC, for allowable stress design.

3.0 DESCRIPTION

4.3 Fire Protection of Floors:

The I-joists described in this report, when installed and protected as specified in Figures 4 and 5, are alternatives to the 2-by-10 dimensional lumber prescribed in 2012 IRC Section R501.3 Exception 4, and have met the requirements for a floor assembly demonstrating equivalent floor performance. The I-joists described in this report, when installed and protected as specified in Figure 6, meet the provisions of 2012 IRC Section R501.3.

Fire Protection of Wood I-Joist Floors Outlined in New System Report

APA's newest System Report provides several practical systems for design and construction of fire-resistant floor assemblies built with prefabricated wood I-joists that satisfy the requirements of 2012 IRC Section R501.3. *APA System Report SR-405: Fire Protection of Floors Constructed with Prefabricated Wood I-Joists for Compliance with the 2012 International Residential Code* was



developed on the basis of the results of fire tests that met the stringent criteria established by the International Code Council Evaluation Service (ICC-ES) Acceptance Criteria for Prefabricated Wood I-Joists, AC14.

The report was developed to inform interested parties of the multiple options for fire-resistant I-joist floor systems where the 2012 IRC Section R501.3 is mandated by the local jurisdiction. "System Report SR-405 can be used by the authority having jurisdiction, designers, specifiers, and builders, in the design, construction, and approval of wood I-joist fire-protective floor systems that are compliant with Section R501.3 requirements," said Dr. Borjen Yeh, P.E., technical services director for APA. "SR-405 provides easy-to-apply solutions for code compliance, while affording additional fire protection to occupants and firefighters, as required by some local jurisdictions in this country."

Download a free PDF of [APA System Report SR-405: Fire Protection of Floors Constructed with Prefabricated Wood I-Joists for Compliance with the 2012 International Residential Code](#).

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ES ICC EVALUATION SERVICE
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ICC-ES Evaluation Report **ESR-1153***
Reissued April 2013
This report is subject to renewal May 1, 2015.

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Section: 06 17 33—Wood I-joists

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1850 PARK LANE
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EVALUATION SUBJECT:
TJI® PREFABRICATED WOOD I-JOISTS

1.0 EVALUATION SCOPE
Compliance with the following codes:
■ 2012 and 2009 International Building Code® (IBC)
■ 2012 and 2009 International Residential Code® (IRC)
Properties evaluated:
■ Structural
■ Sound ratings
■ Fire-resistance ratings

2.0 USES
TJI joists are prefabricated wood I-joists used as floor joists, roof rafters, blocking panels and rim joists, to support code-required loads. Prefabricated wood I-joists described in this report comply with Section 2303.1.2 of the IRC, for allowable stress design; and Section R502.1.4 of the IRC.

3.0 DESCRIPTION
3.1 General:
TJI joists are prefabricated wood I-joists having wood or wood-based flanges and Performance Plus® oriented strand board (OSB) webs. Either the top and bottom flanges are parallel, forming a constant-depth joist; or the top flange has a single taper, forming a variable-depth joist. The web panels have the face grain oriented vertically, and the web-to-web connection is either bolt jointed or serrated and glued to form a continuous web. The web-to-flange connection is a proprietary tongue-and-groove glued joint. Refer to Table 1 for TJI joist series and material descriptions. The TJI L65, TJI L90, TJI H90, TJI HD90, and TJI HS90, may also be trademarked as: TJI L460, TJI L560, TJI H560, TJI HD560, and TJI HS560, respectively.

3.2 Material Specifications:
3.2.1 Flanges: Flange material is either Microllam® laminated veneer lumber (LVL), TimberStrand™ laminated strand lumber (LSL) or machine stress rated lumber (MSR). Microllam LVL and TimberStrand LSL are recognized in evaluation report ESR-1387. Table 1 of this report specifies flange widths and depths. Flange material and grades are as specified in the quality control manual that contains Weyerhaeuser manufacturing standards.
3.2.2 Webs: Web material is Performance Plus® OSB conforming to DOC Voluntary Product Standard PS2, Exposure 1, along with further requirements set forth in the quality control manual that contains Weyerhaeuser manufacturing standards. Web material thickness requirements are noted in Table 1 of this report.
3.2.3 Adhesives: Adhesives are of the types specified in the quality control manual that contains Weyerhaeuser manufacturing standards.

4.0 DESIGN AND INSTALLATION
4.1 General:
The design and installation of TJI joists described in this report must comply with Sections 4.2 through 4.16. Additionally, design of TJI joists is governed by the applicable code and corresponding editions of ANSI/AWC National Design Specification for Wood Construction® (NDS).
4.2 Design Values:
Table 3 specifies reference design moments, reactions, vertical shear forces, and joist stiffness (EI). Reference design reactions are based on minimum bearing lengths of 1¾ inches, 2½ inches and 3½ inches (46, 64 and 89 mm).

*Revised July 2014

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4.17 TJI Joists with Flak Jacket™ Protection Used in IRC Section R501.3 Fire Protected Floors:

TJI® Joists with Flak Jacket™ protection applied to both sides of the web and vertical sides of the bottom flange are an alternative to the 2-by-10 dimension lumber, prescribed in the 2012 IRC Section R501.3 Exception 4, and have met the requirements of a floor assembly demonstrating equivalent floor performance. TJI® Joists with Flak Jacket™ protection are identified in the field by a Flak Jacket™ Protection stamp or label placed on the web of the I-joist member. Flak Jacket™ protection is applied in accordance with the TJI® Joist with Flak Jacket™ Protection Manufacturing Standard and quality control program.