Listing

A Duly Authenticated Report from an Approved Agency

Report No: 2412-111

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Performance of US Strap Cut to Length Straps

Trade Secret Report Holder:

US Strap

Phone: 713-547-4447 Website: us-strap.com Email: info@us-strap.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 00 90 - Wood and Plastic Fastenings

Section: 06 05 23 - Wood, Plastic, and Composite Fastenings

Section: 06 05 23.17 - Wood Framing Metal Connectors

1 Innovative Product Evaluated[1]

1.1 US Strap Cut to Length Straps (CTL)

1.1.1 CTL22

1.1.2 CTL20

1.1.3 CTL18

1.1.4 CTL16

1.1.5 CTL14

2 Product Description and Materials

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

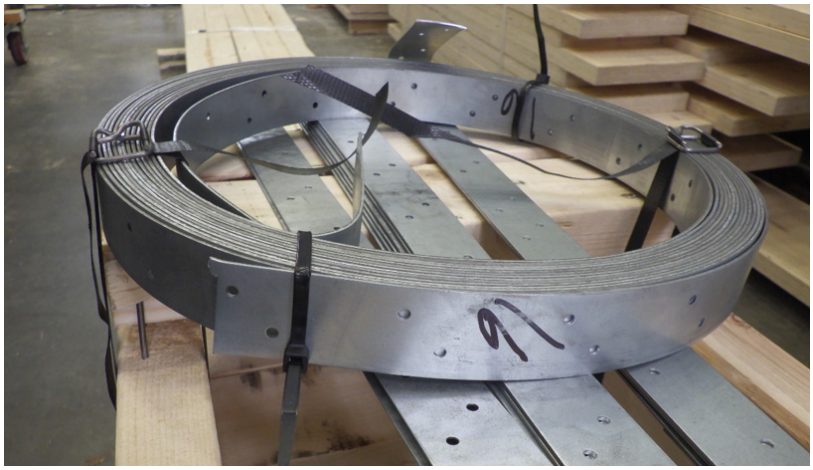

Figure 1. US Strap Cut to Length Straps

Table 1. Product Specifications[1]

US Strap Product ID	Steel Gauge	Minimum Coated Thickness (in)	Steel Grade	Minimum Yield Strength, F_y (ksi)	Minimum Tensile Strength, F_u (ksi)
CTL22	22-gauge	0.0310	ASTM A653 SS Grade 50, Class 1	50	65
CTL20	20-gauge	0.0359	ASTM A653 HSLAS Grade 50	50	60
CTL18	18-gauge	0.0446	ASTM A653 HSLAS Grade 50	50	60
CTL16	16-gauge	0.0580	ASTM A653 SS Grade 50, Class 1	50	65
CTL14	14-gauge	0.0710	ASTM A653 SS Grade 50, Class 1	50	65

SI: 1 in = 25.4 mm, 1 ksi = 6.89 MPa

1. G90 galvanized (typ. 0.0008 coating thickness)

2.1.1 Each strap is $1^1/_4$" wide and pre-punched with 0.156" diameter nail holes spaced at $2^1/_{16}$" intervals along the length.

2.1.1.1 Each strap has two rows of staggered nail holes spaced $^1/_2$" apart (See **Figure 2**).

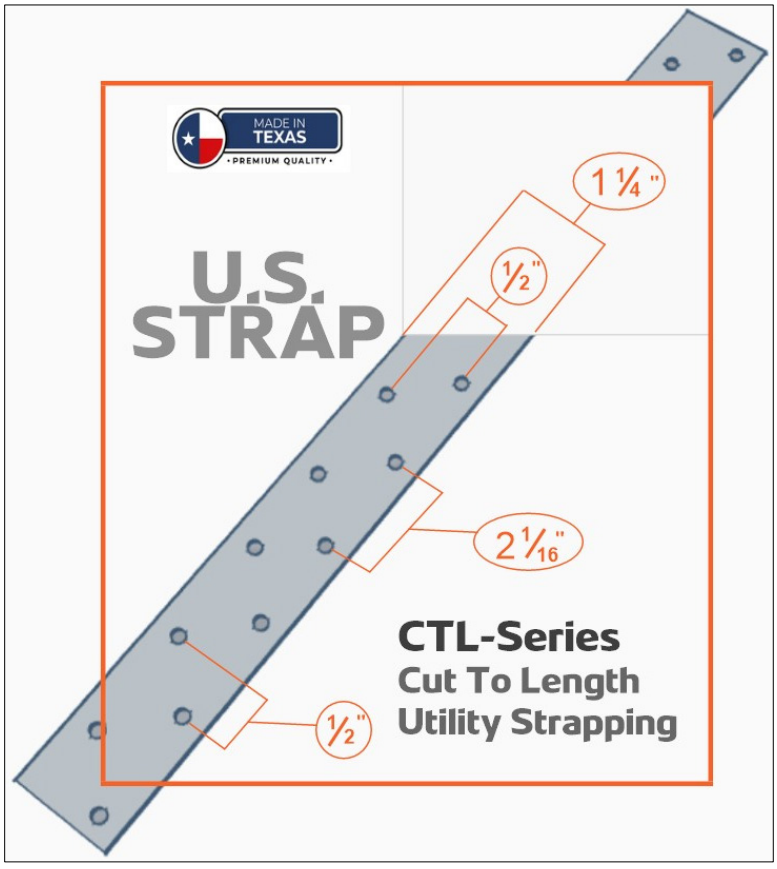

Figure 2. US Strap CTL Series Staggered Nail Holes

2.1.2 *Standard Coil Lengths:*

2.1.2.1 CTL22 Straps are available as a 300' coil (CTL22-300).

2.1.2.2 CTL20 Straps are available as a 250' coil (CTL20-250).

2.1.2.3 CTL18 Straps are available as a 200' coil (CTL18-200).

2.1.2.4 CTL16- Straps are available as a 150' coil (CTL16-150).

2.1.2.5 CTL14- Straps are available as a 100' coil (CTL14-100).

2.1.3 Shorter lengths may be available. Inquire with manufacturer.

2.2 *Wood Members*

2.2.1 Solid sawn wood members connected with US Strap Cut to Length Straps shall consist of lumber species or species combinations having a Specific Gravity (SG) of 0.42 to 0.55.

2.2.2 Structural composite lumber (including but not limited to, LVL, LSL, PSL, etc.) connected with US Strap Cut to Length Straps shall be recognized in evaluation reports having published equivalent SG for lateral and withdrawal resistance of 0.50.

2.3 *Fasteners*

2.3.1 Nails used in the connection between US Strap Cut to Length Straps and wood members shall conform to ASTM F1667.

2.3.1.1 10d nails shall have a minimum bending yield strength, F_{yb}, of 90,000 psi

2.3.1.2 8d nails shall have a minimum bending yield strength, F_{yb}, of 100,000 psi

2.4 As needed, review material properties for design in **Section 6**.

3 Definitions

3.1 New Materials[2] 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.[3] The design strengths and permissible stresses shall be established by tests[4] and/or engineering analysis.[5]

3.2 Duly authenticated reports[6] and research reports[7] are test reports and related engineering evaluations that are written by an approved agency[8] and/or an approved source.[9]

3.2.1 These reports utilize 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 secretes under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[10]

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.[11]

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 ANAB[12] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[13] 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 writing[14] 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.[15]

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.[16] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[17] 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.[18]

4 Applicable Standards for the Listing[19]

4.1 *Standards*

4.1.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

4.1.2 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood*

4.1.3 *ASTM D2395: Standard Test Methods for Density and Specific Gravity (Relative Density) of Wood and Wood-Based Materials*

4.1.4 *ASTM D4442: Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials*

4.1.5 *ASTM F1575: Standard Test Methods for Determining Bending Yield Moment of Nails*

4.1.6 *ASTM F1667: Standard Specification for Driven Fasteners: Nails, Spikes, and Staples*

5 Listed[20]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), an approved agency (i.e., CBI and DrJ), and/or and approved source (i.e., DrJ), or other organization(s) concerned with product evaluation (i.e., DrJ), that maintains periodic inspection (i.e., 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 Allowable tensile strength for the US Strap Cut to Length Straps are provided in **Table 2**.

Table 2. Allowable Tension Loads per Strap[1]

US Strap Product ID	Steel Gauge	Minimum Coated Thickness (in)	Steel Grade	Allowable Tensile Strength (lb)
CTL22	22-gauge	0.0310	ASTM A653 SS Grade 50, Class 1	1,045
CTL20	20-gauge	0.0359	ASTM A653 HSLAS Grade 50	1,200
CTL18	18-gauge	0.0446	ASTM A653 HSLAS Grade 50	1,595
CTL16	16-gauge	0.0580	ASTM A653 SS Grade 50, Class 1	2,080
CTL14	14-gauge	0.0710	ASTM A653 SS Grade 50, Class 1	2,635

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. G90 galvanized (typ. 0.0008 coating thickness)

6.2 Allowable loads based on Allowable Stress Design (ASD) for the US Strap Cut to Length Straps connections are provided in **Table 3** through **Table 7**.

6.2.1 Allowable loads are in pounds.

6.2.2 Unless noted otherwise, nails are common wire nails of the pennyweight noted in the tables. Nails shall comply with ASTM F1667 and shall have the following minimum bending yield strengths, F_{yb}.

$$8d, D = 0.131\ in., F_{yb} = 100{,}000\ psi$$
$$10d, D = 0.148\ in., F_{yb} = 90{,}000\ psi$$

6.2.3 Nails designated as 8d are assumed to be 0.131" x 2 1/2" nails.

6.2.4 Nails designated as 10d are assumed to be 0.148" x 3" nails.

6.2.5 The number of fasteners shown is the minimum required to achieve the loads shown.

6.2.6 Tabulated allowable loads listed for a load duration factor, C_D, of 1.00 (i.e., *"Normal"* load duration) are to be used in applications in which the shortest load duration in the combination of loads is 10 years.

6.2.6.1 Per NDS Section 2.3.2, ASD values may be adjusted by the appropriate load duration factor:

6.2.6.1.1 0.9 for permanent loads or dead load

6.2.6.1.2 1.0 for ten years or occupancy load or *"dead plus live loads"*

6.2.6.1.3 1.15 for two months of load or snow load or *"dead plus live plus snow loads"*

6.2.6.1.4 1.25 for seven day of load or construction load or *"dead plus short term loading"*

6.2.6.1.5 1.33 for a one day load which was used prior to 1987 and is no longer used

6.2.6.1.6 1.6 for a ten minute load or wind/earthquake loads or *"dead plus live plus wind"* or *"dead plus live plus earthquake"*

6.2.6.1.6.1 Tabulated allowable loads listed for a load duration factor, C_D, of 1.60 is also provided.

6.2.6.1.7 2.0 for impact loads or very short term loads. Generally not combined with other applied loads (i.e. dead, live, etc.)

6.2.6.2 When a load duration factor, C_D, is applied to ASD values for uplift, the resulting ASD value cannot exceed the screw tension design value found in **Table 2**.

6.2.7 All framing members shall be designed in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.

6.2.8 Load capacities in the design tables are valid for the species shown. For other species, adjust values in accordance with NDS.

6.2.9 Unless indicated otherwise, the allowable loads provided in these tables assume the connector is attached to a wood member with a minimum nominal thickness of 2".

6.2.10 Allowable simultaneous loads in more than one direction on a single connector must be evaluated using the following equation:

$$\frac{Design\ Load\ Uplift}{Allowable\ Load\ Uplift} + \frac{Design\ Load\ Parallel\ to\ Wall\ Plate}{Allowable\ Load\ Parallel\ to\ Wall\ Plate} + \frac{Design\ Load\ Perpendicular\ to\ Wall\ Plate}{Allowable\ Load\ Perpendicular\ to\ Wall\ Plate} \leq 1.0$$

6.2.11 The building designer is responsible for determining the simultaneous loading conditions.

6.3 The nail sizes and nailing schedules are provided in:

6.3.1 **Table 3** for the CTL22

6.3.2 **Table 4** for the CTL20

6.3.3 **Table 5** for the CTL18

6.3.4 **Table 6** for the CTL16

6.3.5 **Table 7** for the CTL14

Table 3. CTL22 Coiled Straps Allowable Tension Load

Fasteners		Minimum Required End Length[1] (in)	Allowable Tension Load (lb)					
			SP (0.55)		DF-L (0.50)		SPF (0.42)	
Size	Total Number of Fasteners		Load Duration Factor, C_D					
			1.0	1.6	1.0	1.6	1.0	1.6
8d Common (0.131 x 2.5")	4	4	550	875	550	875	510	815
	6	5	825	1,045	825	1,045	765	1,045
	8	6	1,045	1,045	1,045	1,045	1,020	1,045
	10	7	1,045	1,045	1,045	1,045	1,045	1,045
10d Common (0.148 x 3")	4	4	635	1,015	635	1,015	695	1,045
	6	5	950	1,045	950	1,045	1,040	1,045
	8	6	1,045	1,045	1,045	1,045	1,045	1,045

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. The total strap cut length is equal to the Clear Span + 2 x End Length. See **Figure 3** for more detail.

Table 4. CTL20 Coiled Straps Allowable Tension Load

Fasteners		Minimum Required End Length[1] (in)	Allowable Tension Load (lb)					
			SP (0.55)		DF-L (0.50)		SPF (0.42)	
Size	Total Number of Fasteners		Load Duration Factor, C_D					
			1.0	1.6	1.0	1.6	1.0	1.6
8d Common (0.131 x 2.5")	4	4	540	865	540	865	510	820
	6	5	810	1,200	810	1,200	770	1,200
	8	6	1,080	1,200	1,080	1,200	1,025	1,200
	10	7	1,200	1,200	1,200	1,200	1,200	1,200
10d Common (0.148 x 3")	4	4	695	1,110	695	1,110	715	1,145
	6	5	1,040	1,200	1,040	1,200	1,075	1,200
	8	6	1,200	1,200	1,200	1,200	1,200	1,200

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. The total strap cut length is equal to the Clear Span + 2 x End Length. See **Figure 3** for more detail.

Table 5. CTL18 Coiled Straps Allowable Tension Load

Fasteners		Minimum Required End Length[1] (in)	Allowable Tension Load (lb)					
			SP (0.55)		DF-L (0.50)		SPF (0.42)	
Size	Total Number of Fasteners		Load Duration Factor, C_D					
			1.0	1.6	1.0	1.6	1.0	1.6
8d Common (0.131 x 2.5")	4	4	645	1,030	645	1,030	535	860
	6	5	965	1,545	965	1,545	805	1,285
	8	6	1,290	1,595	1,290	1,595	1,070	1,595
	10	7	1,595	1,595	1,595	1,595	1,340	1,595
	12	8	1,595	1,595	1,595	1,595	1,595	1,595
10d Common (0.148 x 3")	4	4	825	1,325	825	1,325	765	1,225
	6	5	1,240	1,595	1,240	1,595	1,150	1,595
	8	6	1,595	1,595	1,595	1,595	1,535	1,595
	10	7	1,595	1,595	1,595	1,595	1,595	1,595

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. The total strap cut length is equal to the Clear Span + 2 x End Length. See **Figure 3** for more detail.

Table 6. CTL16 Coiled Straps Allowable Tension Load

Fasteners		Minimum Required End Length[1] (in)	Allowable Tension Load (lb)					
			SP (0.55)		DF-L (0.50)		SPF (0.42)	
Size	Total Number of Fasteners		Load Duration Factor, C_D					
			1.0	1.6	1.0	1.6	1.0	1.6
8d Common (0.131 x 2.5")	4	4	560	895	560	895	570	910
	6	5	840	1,345	840	1,345	855	1,365
	8	6	1,120	1,790	1,120	1,790	1,140	1,820
	10	7	1,400	2,080	1,400	2,080	1,420	2,080
	12	8	1,680	2,080	1,680	2,080	1,705	2,080
	14	9	1,960	2,080	1,960	2,080	1,990	2,080
	16	10	2,080	2,080	2,080	2,080	2,080	2,080
10d Common (0.148 x 3")	4	4	825	1,325	825	1,325	795	1,275
	6	5	1,240	1,985	1,240	1,985	1,195	1,910
	8	6	1,655	2,080	1,655	2,080	1,590	2,080
	10	7	2,070	2,080	2,070	2,080	1,990	2,080
	12	8	2,080	2,080	2,080	2,080	2,080	2,080

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. The total strap cut length is equal to the Clear Span + 2 x End Length. See **Figure 3** for more detail.

Table 7. CTL14 Coiled Straps Allowable Tension Load

Fasteners		Minimum Required End Length[1] (in)	Allowable Tension Load (lb)					
			SP (0.55)		DF-L (0.50)		SPF (0.42)	
Size	Total Number of Fasteners		Load Duration Factor, C_D					
			1.0	1.6	1.0	1.6	1.0	1.6
8d Common (0.131 x 2.5")	4	4	545	870	545	870	550	880
	6	5	820	1,310	820	1,310	825	1,315
	8	6	1,090	1,745	1,090	1,745	1,100	1,755
	10	7	1,365	2,180	1,365	2,180	1,370	2,195
	12	8	1,635	2,615	1,635	2,615	1,645	2,635
	14	9	1,910	2,635	1,910	2,635	1,920	2,635
	16	10	2,180	2,635	2,180	2,635	2,195	2,635
	18	11	2,455	2,635	2,455	2,635	2,470	2,635
	20	12	2,635	2,635	2,635	2,635	2,635	2,635
10d Common (0.148 x 3")	4	4	855	1,370	855	1,370	780	1,250
	6	5	1,285	2,055	1,285	2,055	1,170	1,875
	8	6	1,715	2,635	1,715	2,635	1,560	2,500
	10	7	2,140	2,635	2,140	2,635	1,955	2,635
	12	8	2,570	2,635	2,570	2,635	2,345	2,635
	14	9	2,635	2,635	2,635	2,635	2,635	2,635

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. The total strap cut length is equal to the Clear Span + 2 x End Length. See **Figure 3** for more detail.

Figure 3. US Strap Cut to Length Straps – Total Cut Length

6.4 Where the application falls outside of the performance evaluation, conditions of use, and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

7 Certified Performance[21]

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.[22]

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.[23]

8 Installation

8.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

8.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9 Substantiating Data

9.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

9.1.1 Connector testing in accordance with ASTM D1761

9.1.2 Connection design value calculations by DrJ Engineering, LLC in accordance with AWC NDS and accepted engineering practices

9.2 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.

9.3 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.

9.4 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.

9.5 *Testing and Engineering Analysis:*

9.5.1 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.[24]

9.6 Where additional condition of use and/or regulatory compliance information is required, please search for US Strap Cut to Length Straps on the DrJ Certification website.

10 Findings

10.1 As outlined in **Section 6**, US Strap Cut to Length Straps have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

10.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, US Strap Cut to Length Straps shall be approved for the following applications:

10.2.1 US Strap Cut to Length Straps are permitted to be used to transfer forces generated by wind loads or seismic loads between wood members.

10.2.1.1 The tabulated loads in this report are based on allowable stress design and are the lesser of the connection strength or the strap steel strength.

10.3 Unless exempt by state statute, when US Strap Cut to Length Straps are 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.

10.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from US Strap.

10.5 IBC Section 104.2.3 (IRC Section R104.2.2 and IFC Section 104.2.3[25] 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.

10.6 **Approved:**[26] Building regulations require that the building official shall accept duly authenticated reports.[27]

10.6.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

10.6.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

10.6.3 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.

10.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

10.8 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.[28]

11 Conditions of Use

11.1 Material properties shall not fall outside the boundaries defined in **Section 6**.

11.2 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.

11.3 Structural framing members (i.e., wood, masonry, concrete, steel, etc.) connected with US Strap Cut to Length Straps shall be designed in accordance with the requirements of their specific design standards/specifications as referenced in the building code adopted by the jurisdiction in which the project is to be constructed.

11.4 When US Strap Cut to Length Straps are installed on wood members having a moisture content that is considered as *"wet-service condition"* (i.e., 19% for sawn lumber and 16% for structural composite lumber), or where wet service is expected, the allowable values for connection strength in **Table 3** through **Table 7** shall be multiplied by the wet service adjustment factor, C_M, specified in NDS Table 11.3.3.

11.5 Where US Strap Cut to Length Straps are installed on wood members where the sustained temperature is greater than 100° F, the allowable values for connection strength in **Table 3** through **Table 7** shall be multiplied by the temperature adjustment factor, C_t, specified in NDS Table 11.3.4.

11.6 US Strap Cut to Length Straps that are exposed directly to weather or subject to salt corrosion in coastal areas as determined by the local building official, shall be protected in accordance with the building code adopted by the jurisdiction in which the project is to be constructed

11.7 For conditions not covered in this report, connections shall be designed in accordance with generally accepted engineering practices. When the capacity of a connection is controlled by either fastener metal strength or connector metal strength rather than wood strength, the metal strength shall not be increased by the adjustment factors specified in the NDS.

11.8 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:

11.8.1 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.

11.8.2 This report and the installation instructions shall be submitted at the time of permit application.

11.8.3 This innovative product has an internal quality control program and a third-party quality assurance program.

11.8.4 At a minimum, this innovative product shall be installed per **Section 8** of this report.

11.8.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

11.8.6 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.

11.8.7 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.

11.9 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.

11.10 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).

11.11 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.

12 Identification

12.1 The innovative product 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.

12.2 Additional technical information can be found at us-strap.com.

13 Review Schedule

13.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

13.2 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 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702

3 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

4 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

5 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

6 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%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.

7 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2

8 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

10 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.

11 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/

12 https://www.cbitest.com/accreditation/

13 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code

14 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

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

16 https://iaf.nu/en/about-iaf-mla/#:~: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

17 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

18 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

19 Unless otherwise noted, all references in this Listing are from the 2024 version of the codes and the standards referenced therein. This material, product, design, service, and/or method of construction also complies with the 2000-2024 versions of the referenced codes and the standards referenced therein.

20 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed AND https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled

21 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4

22 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%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

23 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

24 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

25 2018 IFC Section 104.9

26 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 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

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

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