Listing

A Duly Authenticated Report from an Approved Agency

Report No: 2411-107

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OX-IS™ Reduced Fastener Performance

Trade Secret Report Holder:

Amrize Building Envelope, LLC

Phone: 800-345-8881 Website: www.oxengineeredproducts.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES
Section: 06 12 00 - Structural Panels
Section: 06 12 19 - Shear Wall Panels
Section: 06 16 00 - Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION
Section: 07 21 00 - Thermal Insulation
Section: 07 25 00 - Water-Resistive Barriers/Weather Barriers
Section: 07 27 00 - Air Barriers

1 Innovative Product Evaluated[1]

1.1 1" OX-IS Structural Insulation

2 Product Description and Materials

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

Figure 1. OX-IS Structural Insulation Sheathing Panel

2.2 OX-IS is an insulated structural sheathing panel consisting of a proprietary fibrous sheathing board laminated to one side of a proprietary rigid Foam Plastic Insulating Sheathing (FPIS) panel.

2.2.1 The proprietary fibrous sheathing is made of specially treated plies that are pressure-laminated with a water resistant adhesive.

2.2.1.1 A protective polymer layer is applied on both sides. The surface finish consists of a foil facer on one or both sides.

2.2.1.2 The rigid foam plastic insulating sheathing component is a proprietary polyisocyanurate (polyiso) insulation sheathing, which may have facings on one or both sides and conforms to ASTM C1289, Type 1, Class 1.

2.3 *Material Availability*

2.3.1 *Foam Thickness:*

2.3.1.1 $^1/_2$" (12.7 mm) to 1" (25.4 mm)

2.3.2 *Standard Product Width:*

2.3.2.1 48" (1,219 mm)

2.3.3 *Standard Product Lengths:*

2.3.3.1 96" (2,438 mm)

2.3.3.2 108" (2,743 mm)

2.3.3.3 120" (3,048 mm)

2.4 OX-IS assemblies evaluated in this report are wood-framed wall assemblies sheathed with 1" thick

2.5 OX-IS structural insulating sheathing panel on the exterior side, and with or without a $^1/_2$" lightweight gypsum wallboard (GWB) on the interior side.

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

3 Definitions

3.1 New Materials[2] are defined as building materials, equipment, appliances, systems or methods of construction not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.[3] The design strengths and permissible stresses shall be established by tests[4] and/or engineering analysis.[5]

3.2 Duly Authenticated Reports[6] and Research Reports[7] are test reports and related engineering evaluations, which are written by an approved agency[8] 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 ANAB[12] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[13] the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing[14] stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept Duly Authenticated Reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs or methods of construction.[15]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory 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 Evaluation[19]

4.1 *Standards*

4.1.1 *ANSI/AWC SDPWS: Special Design Provisions for Wind and Seismic*

4.1.2 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.1.3 *ASTM D7989: Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels*

4.1.4 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.2 Structural performance for shear wall assemblies used as lateral force resisting systems in Seismic Design Categories A through F, have been tested and evaluated in accordance with the following standards:

4.2.1 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.2.2 *ASTM D7989: Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels*

4.2.3 *ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

4.2.4 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.2.5 *ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*

4.2.5.1 ASTM D7989 is accepted engineering practice used to establish Seismic Design Coefficients (SDCs). Test data generated by ISO/IEC 17025 approved agencies and/or professional engineers and all associated professional engineering evaluations which use ASTM D7989 as their basis, are defined as intellectual property and/or trade secrets and are also defined as an Independent Design Review (i.e., Listings, certified reports, duly authenticated reports from approved agencies and/or research reports prepared by approved agencies and/or approved sources).

5 Listed[20]

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 *Structural Applications*

6.1.1 *General Provisions:*

6.1.1.1 Except as otherwise described in this report, OX-IS shall be installed in accordance with the applicable building codes using the provisions set forth herein for the design and installation of WSP.

6.1.1.2 OX-IS shall be permitted to be designed in accordance with SDPWS for the design of shear walls using the methods set forth therein, and subject to the SDPWS boundary conditions, except as specifically allowed in this report.

6.1.1.3 Anchorage for in-plane shear shall be provided to transfer the induced shear force into and out of each shear wall.

6.1.1.3.1 For wind design, anchor bolt spacing shall not exceed 6' o.c.

6.1.1.3.2 For seismic design, anchor bolt spacing shall not exceed 4' o.c.

6.1.1.4 The maximum aspect ratio for OX-IS shall be 2:1 when designed and installed in accordance with this report.

6.1.1.4.1 A maximum aspect ratio for OX-IS of 4:1 is permitted when OX-IS is designed and installed in accordance with Report Number 0804-01.

6.1.1.5 All panel edges shall be blocked with a minimum 2" nominal lumber.

6.1.1.6 Fasteners may be countersunk beneath the outer surface of the foam plastic sheathing layer.

6.1.1.7 Installation is permitted for single top plate (advanced framing method) or double top plate applications.

6.1.2 *Performance-Based Wood-Framed Construction:*

6.1.2.1 OX-IS wall assemblies designed as shear walls are permitted to resist lateral wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 1**.

Table 1. Wind Allowable Unit Shear Capacity for Light-Frame Wood Walls[5] Sheathed with OX-IS

Structural Sheathing Product	Structural Sheathing Thickness (in)	Maximum Fastener Spacing[1,2,3] (edge:field), (in)	GWB Thickness (in)	GWB Fastener[4] Spacing (edge:field), (in)	Allowable Unit Shear Capacity (plf)
OX-IS	1"	4.5:4.5 o.c.	-	-	210
	1"	4.5:4.5 o.c.	1/2"	8:8 o.c.	295

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Unless otherwise stated, OX-IS attached to wood framing with minimum 16-gauge, 7/16" crown, galvanized, staples shall penetrate a minimum of 1.0" into the stud.
2. Fasteners are to be installed with the crown parallel to the framing.
3. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the panel surface. Alternately, fastener heads are permitted to be overdriven into the foam portion of the panel with no reduction in shear capacities.
4. Where applicable, GWB shall be attached with minimum #6 type W or S screws 1 1/4" long with a minimum edge distance of 3/8".
5. Maximum stud spacing shall be 16" o.c.

6.1.2.2 OX-IS wall assemblies designed as shear walls are permitted to resist seismic load forces using the seismic allowable unit shear capacities set forth in **Table 2** when seismic design is required in accordance with the applicable building code.

Table 2. Seismic Allowable Unit Shear Capacity for Light-Frame Wood Walls[5] Sheathed with OX-IS

Structural Sheathing Product	Product Thickness (in)	Maximum Fastener Spacing[1,2,3] (edge:field), (in)	GWB Thickness (in)	GWB Fastener[4] Spacing (edge:field), (in)	Seismic Allowable Unit Shear Capacity (plf)	Apparent Shear Stiffness, G_a (kips/in)
OX-IS	1"	4.5:4.5 o.c.	-	-	170	6.3
	1"	4.5:4.5 o.c.	1/2"	8:8 o.c.	235	15.2

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m, 1 kips/in = 175.1 kN/m

1. Unless otherwise stated, OX-IS attached to wood framing with minimum 16-gauge, 7/16" crown, galvanized, staples shall penetrate a minimum of 1.0" into the stud.
2. Fasteners are to be installed with the crown parallel to the framing and spaced a maximum of 3" o.c. at the panel edges and 3" o.c. in the field.
3. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the panel surface. Alternately, fastener heads are permitted to be overdriven into the foam portion of the panel, at a maximum such that they are flush with the structural backer material, with no reduction in shear capacities.
4. Where applicable, GWB shall be attached with minimum #6 type W or S screws 1 1/4" long with a minimum edge distance of 3/8".
5. Maximum stud spacing shall be 16" o.c.

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[21]

7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.[22]

7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.[23]

8 Installation

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

8.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.

8.3 OX-IS may be installed vertically or horizontally over studs, with framing that has a nominal thickness of not less than 2" (50.8 mm) and spaced a maximum of 16" (406 mm) o.c.

8.4 Sheathing joints shall be butted at framing members, and all panel edges shall be blocked.

8.4.1 A single row of fasteners must be applied to each panel edge into the stud or blocking below.

8.4.2 Do not tack product to framing, but fasten each panel completely after fastening begins.

8.5 Where hold-down straps are used, install structural sheathing first, remove foam at the strap location, then install the strap over the face of the structural sheathing backer and attach per the manufacturer installation instructions.

8.6 *OX-IS Fastening Details*

8.6.1 Where used, always fasten staples parallel to the framing member.

8.6.2 Minimum $^{7}/_{16}$" crown by 2" leg, 16-gauge, galvanized staples with a 1.0" minimum embedment into the stud unless otherwise stated in **Section 6**.

8.6.3 Fastener spacing shall be as shown in **Section 6**.

8.7 *GWB Fastening Details*

8.7.1 Fasteners shall be installed with a nominal edge distance of $^{3}/_{8}$" (9.5 mm) for GWB.

8.7.2 Where required, GWB shall be a minimum $^{1}/_{2}$" thickness and shall be attached with the following:

8.7.2.1 #6 x $1^{1}/_{4}$" Type W or S screws

8.7.3 Fastener spacing shall be as shown in **Section 6**.

8.8 *Treatment of Joints*

8.8.1 OX-IS sheathing joints must be butted at framing members, and a single row of fasteners must be applied to each panel edge into the stud below.

8.8.1.1 Install staples parallel to framing.

8.9 *Window Treatments*

8.9.1 OX-IS must be installed with appropriate flashing and counter flashing in conformance with accepted building standards and in compliance with local building codes and the flashing manufacturer installation instructions.

9 Substantiating Data

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

9.1.1 Lateral wall testing performed in accordance with ASTM E564

9.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources and/or RDPs. Accuracy of external test data and resulting analysis is relied upon.

9.3 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.

9.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this Duly Authenticated Report, may be dependent upon published design properties by others.

9.5 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[24]

9.6 Where additional condition of use and/or regulatory compliance information is required, please search for OX-IS on the DrJ Certification website.

10 Findings

10.1 As outlined in **Section 6**, OX-IS has performance characteristics that were tested and/or meet applicable regulations and is suitable for use pursuant to its specified purpose.

10.2 When used and installed in accordance with this Duly Authenticated Report and the manufacturer installation instructions, OX-IS shall be approved for the following applications:

10.2.1 Use to resist wind loading and seismic loading in accordance with the applicable building codes for light-frame wood wall assemblies.

10.3 Unless exempt by state statute, when OX-IS 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.

10.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Amrize Building Envelope, LLC

10.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10[25] 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.

10.6 **Approved**:[26] Building regulations require that the building official shall accept Duly Authenticated Reports.[27]

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

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

10.6.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

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

10.8 Through the IAF Multilateral 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.[28]

11 Conditions of Use

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

11.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

11.3 As listed herein, OX-IS shall not be used:

11.3.1 As a nailing base for claddings, trim, windows, or doors.

11.3.1.1 Fastening through OX-IS into the framing may be acceptable.

11.3.2 To resist horizontal loads from concrete and masonry walls.

11.3.2.1 When used behind masonry, devices such as masonry ties shall be used to transfer the load to the main force resisting system.

11.4 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.

11.5 Allowable shear loads shall not exceed the values in **Table 1** for wind loads or **Table 2** for seismic loads.

11.6 All panel edges shall be supported by nominal 2x wall framing or solid blocking.

11.7 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:

11.7.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.

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

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

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

11.7.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.

11.7.6 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.

11.7.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2 and any other regulatory requirements that may apply.

11.8 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.

11.9 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).

11.10 The actual design, suitability and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

12 Identification

12.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number and other information to confirm code compliance.

12.2 Additional technical information can be found at www.oxengineeredproducts.com/product/ox-is/.

13 Review Schedule

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

13.2 For information on the status of this report, please contact DrJ Certification.

Notes

1 For more information, visit www.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.cbitest.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%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

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-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

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#labeled

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

23 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur

24 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

25 2018 IFC Section 104.9

26 Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

27 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1

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