



Listing and Technical Evaluation Report™ A Duly Authenticated Report from an Approved Agency

Report No: 2405-119



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Subject to Renewal: January 1, 2026

X-Bracket System® by InSoFast®

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION Section: 07 70 00 - Roof and Wall Specialties and Accessories Section: 07 77 00 - Wall Specialties

1 Innovative Product Evaluated¹

1.1 X-Bracket Continuous Insulation System

2 Product Description and Materials

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



Figure 1. Installed X-Brackets

- 2.2 X-Bracket Continuous Insulation System is a composed of a matrix of individual X-Brackets that are designed to hold furring strips or girts parallel to any surface such as walls, ceilings, roofs and floors, for use on interior or exterior of wood, steel, concrete surfaces in a horizontal, sloped or vertical position.
- 2.2.1 Nails or screws can be used to secure X-Brackets to wood substrates.
- 2.2.2 Adhesives can be used to secure X-Brackets to steel or concrete surfaces.
- 2.2.2.1 The base of X-Brackets are ribbed for additional surface area.
- 2.2.3 The space created by the X-Bracket System can be filled with closed-cell spray foam or loose-fill insulation (i.e., mineral wool, fiberglass insulation, cellulose, etc.).
- 2.3 See **Figure 2** for available variations of the X-Bracket.

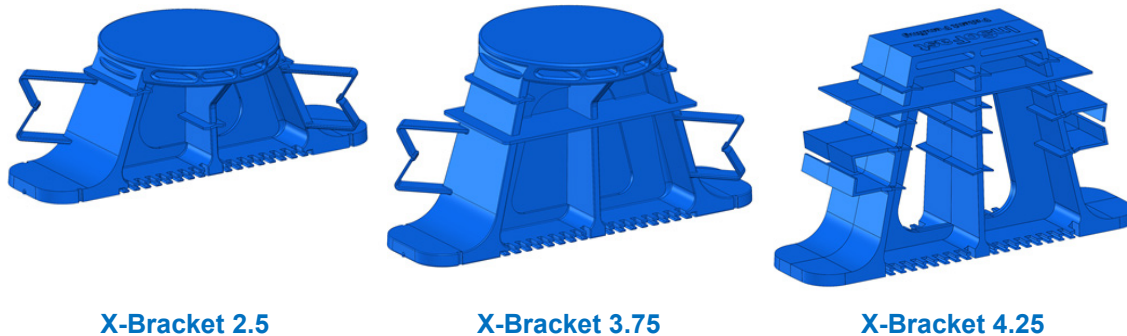


Figure 2. InSoFast X-Brackets - Isometric View

2.4 Product Dimensions

- 2.4.1 Overall Length:
- 2.4.1.1 7¹/₂" (for all variations)
- 2.4.2 Overall Width:
- 2.4.2.1 X-Bracket 2.5 and X-Bracket 3.75 have an overall width of 3¹/₂"
- 2.4.2.2 X-Bracket 4.25 has an overall width of 2"
- 2.4.3 Overall Height:
- 2.4.3.1 X-Bracket 2.5 has an overall height of 2¹/₂"
- 2.4.3.2 X-Bracket 3.75 has an overall height of 3³/₄"
- 2.4.3.3 X-Bracket 4.25 has an overall height of 4¹/₄"

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

3 Definitions

- 3.1 New Materials² 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 tests⁴ and/or engineering analysis.⁵
- 3.2 Duly authenticated reports⁶ and research reports⁷ are test reports and related engineering evaluations, which are written by an approved agency⁸ and/or an approved source.⁹
- 3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).¹⁰
- 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.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 Registered Design Professional (RDP).
 - 3.5.1 The Center for Building Innovation (CBI) is ANAB¹² ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce¹³ 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 writing¹⁴ 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 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.¹⁶ Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.¹⁷
- 3.9 Approval equity is a fundamental commercial and legal principle.¹⁸

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation¹⁹

4.1 Standards

- 4.1.1 *ASTM D198: Standard Test Methods of Static Tests of Lumber in Structural Sizes*
- 4.1.2 *ASTM D638: Standard Test Method for Tensile Properties of Plastics*
- 4.1.3 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials*
- 4.1.4 *ASTM D5961: Standard Test Method for Bearing Response of Polymer Matrix Composite Laminates*
- 4.1.5 *ASTM D7332: Standard Test Method for Measuring the Fastener Pull-through Resistance of a Fiber-Reinforced Polymer Matrix Composite*

4.2 Regulations

- 4.2.1 *IBC – 15, 18, 21: International Building Code®*
- 4.2.2 *IRC – 15, 18, 21: International Residential Code®*

5 Listed²⁰

- 5.1 Equipment, materials, products or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), approved agency (i.e., CBI and DrJ), and/or approved source (i.e., DrJ) or other organization 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 General

- 6.1.1 X-Brackets may be installed over substrates including cold-formed steel, masonry or concrete.
- 6.1.2 X-Brackets may be used in buildings of Type V construction in accordance with IBC.
- 6.1.3 X-Brackets provide the following when used to attach exterior cladding to the building envelope:
 - 6.1.3.1 Transverse load resistance
 - 6.1.3.2 Gravity load resistance for the weight of cladding materials

6.2 Product Axial Performance

- 6.2.1 X-Bracket was evaluated for axial performance
- 6.2.2 Allowable compressive and tensile strength are provided in **Table 1**.

Table 1. Allowable Axial Loads

Product	Compressive Strength (lb)	Tensile Strength ¹ (lb)
X-Bracket	2,010	590

SI: 1 lb = 4.448 N

1. Tensile strength may limit allowable loads due to uplift or wind loading for mechanical and adhesive attachment to wood or steel framing or solid surfaces such as concrete or steel.

6.3 Structural Performance

- 6.3.1 X-Bracket was evaluated for uplift performance (i.e., negative loads applied normal to the product) when installed with an approved adhesive or mechanically fastened with nails or screws.
 - 6.3.1.1 *Approved Adhesives:*
 - 6.3.1.1.1 Loctite® PL Premium®
 - 6.3.1.1.2 LaPage® PL Premium®
 - 6.3.1.1.3 Bostic HD Construction Adhesive
 - 6.3.1.2 Allowable uplift capacities are provided in **Table 2**.



Table 2. Allowable Uplift Loads for Various Substrates and Connection Methods¹

Product	Substrate	Connection Method	Quantity	Allowable Uplift Load (lb)	
X-Bracket	Wood (SG – 0.42)	Ring Shank Framing Nail ⁵	4 ²	215	
			2 ³	110	
		#8 or Larger Construction Screw	2	330	
	Cold-Formed Steel (CFS) Stud, 20-gauge (f _y – 33 ksi)	#12 Self-Drilling Screw ³	2	250	
			Steel	N/A	385
				Concrete	N/A

SI: 1 lb = 4.448 N

- Fastener connection at the base. Minimum penetration for the listed fasteners is 2" for installation into wood or the steel thickness plus three (3) threads for installation into CFS studs.
- Minimum edge distance shall be 0.5".
- Minimum edge distance shall be 1.0" (on the centerline of the product).
- ³/₈" bead size applied in a circular pattern.
- Minimum penetration shall be 1.5".

6.3.2 Allowable wind pressure and basic wind speed for the connection methods listed in **Table 2** are provided in **Table 3**.

Table 3. Allowable Wind Pressure and Basic Wind Speed for Various Connection Methods for the X-Bracket^{1,2}

Substrate	Connection Method	Horizontal Fastener Spacing, sp _h (in o.c.)	Vertical Fastener Spacing, sp _v (in o.c.)	Allowable Uplift Capacity per X-Bracket (lb)	Allowable Wind Pressure (psf)	Basic Wind Speed (mph)		
						Exposure B	Exposure C	Exposure D
Wood (SG = 0.42)	(4) 0.120" Framing Nail	16	16	150	84	222	190	176
			24		56	181	155	144
			36		38	149	128	118
			48		28	128	110	102
		24	16		56	181	155	144
			24		38	149	128	118
			36		25	121	104	96
			48		19	105	90	84



Table 3. Allowable Wind Pressure and Basic Wind Speed for Various Connection Methods for the X-Bracket^{1,2}

Substrate	Connection Method	Horizontal Fastener Spacing, sp _h (in o.c.)	Vertical Fastener Spacing, sp _v (in o.c.)	Allowable Uplift Capacity per X-Bracket (lb)	Allowable Wind Pressure (psf)	Basic Wind Speed (mph)		
						Exposure B	Exposure C	Exposure D
Wood (SG = 0.42) Continued	(2) 0.120" Framing Nail	16	16	75	42	157	134	124
			24		28	128	110	102
			36		19	105	90	84
			48		14	90	78	72
		24	16		28	128	110	102
			24		19	105	90	84
			36		13	87	75	69
			48		9	73	62	58
	(2) #8 Construction Screw or (2) #10 Construction Screw	16	16	330	186	330	283	262
			24		124	269	231	214
			36		83	220	189	175
			48		62	190	163	151
		24	16		124	269	231	214
			24		83	220	189	175
			36		55	179	154	142
			48		41	155	133	123



Table 3. Allowable Wind Pressure and Basic Wind Speed for Various Connection Methods for the X-Bracket^{1,2}

Substrate	Connection Method	Horizontal Fastener Spacing, sp_h (in o.c.)	Vertical Fastener Spacing, sp_v (in o.c.)	Allowable Uplift Capacity per X-Bracket (lb)	Allowable Wind Pressure (psf)	Basic Wind Speed (mph)		
						Exposure B	Exposure C	Exposure D
CFS Stud 20-gauge ($F_y = 33$ ksi)	(2) #8 Self-Drilling Screw	16	16	180	101	267	223	205
			24		68	219	183	168
			36		45	178	149	137
			48		34	155	130	119
		24	16		68	219	183	168
			24		45	178	149	137
			36		30	145	122	112
			48		23	127	107	98
	(2) #10 Self-Drilling Screw	16	16	220	124	295	248	227
			24		83	242	203	186
			36		55	197	165	151
			48		41	170	142	130
		24	16		83	242	203	186
			24		55	197	165	151
			36		37	161	135	124
			48		28	140	118	108
	(2) #12 Self-Drilling Screw	16	16	250	141	287	246	228
			24		94	234	201	186
			36		63	192	164	152
			48		47	166	142	132
		24	16		94	234	201	186
			24		63	192	164	152
			36		42	157	134	124
			48		31	135	115	107



Table 3. Allowable Wind Pressure and Basic Wind Speed for Various Connection Methods for the X-Bracket^{1,2}

Substrate	Connection Method	Horizontal Fastener Spacing, sp_h (in o.c.)	Vertical Fastener Spacing, sp_v (in o.c.)	Allowable Uplift Capacity per X-Bracket (lb)	Allowable Wind Pressure (psf)	Basic Wind Speed (mph)		
						Exposure B	Exposure C	Exposure D
Steel	Adhesive	16	16	385	217	356	305	283
			24		144	290	249	230
			36		96	237	203	188
			48		72	205	176	163
		24	16		144	290	249	230
			24		96	237	203	188
			36		64	193	166	153
			48		48	168	144	133
Concrete	Adhesive	16	16	480	270	397	340	315
			24		180	324	278	257
			36		120	265	227	210
			48		90	229	197	182
		24	16		180	324	278	257
			24		120	265	227	210
			36		80	216	185	172
			48		60	187	160	149

SI: 1 in = 25.4 mm, 1 lb = 4.448 N, 1 psf = 0.0479 kPa, 1 mph = 1.61 km/hr

- Based on a building height of 60-feet, $GC_p = -1.4$ for Zone 5 and an Effective Wind Area of 10ft², Topographic Factor: $K_{zt} = 1.0$, Ground Elevation Factor: $K_e = 1.0$, Internal Pressure Coefficient, $GC_{pi} = +/- 0.18$ for an enclosed building, $K_d = 0.85$ for Component and Cladding
- Allowable stress design wind speed shall be determined in accordance with IBC Section 1609.3.1: $V_{asd} = V_{ult} \sqrt{0.6}$.

6.3.3 Allowable withdrawal strength for fasteners when installed into the top face of X-Bracket are provided in **Table 4**.

Table 4. Allowable Fastener Properties when Installed into X-Bracket^{1,2}

Product	Fastener	Withdrawal (lb)
X-Bracket	#8 Construction Screw	195
	#10 Construction Screw	205
	#12 Self-Drilling Screw	190

SI: 1 lb = 4.45 N

- Fastener installed into the double top face of X-Bracket should be of sufficient length to penetrate at least 1" into the double top face of the X-Bracket.
- See **Figure 3** for flange and top face location. Fastener shall not be installed within 1/4" of the edge of the double top face.

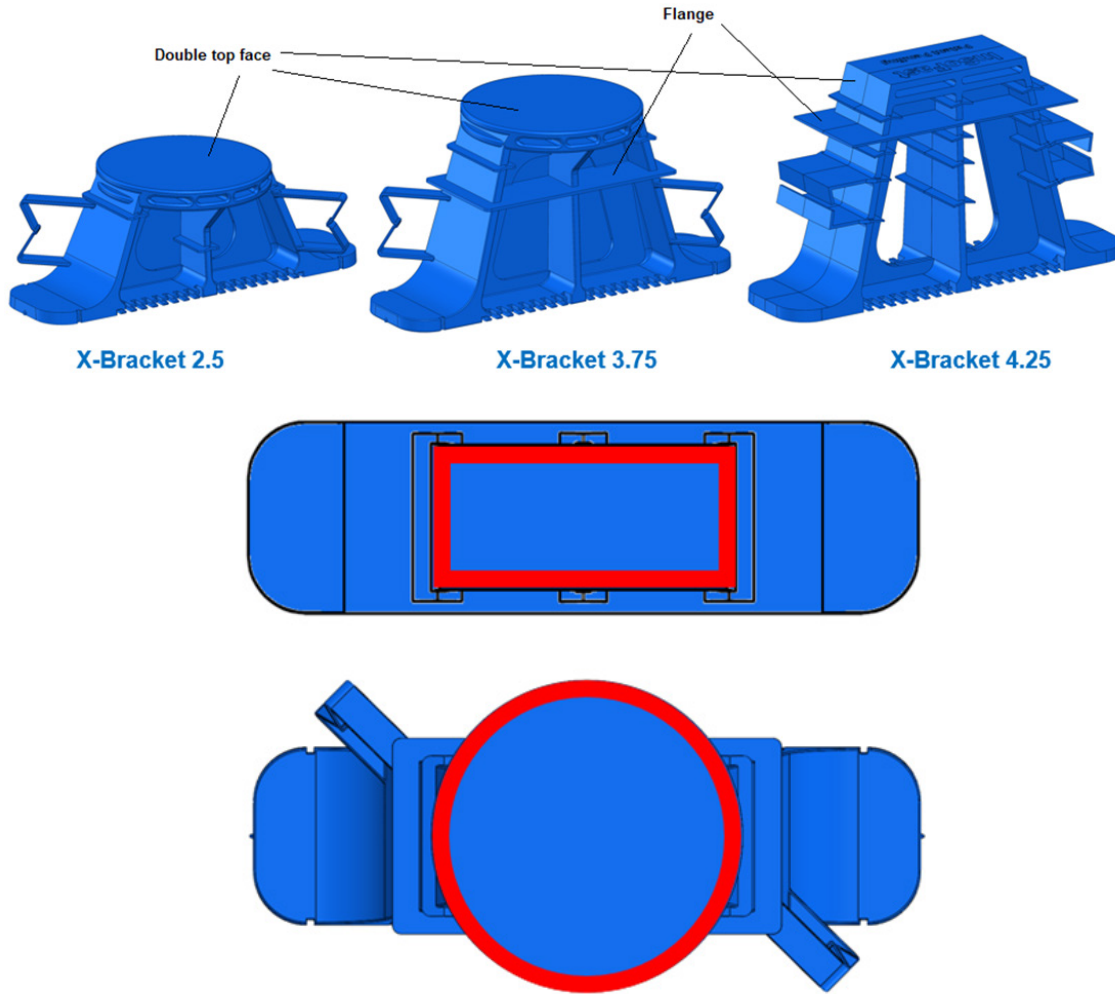


Figure 3. Minimum Edge Distances ($1/4$) for Fasteners Installed into the Double Top Face

6.3.4 Allowable lateral resistance for fasteners when installed into X-Bracket are provided in **Table 5**.

Table 5. Allowable Lateral Resistance X-Bracket²

Product	Substrate	Connection Method ¹	Description	Lateral Load (lb)			
X-Bracket	Wood (SPF, SG =0.42)	0.120" x 3" Framing Nail or 0.120" x 3" Ring Shank Nail	4 nails total	325			
			2 nails total	245			
	CFS Stud 20-gauge (F _y = 33 ksi)	#8-18 x 1 1/4" Self-Drilling Screw #10-18 x 1 1/4" Self-Drilling Screw #12-18 x 1 1/4" Self-Drilling Screw	2 screws total	110			
				Steel	Adhesive	3/8" bead size applied in a circular pattern	120
				Concrete			170

SI: 1 lb = 4.448 N

1. Connection method refers to the bottom of the bracket to the substrate.

2. Furring strips connected at the top of X-Bracket shall be minimum of two (2) #8 or #10 screws of sufficient length to penetrate 1" through the double top face.



- 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 Performance²¹

- 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 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 X-Bracket complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
- 8.1.1 Structural under transverse load conditions for wind loading in accordance with general engineering principles
- 8.1.2 Connection performance in accordance with general engineering principles
- 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 qualified²⁴ 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.
- 9.3 *General*
- 9.3.1 Inspect the substrate for the readiness to install the brackets.
- 9.3.2 When installing onto steel structures via approved adhesives, the surface shall be wiped clean of any grease or debris with an acetone solution prior to adhering the brackets.
- 9.3.2.1 Adhesive shall be applied per the manufacturer instructions.
- 9.3.3 When installing onto concrete and CMU substrates via approved adhesives, the surface shall be wiped clean of any debris prior to adhering the brackets.
- 9.3.4 When installing onto wood substrates via fasteners, make certain not to strip or excessively tighten the fasteners. Adhere to all fastener specifications including minimum edge and end distances, and drill speeds as provided by the fastener manufacturer.
- 9.3.4.1 Do not use impact fasteners or impact power tools when installing X-Bracket with nails or screws.



9.3.5 *Securement of Insulation:*

- 9.3.5.1 Application of spray foam shall be in accordance with manufacturer instructions.
- 9.3.5.2 Securement of loose-fill insulation shall be in accordance with manufacturer instructions.

9.3.6 *Cladding Fastening:*

- 9.3.6.1 Secure furring strips onto the double top face of the X-Brackets per project plans.
- 9.3.6.2 Secure cladding onto furring strips per manufacturer instructions.

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 Axial testing in general accordance with ASTM D198
 - 10.1.2 Uplift testing in general accordance with ASTM D1761
 - 10.1.3 Withdrawal testing of listed fasteners in general accordance with ASTM D1761
 - 10.1.4 Head pull-through testing of listed fasteners in general accordance with ASTM D1761
 - 10.1.5 Lateral shear testing on the connection at the base and at the double top face in general accordance with ASTM D1761
- 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 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: 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.²⁵
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for X-Bracket on the DrJ Certification website.



11 Findings

- 11.1 As outlined in **Section 6**, X-Bracket has performance characteristics that were tested and/or meet applicable regulations and is 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, X-Bracket shall be approved for the following applications:
- 11.2.1 Cladding supports for use with exterior insulated walls.
- 11.2.1.1 X-Brackets function as a shim between exterior cladding supports (furring strips) and the structural backer (sheathed light-framed wood walls, cold-formed steel walls, concrete walls, etc.).
- 11.2.1.2 X-Brackets also function as a thermal break to assist in energy performance of the wall system.
- 11.3 Unless exempt by state statute, when X-Bracket 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 InSoFast, LLC.
- 11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10²⁶ 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:**²⁷ Building regulations require that the building official shall accept duly authenticated reports.²⁸
- 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.²⁹

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 Structural substrate shall be designed to support the required loads in accordance with the application sections in IBC Chapter 16 and IRC Section R301.



- 12.4 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:
- 12.4.1 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.
 - 12.4.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 12.4.3 This innovative product has an internal quality control program and a third-party quality assurance program.
 - 12.4.4 At a minimum, this innovative product shall be installed per **Section 9** of this report.
 - 12.4.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.
 - 12.4.6 This innovative product has 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.
 - 12.4.7 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.
- 12.5 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.
- 12.6 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).
- 12.7 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 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.
- 13.2 Additional technical information can be found at www.insofast.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 is 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
 - 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 this innovative product 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),³⁰ where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years³¹ and/or a \$5,000,000 fine or 3 times the value of³² 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 materials³³ 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.³⁴
 - 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 104.11.³⁵



- 1.3 **Approved³⁶ 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.³⁷ 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 1707.1.³⁸
- 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 deemed³⁹ 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 agreement⁴⁰ (i.e., ANAB, International Accreditation Forum also known as 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](#),⁴¹ 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)”*.⁴² 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](#)⁴³ and [Part 3280](#),⁴⁴ 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.⁴⁵
 - 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.⁴⁶
 - 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.⁴⁷
 - 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.⁴⁸
- 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.⁴⁹
 - 1.11.4 Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.⁵⁰
- 1.12 Approval equity is a fundamental commercial and legal principle.⁵¹



Notes

- 1 For more information, visit drjcertification.org or call us at 608-310-6748.
- 2 <https://up.codes/viewer/wyoming/ibc-2021/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/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>
- 4 <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
- 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/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:-:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice
- 6 <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
- 7 <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>
- 8 https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency
- 9 https://up.codes/viewer/wyoming/ibc-2021/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.cbiteest.com/accreditation/>
- 13 <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104>:-:text=to%20enforce%20the%20provisions%20of%20this%20code
- 14 <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>:-:text=Where%20the%20alternative%20material%20design%20or%20method%20of%20construction%20is%20not%20approved%20the%20building%20official%20shall%20respond%20in%20writing%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%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%20stating%20the%20reasons%20therefore
- 15 <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
- 16 <https://iaf.nu/en/about-iaf>:-: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%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 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.
- 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#abeled>
- 21 <https://up.codes/viewer/colorado/ibc-2021/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%20livable%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 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.
- 25 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.
- 26 [2018 IFC Section 104.9](#)
- 27 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.
- 28 <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>
- 29 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.
- 30 <http://www.drjengineering.org/AppendixC> AND <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>



31 <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>

32 <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>

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

34 [IBC 2021, Section 1706.1 Conformance to Standards](#)

35 [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#)

36 **See Section 11** for the distilled building code definition of **Approved**

37 [Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES](#)

38 <https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>

39 [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)

40 [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)

41 <https://up.codes/viewer/new-jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1>

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

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

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

45 [IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.](#)

46 [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.](#)

47 <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/>

48 [IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.](#)

49 <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>

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

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