



Listing and Technical Evaluation Report™

Report No: 1506-20



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QuickTie™ System Portal Frame with Hold-Downs

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 00 90 - Wood and Plastic Fastenings

1 Innovative Products Evaluatedⁱ

- 1.1 QuickTie System (QTS) Portal Frame with Hold-Downs (PFH)

2 Product Description and Materials

- 2.1 The innovative products evaluated in this report are shown in **Figure 1** and **Figure 2**.

- 2.1.1 QTB(L) Blue ($\frac{3}{16}$ " aircraft wire rope): $\frac{3}{16}$ " diameter, 7x19, hot-dipped, galvanized steel wire with a minimum nominal strength of 4,200 lbs per ASTM A1023. Individual wires in the wire rope are galvanized with a minimum of 0.10 ounces per square foot of uncoated wire surface (**Figure 1**).

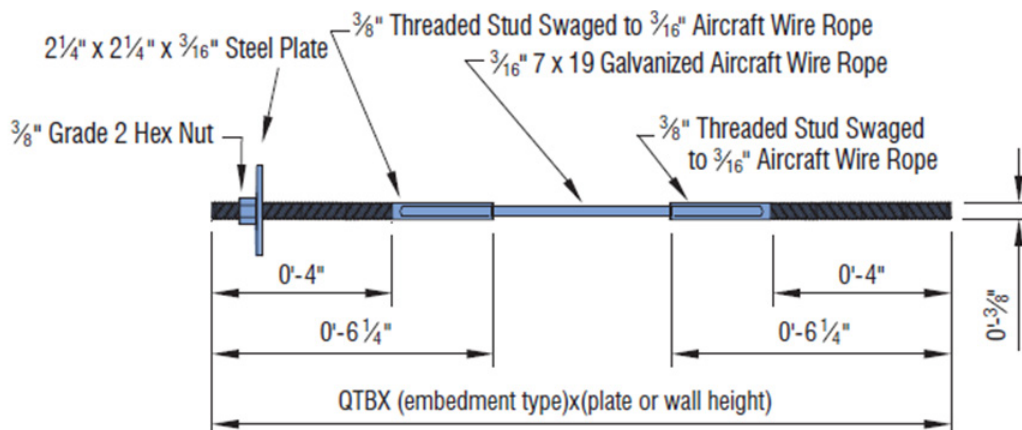


Figure 1. QuickTie Part Detail – QTB(L) Blue $\frac{3}{16}$ " Diameter

- 2.1.2 QTO(L) Orange ($\frac{5}{16}$ " aircraft wire rope): $\frac{5}{16}$ " diameter, 7x19, hot-dipped, galvanized steel wire with a minimum nominal strength of 9,800 lbs per ASTM A1023. Individual wires in the wire rope are galvanized with a minimum of 0.10 ounces per square foot of uncoated wire surface (**Figure 2**).

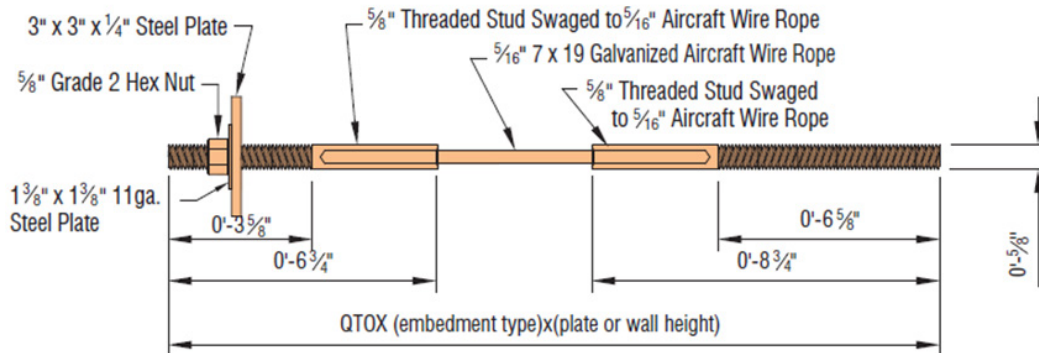


Figure 2. QuickTie Part Detail – QTO(L) Orange $\frac{5}{16}$ " Diameter

2.2 QTS Description

- 2.2.1 The QTS is a wall anchoring system for conventional light-frame construction and masonry projects that involve a Registered Design Professional (RDP).
- 2.2.2 The QTS provides a continuous load path from the top of the wall to the foundation by resisting and transferring wind uplift and/or laterally applied loads that result in overturning uplift forces.
- 2.2.3 The QTS consists of a wire rope with threaded studs swaged to each end.
- 2.2.4 *Portal Frames with Hold-Downs (PFH) – Primary Connection:*
- 2.2.4.1 QuickTie cables with threaded bottoms will be connected to the foundation via an embedded anchor bolt cast in place. The QuickTie cable will be attached to the anchor bolt by a mechanical coupling.
- 2.2.4.2 The other threaded stud is extended vertically within the interior wood stud wall to the top of the wall, inserted through a hole drilled through the wood top plate(s) and attached to a steel plate and nut placed on the top surface of the topmost plate on the wall. The nut is then tightened to post tension the QTS.
- 2.2.5 *Alternative Connection:*
- 2.2.5.1 The end of the QuickTie cable with longer threads and no plate washers will be connected to the foundation via a formed or drilled hole in the foundation. The hole is filled with epoxy and the QuickTie cable is inserted into the hole and left to set.
- 2.2.5.2 The other threaded stud is extended vertically within the interior wood stud wall to the top of the wall, inserted through a hole drilled through the wood top plate(s) and attached to a steel plate and nut placed on the top surface of the topmost plate on the wall. The nut is then tightened to post tension the QTS.
- 2.2.6 Trusses, headers and bottom plates are connected with Quick Connectors to provide distribution of load through the QTS to the foundation.
- 2.2.7 Where one QuickTie cable does not provide sufficient capacity, multiple cables of the same type may be installed to increase the pre-stressing force and transfer of accumulated loads to the foundation.



2.3 QuickTie System Materials

2.3.1 **QuickTie QT(L) Wood Frame Connectors** (note that the “L” indicates length in feet): galvanized aircraft wire rope, $\frac{3}{16}$ " diameter, $\frac{5}{16}$ " diameter. Threaded studs in the following sizes are swaged onto each end of the wire rope:

2.3.1.1 Individual wires are 0.030" diameter, or smaller, with minimum $F_u = 268,000$ psi. The length varies in 1" increments from 2' to 60'.

2.3.2 **Steel Plate Washers:**

2.3.2.1 Washers are made from the following materials:

2.3.2.1.1 $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ " ASTM A36, A283/284 or A570 steel plate, with a minimum yield strength of 33 ksi and a minimum ultimate strength of 45 ksi (QTB(L) Blue $\frac{3}{16}$ " diameter wire rope)

2.3.2.1.2 3" x 3" x $\frac{1}{4}$ " ASTM A36, A283/284 or A570 steel plates, with a minimum yield strength of 33 ksi and a minimum ultimate strength of 45 ksi (QTO(L) Orange $\frac{5}{16}$ " diameter wire rope)

2.3.3 **Tension Indicator Device:**

2.3.3.1 Tension Indicator Devices (TID) are made from the following materials:

2.3.3.1.1 Blue: ASTM A653, Grade 33 structural steel, 14-gauge, min. thickness 0.0821", painted.

2.3.3.1.2 Orange: ASTM A653, Grade 33 structural steel, 10-gauge, min. thickness 0.1419", painted.

2.3.4 **Nuts:**

2.3.4.1 $\frac{3}{8}$ " Grade 2 Hex Nuts (QTB(L) Blue $\frac{3}{16}$ " diameter wire rope)

2.3.4.2 $\frac{5}{8}$ " Grade 2 Hex Nuts (QTO(L) Orange $\frac{5}{16}$ " diameter wire rope)

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

3 Definitions

3.1 New Materialsⁱⁱ 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.ⁱⁱⁱ The design strengths and permissible stresses shall be established by tests^{iv} and/or engineering analysis.^v

3.2 Duly Authenticated Reports^{vi} and Research Reports^{vii} are test reports and related engineering evaluations, which are written by an approved agency^{viii} and/or an approved source.^{ix}

3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).^x

3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory.

3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.^{xi}

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 Registered Design Professional (RDP).

3.5.1 The Center for Building Innovation (CBI) is ANAB^{xii} ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce^{xiii} 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^{xiv} 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.^{xv}



- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope, shall be approved.^{xvi} Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.^{xvii}
- 3.9 Approval equity is a fundamental commercial and legal principle.^{xviii}

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation^{xix}

4.1 Standards

- 4.1.1 *AISI S100: North American Specification for the Design of Cold-formed Steel Structural Members*
- 4.1.2 *ANSI/AISC 360: Specification for Structural Steel Buildings*
- 4.1.3 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 4.1.4 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*
- 4.1.5 *ASCE/SEI 19: Structural Applications of Steel Cables for Buildings*
- 4.1.6 *ASTM A36: Standard Specification for Carbon Structural Steel*
- 4.1.7 *ASTM A283: Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates*
- 4.1.8 *ASTM A284: Specification for Low and Intermediate Tensile Strength Carbon-Silicon Steel Plates for Machine Parts and General Construction*
- 4.1.9 *ASTM A653: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*
- 4.1.10 *ASTM A1011: Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength*
- 4.1.11 *ASTM A1023: Standard Specification for Carbon Steel Wire Ropes for General Purposes*
- 4.1.12 *ASTM F1667: Standard Specification for Driven Fasteners: Nails, Spikes, and Staples*

4.2 Regulations

- 4.2.1 *IBC – 15, 18, 21: International Building Code®*
- 4.2.2 *IRC – 15, 18, 21: International Residential Code®*
- 4.2.3 *FBC-B—20, 23: Florida Building Code – Building^{xx}*
- 4.2.4 *FBC-R—20, 23: Florida Building Code – Residential^{xx}*
- 4.2.5 *NCBC—12, 18: North Carolina Building Code*

5 Listed^{xxi}

- 5.1 A nationally recognized testing laboratory such as CBI, states that the materials, designs, methods of construction, and/or equipment have met nationally recognized standards and/or have been tested and found suitable for use in a specified manner.



6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 Design

6.1.1 **Table 1** lists the maximum allowable tensile loads, based on Allowable Stress Design (ASD), of the QTS.

Table 1. Maximum Allowable Tensile Loads of the QTS

Cable Type	Cable Diameter (in)	Ultimate Tensile Capacity (lb)	Allowable Tensile Capacity ¹ (lb)
QTB(X) Blue	3/16	4,200	1,910
QTO(X) Orange	5/16	9,800	4,455

SI: 1 in = 25.4 mm, 1 lb = 4.45 N
 1. Allowable loads determined in accordance with ASCE 19 and a safety factor of 2.2.

6.1.1.1 Multiple QuickTie cables of the same type may be used together to apply pre-stressing force, where one QuickTie cable is not sufficient.

6.1.1.2 Allowable loads are based on the published strength of the cables per ASTM A1023 using a safety factor of 2.2.

6.1.1.3 Construction documents shall include the information required by ASCE 19 Section 2.

6.1.2 Portal Frame with Hold-Downs (PFH):

6.1.2.1 Use of Method PFH shall be in accordance with IRC Section R602.10.6.2 and IRC Figure R602.10.6.2 except that **Figure 3** shall be used to construct the PFH.

6.1.2.2 The maximum allowable tensile loads (based on Allowable Stress Design, ASD basis) of the QTS are presented in **Table 1**.

6.1.2.3 Two QuickTie Orange cables will be used to meet the required two (2) 3,500-lb hold-downs, with one (1) QuickTie Orange on each side of the pier.

6.1.2.4 QuickTie Blue cables will be used on the non-pier end of the portal frame where only a single 1,000-lb hold-down is required. The detail below using QTS is considered equivalent to the Method PFH detail of the IRC (**Figure 3**).

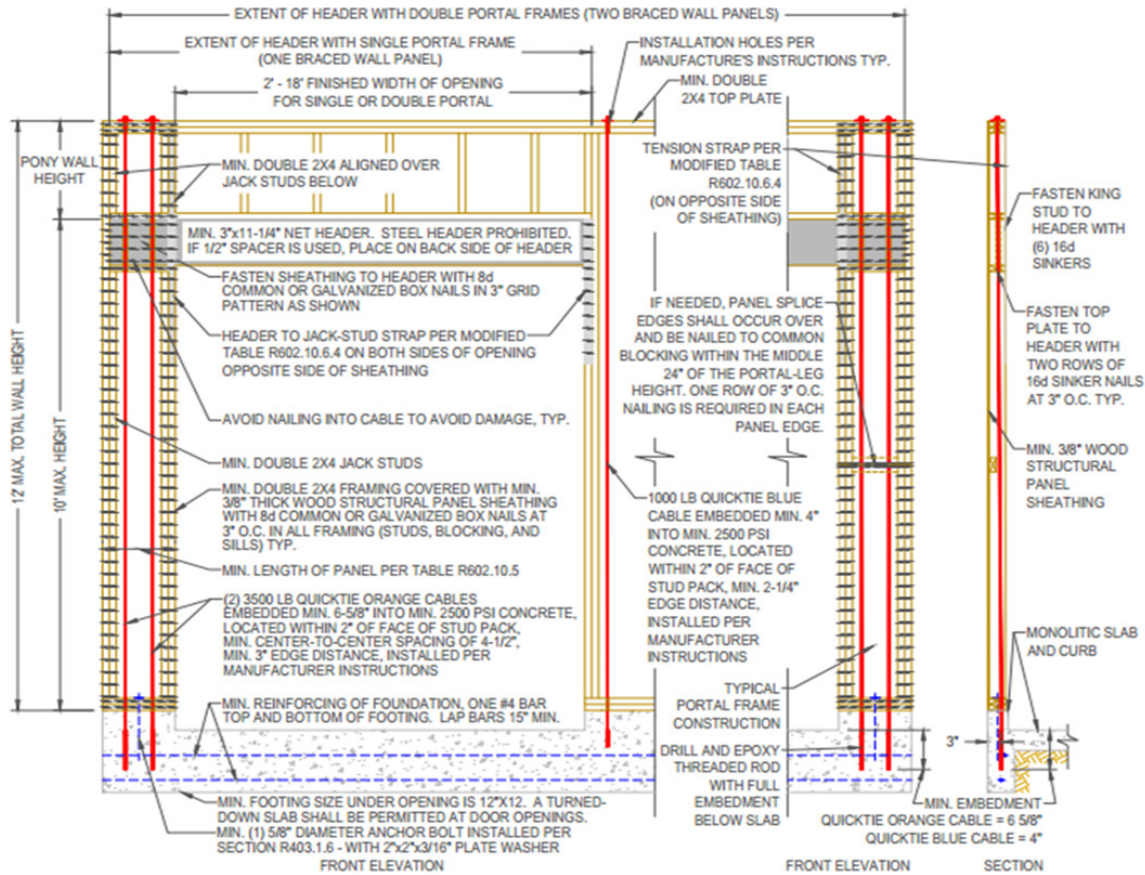


Figure 3. Diagram for Portal Frame with QuickTie Cables

6.1.2.5 Design parameters are presented in **Figure 4.**

MODIFIED TABLE R602.10.6.4 TENSION STRAP CAPACITY FOR RESISTING WIND PRESSURES PERPENDICULAR TO METHOD PFH																
MINIMUM WALL STUD FRAMING NOMINAL SIZE AND GRADE	MAXIMUM PONY WALL HEIGHT (feet)	MAXIMUM TOTAL WALL HEIGHT (feet)	MAXIMUM OPENING WIDTH (feet)	ADJACENT TO QUICKTIE ORANGE CABLE						ADJACENT TO QUICKTIE BLUE CABLE						
				TENSION STRAP CAPACITY REQUIRED (pounds) ^{a,b,c}						TENSION STRAP CAPACITY REQUIRED (pounds) ^{a,b,c}						
				Ultimate Design Wind Speed V_u (mph)						Ultimate Design Wind Speed V_u (mph)						
				110	115	130	110	115	130	110	115	130	110	115	130	
				Exposure B			Exposure C			Exposure B			Exposure C			
2 x 4 No. 2 Grade	0	10	18	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
			9	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	750
			16	NR	NR	NR	NR	NR	450	NR	NR	1,050	1,075	1,500	2,950	
	2	10	18	NR	NR	NR	NR	NR	DR	NR	275	1,375	1,400	1,850	DR	
			9	NR	NR	NR	NR	NR	NR	NR	NR	475	500	875	2,125	
			16	NR	NR	NR	NR	625	DR	775	1,175	2,525	2,550	3,125	DR	
	2	12	18	NR	NR	NR	450	475	DR	DR	1,075	1,500	2,950	2,975	DR	DR
			9	NR	NR	NR	NR	NR	DR	150	500	1,650	1,675	2,175	DR	
			16	NR	NR	DR	DR	DR	DR	1,875	2,375	DR	DR	DR	DR	
	4	12	18	NR	NR	475	DR	DR	DR	DR	2,425	2,975	DR	DR	DR	DR
			9	NR	NR	DR	DR	DR	DR	1,275	1,750	DR	DR	DR	DR	
			12	NR	275	DR	DR	DR	DR	2,225	2,775	DR	DR	DR	DR	
2 x 6 Stud Grade	2	12	9	NR	NR	NR	NR	NR	NR	NR	NR	700	700	1,025	2,050	
			16	NR	NR	NR	NR	175	DR	825	1,150	2,225	2,225	2,675	DR	
			18	NR	NR	225	250	DR	DR	1,200	1,550	2,725	2,750	DR	DR	
	4	12	9	NR	NR	NR	NR	NR	DR	450	750	1,700	1,725	2,125	DR	
			16	NR	NR	DR	DR	DR	DR	1,050	1,400	DR	DR	DR	DR	
			18	NR	NR	300	DR	DR	DR	2,350	2,800	DR	DR	DR	DR	

For SF: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s

a. DR = Design Required

b. Straps shall be installed in accordance with manufacturer's recommendations.

c. NR = Not Required

Figure 4. Design Parameters for Portal Frame with QuickTie Cables



- 6.2 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^{xxii}

- 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.^{xxiii}
- 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.^{xxiv}

8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 QTS complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
- 8.1.1 Performance for use in buildings of light-frame construction and masonry is in accordance with the codes listed in **Section 4**.
 - 8.1.2 Compliance for use in buildings assigned to Seismic Design Categories A through E.
 - 8.1.3 Compliance for use in buildings located where basic design wind speed is less than or equal to 215 mph or the allowable stress design wind speed is less than or equal to 165 mph.
 - 8.1.4 Compliance for use as an alternative to the Portal Frame with Hold-Downs (PFH) detail as prescribed in IRC Section R602.10.6.2.
- 8.2 Any building code, regulation, and/or accepted engineering evaluations (i.e., research reports, Duly Authenticated Reports, etc.) that are 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 RDP/approved sources. DrJ is qualified^{xxv} to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which are also its areas of professional engineering competence.
- 8.4 Any regulation specific issues not addressed in this section are outside the scope of this report.

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, the more restrictive shall govern.



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 Test Reports for Evaluation of QuickTie System (QTS) and Quick Connectors for QuickTie Assembly's Tension Load Strength and Elongation Properties (Pre-load and 30+ Day Relaxation).
 - 10.1.2 Engineering calculations and Allowable Load Verification Reports on the QuickTie System (QTS) for Allowable Design Loads, prepared by Qualtim, Inc.
 - 10.1.3 Engineering report for QuickTie used in a portal frame application, prepared by Qualtim, Inc.
- 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 RDPs. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where pertinent, 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: 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.^{xxvi}
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for QTS on the DrJ Certification website.

11 Findings

- 11.1 As outlined in **Section 6**, QTS have performance characteristics that were tested and/or meet applicable regulations and 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, QTS shall be approved for the following applications:
 - 11.2.1 QTS and PFH are approved for use in Seismic Design Categories A through E.
 - 11.2.2 QTS and PFH are approved for use where the maximum allowable stress design wind speed is not more than 165 mph, or the maximum basic design wind speed is not more than 215 mph.
- 11.3 Unless exempt by state statute, when QTS 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.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from QuickTie™ Products, Inc.



11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10^{xxvii} are similar) in pertinent part states:

104.11 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. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

11.6 **Approved:**^{xxviii} Building regulations require that the building official shall accept Duly Authenticated Reports.^{xxix}

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 Agreements (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.^{xxx}

12 Conditions of Use

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

12.2 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.

12.3 Loads applied shall not exceed those recommended by the manufacturer as defined in this report.

12.4 Structural framing members (i.e., wood, masonry, concrete, steel) connected with the QTS and Quick Connectors 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.

12.5 Each QTS and/or PFH shipment shall contain the manufacturer installation instructions. A copy of the installation instructions must be available at the jobsite at all times during installation.

12.6 The QTS shall be installed by contractors trained and certified by QuickTie Products, Inc.

12.7 QTS and Quick Connectors 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.

12.8 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:

12.8.1 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.

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

12.8.3 These innovative products have an internal quality control program and a third-party quality assurance program.

12.8.4 At a minimum, these innovative products shall be installed per **Section 9** of this report.



- 12.8.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.
- 12.8.6 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.
- 12.8.7 The application of these innovative products 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.
- 12.9 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11,"* all of IBC Section 104, and IBC Section 105.4.
- 12.10 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).
- 12.11 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.

13 Identification

- 13.1 The innovative products listed in **Section 1.1** are 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.quicktieproducts.com.

14 Review Schedule

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

15 Approved for Use Pursuant to U.S. and International Legislation Defined in Appendix A

- 15.1 QuickTie System (QTS) Portal Frame with Hold-Downs (PFH) are included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.



Appendix A

1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies, and/or methods of construction that:
 - 1.1.1 Advance innovation,
 - 1.1.2 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
 - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize these innovative products to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
 - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to “*protect economic freedom and opportunity by promoting free and fair competition in the marketplace.*”
 - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies, and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
 - 1.2.3 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),^{xxxv} where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years^{xxxii} and/or a \$5,000,000 fine or 3 times the value of^{xxxiii} the Intellectual Property (IP) and Trade Secrets (TS).
 - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, Duly Authenticated Reports, and/or research reports prepared by approved agencies and/or approved sources.
 - 1.2.4 For new materials^{xxxiv} that are not specifically provided for in any regulation, 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.
 - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.^{xxxv}
 - 1.2.6 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 have been violated by an individual registered PE.
 - 1.2.7 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.^{xxxvi}



- 1.3 **Approved^{xxxvii} 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 that 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 testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.^{xxxviii} The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, 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 1707.1.^{xxxix}
- 1.4 **Approved 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, service, design, assembly, and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed^{xi} 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 agreement^{xii} (i.e., ANAB, International Accreditation Forum [IAF], etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation by:
- 1.6.1 A certification mark or listing of an approved certification agency,
 - 1.6.2 A test report from an approved testing laboratory,
 - 1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or
 - 1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed and sealed by a professional engineer or architect, licensed in Florida.
 - 1.6.5 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:
 - 1.6.5.1 A certification mark, listing or label from a commission-approved certification agency indicating that the product complies with the code,
 - 1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code,
 - 1.6.5.3 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,



- 1.6.5.4 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, or
- 1.6.5.5 A statewide product approval issued by the Florida Building Commission.
- 1.6.6 The [Florida Department of Business and Professional Regulation \(DBPR\)](#) website provides a listing of companies certified as a [Product Evaluation Agency](#) (i.e., EVLMiami 13692), a [Product Certification Agency](#) (i.e., CER10642), and as a [Florida Registered Engineer](#) (i.e., ANE13741).
- 1.7 **Approved by Miami-Dade County (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 County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to the 2018 Building Code of New Jersey in [IBC Section 1707.1 General](#),^{xlii} it states: *"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)"*.^{xliii} Furthermore N.J.A.C 5:23-3.7 states: *"Municipal approvals of alternative materials, equipment, or methods of construction."*
- 1.8.1 **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.
- 1.8.1.1 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 the above.
- 1.8.1.2 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 the above.
- 1.8.2 The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide *"reports of engineering findings."*
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#)^{xliv} and [Part 3280](#),^{xlv} the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:
- 1.9.1 *"All construction methods shall be in conformance with accepted engineering practices."*
- 1.9.2 *"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."*
- 1.9.3 *"The design stresses of all materials shall conform to accepted engineering practice."*



- 1.10 **Approval by US, Local and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.^{xlvi}
 - 1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept Duly Authenticated Reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.^{xlvi}
 - 1.10.2.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is in the ANAB directory.
 - 1.10.2.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.^{xlvi}
 - 1.10.3 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.^{xlix}
- 1.11 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 State that 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.
 - 1.11.2 **Approved:** The purpose of the 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 materials, designs, services, and/or methods of construction.
 - 1.11.3 ANAB is an IAF-MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.ⁱ
 - 1.11.4 Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.ⁱⁱ
- 1.12 Approval equity is a fundamental commercial and legal principle.ⁱⁱⁱ



Issue Date: February 18, 2022
Subject to Renewal: April 1, 2025

FBC Supplement to Report Number 1506-20

REPORT HOLDER: QuickTie™ Products, Inc.

1 Evaluation Subject

- 1.1 QuickTie System (QTS) Portal Frame with Hold-Downs

2 Purpose and Scope

- 2.1 Purpose
 - 2.1.1 The purpose of this Report Supplement is to show QTS, recognized in Report Number 1506-20, have also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.
- 2.2 *Applicable Code Editions*
 - 2.2.1 *FBC-B—20, 23: Florida Building Code – Building*
 - 2.2.2 *FBC-R—20, 23: Florida Building Code – Residential*

3 Conclusions

- 3.1 QTS, described in Report Number 1506-20, comply with the FBC-B and FBC-R and are subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:
 - 3.2.1 FBC-B Section 104.4 and Section 110.4 are reserved.
 - 3.2.2 FBC-R Section R104, Section R109, Section R602.10.6.2 and Figure R602.10.6.2 are reserved.

4 Conditions of Use

- 4.1 QTS, described in Report Number 1506-20, must comply with all of the following conditions:
 - 4.1.1 All applicable sections in Report Number 1506-20.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.



Notes

- i For more information, visit djrcertification.org or call us at 608-310-6748.
- ii <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702>
- iii 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/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>
- iv <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:-:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as
- v 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/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:-:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice
- vi <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:-:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies
- vii <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>
- viii https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency
- ix https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source
- x <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.
- xi <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/>
- xii <https://www.cbiteest.com/accreditation/>
- xiii <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104>:-:text=to%20enforce%20the%20provisions%20of%20this%20code
- xiv <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>:-:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved AND <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1>:-:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore
- xv <https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:-:text=the%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%20104.11
- xvi <https://iaf.eu/en/about-iaf-mia/#>:-:text=it%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
- xvii True for all ANAB accredited product evaluation agencies and all International Trade Agreements.
- xviii <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>
- xix 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.
- xx All references to the FBC-B and FBC-R are the same as the 2021 IBC and 2021 IRC unless otherwise noted in the Florida Supplement at the end of this report.
- xxi <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#labeled> AND <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled>
- xxii <https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4>
- xxiii <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
- xxiv <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
- xxv 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.
- xxvi See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.
- xxvii 2018 IFC Section 104.9
- xxviii 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.
- xxix <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>



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- xxx Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.
 - xxxi <http://www.drjengineering.org/AppendixC> AND <https://www.drjcertification.org/comell-2016-protection-trade-secrets>
 - xxxii <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>
 - xxxiii <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>
 - xxxiv <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>
 - xxxv IBC 2021, Section 1706.1 Conformance to Standards
 - xxxvi IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General
 - xxxvii See Section 11 for the distilled building code definition of **Approved**
 - xxxviii [Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES](#)
 - xxxix <https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>
 - xl [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)
 - xli [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)
 - xlii <https://up.codes/viewer/new-jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1>
 - xliii <https://www.nj.gov/dca/divisions/codes/codreg/ucc.html>
 - xliv <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>
 - xlv <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>
 - xlvi IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.
 - xlvi IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.
 - xlvi <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/>
 - xlix IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.
 - l <https://iaf.nu/en/about-iaf-mla/#:~:text=it%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>
 - li True for all ANAB accredited product evaluation agencies and all International Trade Agreements.
 - lii <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>