

CBI Listing



CL 2205-03

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Trade Secret Owner

Trimjoist Corporation

www.trimjoist.com

Telephone: 800-844-8281

Email: info@trimjoist.com

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 11 00 - Wood Framing

SECTION: 06 17 00 - Shop-Fabricated Structural Wood

SECTION: 06 17 33 - Wood I-joists

SECTION: 06 17 53 - Shop-Fabricated Wood Trusses

1 Listed Innovative Product^{1,2}

1.1 TrimJoist®

1.1.1 The Innovative Product evaluated in this Listing is shown in Figure 1.



Figure 1. TrimJoist®

1.2 TrimJoist® Description

1.2.1 TrimJoist® is a prefabricated metal plate connected trimmable end wood floor truss designed and manufactured in accordance with ANSI/TPI 1- 2014: National Design Standard for Metal Plate Connected Wood Truss Construction.

¹ For more information, visit cbitest.com or call us at 608-310-6739.

² Listed. Equipment, materials, products or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

- 1.2.2 Proprietary metal connector plates are used to transmit forces from one wood member to one or more other wood members, where wood members are connected using integral teeth formed from the metal plate and subsequently embedded into each wood member at a truss joint.
- 1.2.3 Commodity lumber design values (E, Emin, Fb, Fc, Fc \perp , Ft, and Fv), specified in the *ANSI/AWC National Design Specification®* for Wood Construction (*NDS*), are used in all engineering mechanics based equations.
 - 1.2.3.1 Sawn lumber used for load-supporting purposes, including end-jointed, edge-glued, machine stress-rated or machine-evaluated lumber, shall be identified by the Grade mark of a lumber grading or inspection agency that has been approved by and Accreditation Body that complies with the latest edition of the DOC PS 20 American Softwood Lumber Standard or equivalent.
 - 1.2.3.2 TrimJoist® relies upon each lumber manufacturer to provide building code conforming design values, conditions of use, quality, and repair requirements as well as compliance with DOC PS 20 and the *NDS* Supplement, as pertinent.
- 1.2.4 Truss member axial forces, bending moments, and effective buckling lengths are based on a mathematical model of the truss that closely approximates the geometry and properties of the truss members and connections.

2 Scope of Listing^{3,4}

- 2.1 TrimJoist® has been tested and/or evaluated in accordance with the following Standards and Referenced Documents for use as specified herein:
 - 2.1.1 *ANSI/TPI 1- 2014: National Design Standard for Metal Plate Connected Wood Truss Construction*

3 Performance Evaluation

- 3.1 This product has been evaluated for general conformance with ANSI/TPI 1.
- 3.2 Testing and related engineering evaluations are defined as intellectual property and/or trade secrets.
- 3.3 Testing and/or inspections conducted for this Listing are performed by CBI, an ISO/IEC 17025 accredited testing laboratory and ISO/IEC 17020 accredited inspection body, which are internationally recognized accreditations through International Accreditation Forum (IAF).
- 3.4 Any building code and/or accepted engineering evaluations conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by registered design professionals/approved sources. DrJ is qualified⁵ to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.

³ This Listing is also a code defined research report provided by an approved agency (see IBC 1703.1) and/or an approved source (see IBC 1703.4.2). A professional engineer is approved as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a research report certified by an approved source. (i.e., a registered design professional.)

⁴ Unless otherwise noted, all references in this *Listing* are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

⁵ Qualification is performed a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. CBI is an ANAB accredited laboratory and inspection body. DrJ is an ANAB accredited product certification body.



4 Installation

- 4.1 Installation shall comply with the manufacturer installation instructions, this Listing, the approved construction documents, and the applicable building code.
- 4.2 In the event of a conflict between the manufacturer installation instructions, this Listing, the approved construction documents and the applicable building code, the most restrictive shall govern.

5 Findings

- 5.1 As delineated in Section 3, TrimJoist® has performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.
- 5.2 When used and installed in accordance with this Listing and the manufacturer installation instructions, TrimJoist® shall be approved for:
 - 5.2.1 Compliance with ANSI TPI 1-2014.
- 5.3 If TrimJoist® is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by a registered design professional (RDP).
 - 5.3.1 Assistance with truss layout and design is available from Trimjoist Corporation.
 - 5.3.2 If not, section 5.3 does not apply.

6 Conditions of Use

- 6.1 Performance characteristics are specified in Section 3.
- 6.2 As defined in Section 3, where material or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 6.3 As Listed herein, TrimJoist® shall not be used as follows:
 - 6.3.1 Allowable maximum spans for resistance to transverse loads shall not exceed those described in Section 3,
 - 6.3.2 Allowable maximum reactions for resistance to transverse loads shall not exceed those described in Section 3.
 - 6.3.3 Allowable deflection shall not exceed limits described in Section 3,
 - 6.3.4 Use of the span charts shown in Section 3 must be in accordance with footnotes herein,
 - 6.3.5 TrimJoist® has a “top” orientation and shall not be installed upside-down, nor
 - 6.3.6 Special applications requiring concentrated loads, asymmetric continuous loads, cantilevers, or special bearing conditions are outside the scope of this Listing.
- 6.4 When required by adopted legislation and enforced by the building official (AHJ)⁶ in which the project is to be constructed:
 - 6.4.1 This Listing and the installation instructions shall be submitted at the time of permit application.

⁶ Also known as the authority having jurisdiction (AHJ)

- 6.4.2 Any calculations incorporated into the construction documents shall conform to accepted engineering practice, and, when prepared by an approved source, shall be approved when requirements of adopted legislation are met.
- 6.4.3 This Innovative Product has an internal quality control program and a third-party quality assurance program.
- 6.5 The actual design, suitability, and use of this Listing for any particular building is the responsibility of the owner or the owner's authorized agent.
- 6.6 Any required design loads shall be provided by the building designer (i.e., owner or RDP) and/or determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.
- 6.7 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e. ANAB accredited agencies), approved sources (i.e., registered design professionals) and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 6.8 Where appropriate, testing and/or engineering analysis is based upon state or local code and/or standard provisions that have been codified into law through legislation. The developers of the codes and standards are legally responsible for the accuracy of any legislatively adopted material properties and/or analytical methods. Any testing and/or engineering mechanics-based analysis may use legislatively and/or code adopted provisions as the control condition. The use of a control condition to compare to a test condition establishes equivalency to that prescribed in the adopted legislation with respect to quality, strength, effectiveness, fire resistance, durability, and safety. The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports from approved agencies, and valid research reports prepared by approved agencies and/or approved sources provided by the suppliers of any raw materials. These are presumed to be minimum properties and relied upon to be accurate.
- 6.9 Where additional condition of use and/or code compliance information is required, please search for TrimJoist® on the DrJ Engineering website.

7 Identification

- 7.1 Labeling⁷⁻⁸ shall include, but not be limited to, the manufacturer name, manufacturing location/identifier, and the CBI Listing number.
- 7.2 Labeling may include, but not be limited to, the CBI mark and any other numerical designations related to layout locations for a given project.

⁷ LABEL. An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material and the name and identification of an approved agency, and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency (see IBC Section 1703.5, "Manufacturer's designation" and "Mark").

⁸ LABELED. Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

8 Approved for Use Pursuant to US and International Legislation Defined in Section 9

8.1 TrimJoist® is included in this List published by an approved agency concerned with evaluation of products or services that maintains periodic inspection of production of listed materials or periodic evaluation of services and whose Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This Listing meets the legislative intent and definition of being acceptable to the AHJ.

9 Innovation Legislation that Mandates Approval by any AHJ

9.1 **Fair Competition:** Many state legislatures have adopted regulations for the examination and approval of both building code referenced and alternative materials, products, designs, services, and/or methods of construction that:

9.1.1 Advance innovation,

9.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and

9.1.3 Benefit consumers through lower prices, better quality, and greater choice.

9.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize TrimJoist® to be found acceptable to AHJs, delegates of building departments, and/or delegates of an agency of the federal government:

9.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative materials, products, designs, services, and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”

9.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have alternative to code-referenced materials, products, services, designs, and/or methods of construction approved for use in commerce. Disapproval of alternative to code applications shall be based upon specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved with reference to legislation violated.

9.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA).

9.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, duly authenticated reports from approved agencies, valid research reports prepared by approved agencies and/or approved sources, and/or Technical Evaluation Reports.

9.2.4 For new materials⁹ that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.

⁹ <https://up.codes/viewer/alabama/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>

- 9.2.5 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design using accepted engineering practice....¹⁰
- 9.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
- 9.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.¹¹
- 9.2.8 **Approval by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 104.11. The testing agency shall publish the scope and limitation(s) of listed material or fabricated assembly.¹² The Superintendent of Building roster of approved testing agencies is provided by the Los Angeles Department of Building and Safety (LADBS).
- 9.2.9 **Approval by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, or assembly. Supporting technical data to assist in the approval of products, materials, or assemblies not specifically provided for in MCC, shall consist of valid research reports from approved sources (i.e., MCC defined Approved Agencies).

¹⁰ IBC 2021, Section 1706.1 Conformance to Standards

¹¹ IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

¹² Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

- 9.2.10 **Approval by New York City:** The NYC Building Code 2022 (NYCBC) states in pertinent part that an approved agency shall be deemed¹³ an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement¹⁴ (i.e., ANAB, International Accreditation Forum (IAF), etc.).
- 9.2.11 **Approval by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVL13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).
- 9.2.12 **Approval by Miami Dade (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami Dade shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.

¹³ New York City, The Rules of the City of New York, § 101-07 Approved Agencies

¹⁴ New York City, The Rules of the City of New York, § 101-07 Approved Agencies

9.2.13 **Approval by New Jersey:** Pursuant to Building Code 2018 of New Jersey in Section 1707.1 General¹⁵ says: “In the absence of approved rules or other approved standards,...the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)”¹⁶. § 5:23-3.7 Municipal approvals of alternative materials, equipment, or methods of construction. (a) Approvals: Alternative materials, equipment, or methods of construction **shall be approved** by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations. 1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, **shall be accepted** by the appropriate subcode official as meeting the requirements of (a) above. 2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, **but not limited to**, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., **shall be accepted** by the appropriate subcode official as meeting the requirements of (a) above. The New Jersey Department of Community Affairs has confirmed that reports of engineering findings from any accredited entity listed by ANAB meets the requirements of item 2 given the listed entities no longer exist.

9.2.14 **Code of Federal Regulations Manufactured Home Construction and Safety Standards Approval:** Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282¹⁷ and Part 3280¹⁸, “the Department encourages innovation and the use of new technology in manufactured homes” and the design and construction of a manufactured home shall conform with the provisions of this standard where key approval provisions in mandatory language follow; “All construction methods shall be in conformance with accepted engineering practices”; “The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.”; and “The design stresses of all materials shall conform to accepted engineering practice.”

¹⁵ https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1

¹⁶ <https://www.nj.gov/dca/divisions/codes/codreg/ucc.html>

¹⁷ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>

¹⁸ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

9.2.15 **Other US Local and State Approval Processes:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:

- 9.2.15.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.¹⁹
- 9.2.15.2 For innovative alternative products, materials, designs, services and/or methods of construction, in the absence of approved rules or other approved standards...the building official shall accept duly authenticated reports (i.e., listing and/or research report) from approved agencies with respect to the quality and manner of use of new materials or assemblies.²⁰ A building official approved agency is deemed to be approved via certification from an accreditation body that is listed by the International Accreditation Forum²¹ or equivalent.
- 9.2.15.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.²² An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report, certified by a PE, shall be approved.

9.2.16 **International Approval Process:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements state in pertinent part:

- 9.2.16.1 Permit participation of conformity assessment bodies located in the territories of other Members under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,
- 9.2.16.2 Conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation,
- 9.2.16.3 Conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform with the applicable technical regulations or standards, and
- 9.2.16.4 **International Approval:** The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative

¹⁹ IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.

²⁰ IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.

²¹ Please see the ANAB directory for building official approved agencies.

²² IBC 2021, Section 1706 Design Strengths of Materials, 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.



materials, products, designs, services, and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.