



Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2601-120



Issue Date: September 10, 2026

Revision Date: September 10, 2026

Subject to Renewal: October 1, 2027

Masaya Teak Glulam Beams

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 17 00 - Shop-Fabricated Structural Wood

Section: 06 18 00 Glued-Laminated Construction

Section: 06 18 16 Glued-Laminated Columns

1 Innovative Product Evaluated¹

1.1 Masaya Teak Glued Laminated Timber

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**.



Figure 1. Masaya Teak Glued Laminated Timber



2.2 Masaya Teak Glued Laminated Timber is a structural Glued Laminated Timber (GLT) product manufactured in accordance with ANSI/APA 190.1, as specified in IBC Section 2303.1.3.

2.2.1 Masaya Teak Glued Laminated Timber consists of visually graded teak wood laminations assembled with the grain parallel to the longitudinal axis of the member and bonded with a structural adhesive under controlled manufacturing conditions. The resulting members are manufactured in finished sizes listed in **Table 1**.

2.2.1.1 Franklin Advantage EP-950A structural adhesive in conjunction with the Hardener 200 (used for face joints), and Franklin Multibond EZ-1 (used for end joints) conform to the requirements specified in ANSI 405 as required per ANSI/APA 190.1, Section 8.

2.2.1.2 End joints (finger-joints) comply with ANSI/APA 190.1.

Table 1. Masaya Teak Glued Laminated Timber Dimensions

Product Type	Product ID	Dimensions (in) ¹		Section Properties ^{2,3,4}				
		Width	Depth	A (in) ²	S _x (in) ³	L _x (in) ⁴	S _y (in) ³	L _y (in) ⁴
Masaya Teak Glued Laminated Timber	1.5 x 3.5	1.50	3.50	5.25	3.06	5.36	1.31	0.98
	1.5 x 4.5	1.50	4.50	6.75	5.06	11.39	1.69	1.27
	1.5 x 6	1.50	6.00	9.00	9.00	27.00	2.25	1.69
	1.5 x 7.5	1.50	7.50	11.25	14.06	52.73	2.81	2.11
	1.5 x 9	1.50	9.00	13.50	20.25	91.13	3.38	2.53
	1.5 x 12	1.50	12.00	18.00	36.00	216.00	4.50	3.38
	3.5 x 4.5	3.50	4.50	15.75	11.81	26.58	9.19	16.08
	3.5 x 6	3.50	6.00	21.00	21.00	63.00	12.25	21.44
	3.5 x 7.5	3.50	7.50	26.25	32.81	123.05	15.31	26.80
	3.5 x 9	3.50	9.00	31.50	47.25	212.63	18.38	32.16
	3.5 x 12	3.50	12.00	42.00	84.00	504.00	24.50	42.88
	3.5 x 13.5	3.50	13.50	47.25	106.31	717.61	27.56	48.23
	3.5 x 15	3.50	15.00	52.50	131.25	984.38	30.63	53.59
	3.5 x 16.5	3.50	16.50	57.75	158.81	1310.20	33.69	58.95
	3.5 x 18	3.50	18.00	63.00	189.00	1701.00	36.75	64.31

SI: 1 in = 25.4 mm, 1 in² = 645.16 mm², 1 in³ = 16,387.06 mm³, 1 in⁴ = 416,234.43 mm⁴

1. Dimensions are for vertically laminated beams/columns.

2. See **Figure 2** for axis orientation.

3. X-X axis is the neutral axis for bending produced by loads applied perpendicular to the wide face of the laminations.

4. Y-Y axis is the neutral axis for bending produced by loads applied parallel to the wide face of the laminations.

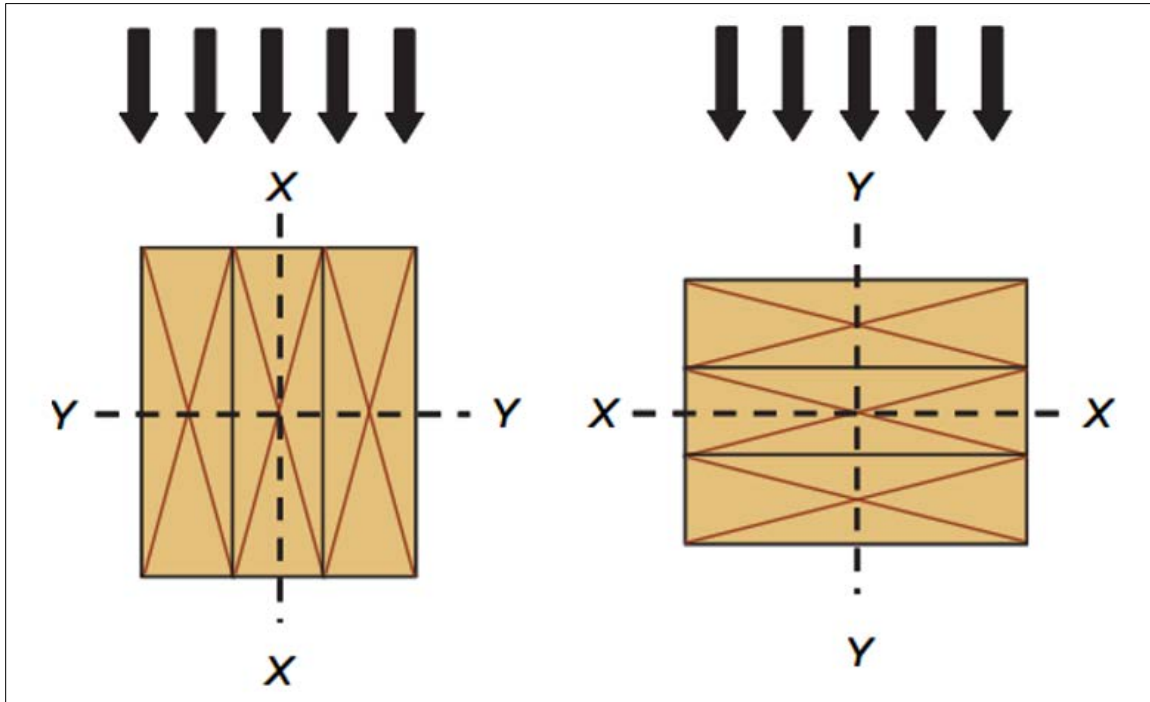


Figure 2. Vertically Laminated - Edgewise (Left) and Horizontally Laminated - Flatwise (Right)

2.3 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

3 Definitions²

- 3.1 New Materials³ are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.⁴ The design strength and permissible stresses shall be established by tests⁵ and/or engineering analysis.⁶
- 3.2 Duly authenticated reports⁷ and research reports⁸ are test reports and related engineering evaluations that are written by an approved agency⁹ and/or an approved source.¹⁰
 - 3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.
 - 3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.U.S.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).¹¹
- 3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.
- 3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.¹²
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.
 - 3.5.1 The Center for Building Innovation (CBI) is ANAB¹³ ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce¹⁴ the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing¹⁵ stating the nonconformance and the path to its cure.



- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.¹⁶
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.¹⁷ Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,¹⁸ and can be used in any country that is an MLA signatory found at this link: <https://iaf.nu/en/recognised-abs/>
- 3.9 Approval equity is a fundamental commercial and legal principle.¹⁹

4 Applicable Local, State, and Federal Approvals; Standards; Regulations²⁰

4.1 Local, State, and Federal

- 4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.²¹
- 4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.²²
- 4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14²³ and Part 3280²⁴ pursuant to the use of ISO/IEC 17065 duly authenticated reports.
- 4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 Regulations

- 4.2.1 *IBC – 18, 21, 24: International Building Code®*
- 4.2.2 *IRC – 18, 21, 24: International Residential Code®*
- 4.2.3 *CBC – 22, 25: California Building Code*
- 4.2.4 *CRC – 22, 25: California Residential Code*
- 4.2.5 *LABC – 22, 25: Los Angeles City Building Code*
- 4.2.6 *LARC – 22, 25: Los Angeles City Residential Code*
- 4.2.7 *LA County Building Code (Title 26)*

4.3 Standards

- 4.3.1 *AITC Test T107: Shear Test*
- 4.3.2 *AITC Test T110: Cyclic Delamination Test*
- 4.3.3 *AITC Test T119: Full Size End Joint Tension Test*
- 4.3.4 *ANSI 405: Standard for Adhesives for Use in Structural Glued Laminated Timber*
- 4.3.5 *ANSI A190.1: Standard for Wood Products—Structural Glued Laminated Timber*
- 4.3.6 *ASTM D143: Standard Test Methods for Small Clear Specimens of Timber*
- 4.3.7 *ASTM D198: Standard Test Methods of Static Tests of Lumber in Structural Sizes*



- 4.3.8 *ASTM D905: Standard Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading*
- 4.3.9 *ASTM D2395: Standard Test Methods for Density and Specific Gravity of Wood and Wood-Based Materials*
- 4.3.10 *ASTM D2559: Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions*
- 4.3.11 *ASTM D3737: Standard Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)*
- 4.3.12 *ASTM D7341: Standard Practice for Establishing Characteristic Values for Flexural Properties of Structural Glued Laminated Timber by Full-Scale Testing*
- 4.3.13 *AWC National Design Specification (NDS®) for Wood Construction*
- 4.3.14 *AWC NDS Supplement, National Design Specification for Wood Construction*

5 Listed²⁵

- 5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or an approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 General

- 6.1.1 Masaya Teak Glued Laminated Timber is intended for use as beams and columns in the construction of buildings under the cited regulations in **Section 4**.
 - 6.1.1.1 Masaya Teak Glued Laminated Timber shall be designed in accordance with the NDS Chapter 5 and the applicable provisions of the IBC or IRC. The reference design values in this report are ASD reference values; all project-specific NDS adjustment factors shall be applied as applicable.
- 6.1.2 Face joints of Masaya Teak Glued Laminated Timber were evaluated for bond-line shear strength and cyclic delamination in accordance with AITC T107 and AITC T110, respectively. The combined strength, durability, and observed failure-mode performance demonstrate acceptable structural bonding performance for the applications recognized in this report.
 - 6.1.2.1 Continued conformance of the face-bonding process shall be maintained through the Masaya Teak manufacturer approved quality-control program in accordance with ANSI A190.1.
- 6.1.3 End joints used in Masaya Teak Glued Laminated Timber were evaluated for tensile strength and cyclic delamination in accordance with AITC T119 and AITC T110, respectively. The combined strength, durability, and observed failure-mode performance demonstrate acceptable structural end-joint performance for the applications recognized in this report.
 - 6.1.3.1 Continued conformance of the end-jointing process shall be maintained through the Masaya Teak manufacturer approved quality-control program in accordance with ANSI A190.1.

6.2 Reference Design Values

- 6.2.1 Allowable stress design (ASD) values for Masaya Teak Glued Laminated Timber is listed in **Table 2**.

Table 2. Reference Design Values (ASD) for Masaya Teak Glued Laminated Timber

Product Type	Product ID	Flatwise ¹ (psi)		Edgewise ² (psi)		Axial (psi)		$F_{c\perp}$ (psi)	E_{axial}^4 (10 ⁶ psi)	E_{app} (10 ⁶ psi)	E_{min}^5 (10 ⁶ psi)
		F_{bx}	F_{vx}^3	F_{by}	F_{vy}^3	F_t	F_c				
Masaya Teak Glued Laminated Timber	1.5 x 3.5	2,250	295	1,300	180	1,400	1,750	330	1.8	1.7	0.86
	1.5 x 4.5	2,250	295	1,600	180	1,400	1,750	330	1.8	1.7	0.86
	1.5 x 6	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	1.5 x 7.5	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	1.5 x 9	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	1.5 x 12	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 4.5	2,250	295	1,800	180	1,400	1,750	330	1.8	1.7	0.86
	3.5 x 6	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 7.5	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 9	2,250	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 12	1,750	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 13.5	1,750	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 15	1,750	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 16.5	1,750	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86
	3.5 x 18	1,750	295	1,800	180	1,400	1,900	330	1.8	1.7	0.86

SI: 1-psi = 0.0689 MPa

1. Bending about the Y-Y axis. Load applied parallel to wide faces of laminations. See **Figure 2** for axis orientation
2. Bending about the X-X axis. Load applied perpendicular to wide faces of laminations. See **Figure 2** for axis orientation
3. Design values for shear shall be decreased by a factor of 0.72 for non-prismatic members, notched members, and for all members subject to impact or cyclic loading. This reduced design value shall be used for design of members at connections that transfer shear by mechanical fasteners, and for determination of design values for radial tension and torsion.
4. The true (shear-free) Modulus of Elasticity (MOE) shall be equal to the tabulated E_{axial} .
5. The tabulated E_{min} values can be used in beam stability and column stability calculations.

6.2.2 Tabulated ASD values in **Table 2** may be converted to Load Resistance Factor Design (LRFD) values using the provisions set forth in NDS Chapter 2 or ASTM D5457.



6.3 Mechanical Connections

- 6.3.1 Specific gravity for fastener design is based on evaluation of the physical specific gravity of the teak material in accordance with ASTM D2395, dowel-bearing performance evaluated in accordance with ASTM D5764, and published specific-gravity data for *Tectona grandis*.²⁶
 - 6.3.1.1 For NDS connection-strength calculations, the specific gravity for fastener design shall be taken as 0.55.
 - 6.3.1.2 Connections to Masaya Teak Glued Laminated Timber shall be designed in accordance with the applicable provisions of NDS Chapter 12 and the applicable requirements of the fastener manufacturer or evaluation report.
 - 6.3.1.2.1 Fastener spacing, end distance, edge distance, group action, local splitting, and tension perpendicular to grain shall be evaluated in accordance with the NDS, as applicable.
 - 6.3.1.2.2 Connections using proprietary fasteners shall additionally comply with the conditions and limitations of the applicable product evaluation report.
 - 6.3.1.2.3 Lead holes shall be in accordance with the application subsection of NDS Chapter 12.

6.4 Fire Resistance

- 6.4.1 Per IBC Section 722.1, the methodology detailed in NDS Chapter 16 is permitted to be used in designing Masaya Teak Glued Laminated Timber exposed to fire up to 2 hours.
- 6.5 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance²⁷

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.²⁸
- 7.2 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.²⁹

8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 Masaya Teak Glued Laminated Timber complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
 - 8.1.1 Masaya Teak Glued Laminated Timber was evaluated in accordance with ANSI A190.1 as specified in IBC Section 2303.1.3 and IRC Section R502.1.3, IRC Section R602.1.3, and IRC Section R802.1.2.
 - 8.1.2 Dimensions of Masaya Teak Glued Laminated Timber comply with the minimum nominal size as specified in IRC Section R407.3.
- 8.2 Any building code, regulation and/or accepted engineering evaluations (e.g., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified³⁰ to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,³¹ respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.



9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
 - 10.1.1 Adhesive compliance to ANSI 405 from an approved source
 - 10.1.2 Adhesive compliance to ASTM D2559 from an approved source
 - 10.1.3 End-joint delamination and tension testing in accordance with AITC T110 and AITC T119
 - 10.1.4 Face bond shear and delamination testing in accordance with AITC T107 and AITC T110
 - 10.1.5 Flexural strength and stiffness testing in accordance with ASTM D198 as specified in ASTM D7341
 - 10.1.6 Compression parallel-to-grain and compression perpendicular-to-grain testing according to ASTM D143
 - 10.1.7 Shear testing in accordance with ASTM D198/ASTM D143
 - 10.1.8 Dowel bearing testing in accordance with ASTM D5764
 - 10.1.9 Specific gravity testing in accordance with ASTM D2395
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 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, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis*
 - 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.³²
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Masaya Teak Glued Laminated Timber on the DrJ Certification website.



11 Findings

- 11.1 As outlined in **Section 6**, Masaya Teak Glued Laminated Timber has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Masaya Teak Glued Laminated Timber shall be approved for the following applications:
- 11.2.1 When manufactured, identified, and installed in accordance with this report and the manufacturer requirements, Masaya Teak Glued Laminated Timber is recognized as being in compliance with the design parameters herein and are permitted to be used as structural members in Type IV and other types of construction permitted by the IBC.
- 11.3 Unless exempt by state statute, when Masaya Teak Glued Laminated Timber 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 an RDP.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Masaya Teak.
- 11.5 IBC Section 104.2.3³³ (IRC Section R104.2.2³⁴ and IFC Section 104.2.3³⁵ are similar) in pertinent part state:
- 104.2.3 Alternative Materials, Design and Methods of Construction and Equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.
- 11.6 **Approved:**³⁶ Building regulations require that the building official shall accept duly authenticated reports.³⁷
- 11.6.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited.
- 11.6.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce.
- 11.6.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.
- 11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.³⁸



12 Conditions of Use

- 12.1 As defined in **Section 6**, where material and/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.
- 12.2 As listed herein, Masaya Teak Glued Laminated Timber shall be subject to the following conditions:
- 12.2.1 The design of Masaya Teak Glued Laminated Timber shall comply with the requirements of IBC Section 2306 for Allowable Stress Design (ASD), IBC Section 2307 for Load and Resistance Factor Design (LRFD), IRC Section R502.2, IRC Section R802.2, and NDS as applicable. All applicable adjustments to the ASD values shall be in accordance with NDS Section 5.3.
- 12.2.1.1 The tabulated design values in **Table 2** are for dry service conditions where the moisture content in service is less than sixteen percent (16%).
- 12.2.1.1.1 For wet service conditions, where the moisture content in service is greater than or equal to sixteen percent (16%), the design values in **Table 2** shall be multiplied by the applicable wet service factor, C_M , specified in the NDS Supplement, Chapter 4, Tables 5A, 5B, 5C, and 5D, for reference design values.
- 12.2.2 Per IBC Section 2304.12.2.2, Masaya Teak Glued Laminated Timber that is not treated with a pressure preservative shall be:
- 12.2.2.1 Protected by a roof, eave, overhang, or other covering if exposed to the weather. In general, untreated posts or columns are not exposed to the weather.
- 12.2.2.2 Supported by concrete piers or metal pedestals projected not less than 1" above the slab or deck, and are separated from the concrete pier by an impervious moisture barrier.
- 12.2.2.3 Located not less than 8" above exposed earth.
- 12.2.3 When used as columns, Masaya Teak Glued Laminated Timber shall be restrained to prevent lateral displacement at the bottom end, per IRC Section R407.3.
- 12.2.3.1 In Seismic Design Categories (SDC) A through C, columns not more than 48" in height on a pier or footing, are exempt from the bottom end lateral displacement requirement within under-floor areas enclosed by a continuous foundation.
- 12.2.3.2 Masaya Teak Glued Laminated Timber shall be installed into bored holes in the ground and backfilled with suitable compacted soils, wet-poured concrete, or a self-leveling and self-compacting material.
- 12.2.3.3 Backfill material and foundation are outside the scope of this report and shall be designed by an engineer.
- 12.2.4 Masaya Teak Glued Laminated Timber shall be protected from termites when installed in geographical areas where hazard of termite damage is known to be "very heavy", per IBC Section 2304.12.2.7 and IRC Section R305.³⁹ See also, IBC Figure 2603.8 or IRC Figure R305.4.⁴⁰
- 12.2.5 Fasteners used in contact with preservative-treated lumber shall comply with IBC Section 2304.10.6 and IRC Section R304.3.⁴¹
- 12.2.6 Design shall use the published values, adjustment methodology, and limitations set forth herein.
- 12.2.7 Project-specific design, including load determination and member adequacy for the intended application, shall be prepared by the building designer or an RDP.
- 12.2.7.1 Field cutting, drilling, or notching that reduces the listed cross-section shall be permitted only where the resulting member is specifically checked by the building designer or RDP.
- 12.2.7.2 Connections, bearing conditions, bracing, stability, fire-resistance design, and serviceability checks are outside the scope of the product property tables unless specifically addressed.



- 12.3 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
- 12.3.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
 - 12.3.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 12.3.3 At a minimum, this innovative product shall be installed per **Section 9**.
 - 12.3.4 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.
 - 12.3.5 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.
 - 12.3.6 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.4 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or 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 Section 104.2.3", all of IBC Section 104, and IBC Section 105.3.*
- 12.5 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.6 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

- 13.1 Masaya Teak Glued Laminated Timber, as listed in **Section 1.1**, is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at www.masayahomes.com.

14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.
- 14.2 For information on the status of this report, please contact [DrJ Certification](#).



Notes

- 1 For more information, visit drjcertification.org or call us at 608-310-6748.
- 2 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of [TPI 1](#), the [NDS](#), [AISI S202](#), [US professional engineering law](#), [Canadian building code](#), [Canada professional engineering law](#), [Qualtim External Appendix A: Definitions/Commentary](#), [Qualtim External Appendix B: Project/Deliverables](#), [Qualtim External Appendix C: Intellectual Property and Trade Secrets](#), definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.
- 3 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702>
- 4 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review <https://www.justice.gov/atr/mission> and <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3>
- 5 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2>:-:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests
- 6 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1>:-:text=Conformance%20to%20Standards-.The%20design%20strengths%20and%20permissible%20stresses-.of%20any%20structural
- 7 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>:-:text=the%20building%20official%20shall%20make%20a%20or%20cause%20to%20be%20made%20C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.
- 8 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2>
- 9 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency
- 10 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source
- 11 <https://www.law.cornell.edu/uscode/text/18/1832> (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a [public records act](#). To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or [approved sources](#). For more information, please review this website: [Intellectual Property and Trade Secrets](#).
- 12 <https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>
- 13 <https://www.cbiteest.com/accreditation/>
- 14 <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1>:-:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code
- 15 <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3> AND <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1>
- 16 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>
- 17 <https://iaf.nu/en/about-iaf-mila/#>:-:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope
- 18 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.
- 19 <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>
- 20 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the [IBC 2024](#) and the [IRC 2024](#) are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.
- 21 See [Adoptions by Publisher](#) for the latest adoption of a non-amended or amended model code by the local jurisdiction. <https://up.codes/codes/general>
- 22 See [Adoptions by Publisher](#) for the latest adoption of a non-amended or amended model code by state. <https://up.codes/codes/general>
- 23 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>
- 24 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>
- 25 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2> (Listed%20or%20certified); <https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed> AND <https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled>
- 26 Tectona grandis, commonly known as teak, is a large, tropical deciduous timber tree belonging to the mint family (Lamiaceae)
- 27 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4>
- 28 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:-:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%20C%20livable%20C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades
- 29 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:-:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur



Qualification is performed by 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. DrJ is an ANAB accredited product certification body.

<https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH>

See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

2021 IBC Section 104.11

2021 IRC Section R104.11

2018: <https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9> AND 2021: <https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11>

Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (<https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4>) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>

Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

2021 IRC Section R318

2021 IRC Figure R318.4

2021 IRC Section R317.3