Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1608-04

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Brace-Plate™

Trade Secret Report Holder:

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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

1 Innovative Product Evaluated[1]

1.1 Brace-Plate

2 Product Description and Materials

2.1 Brace-Plate is a proprietary application of DRYline TSX® Structural Sheathing brands manufactured by Fibre Converters, Inc.

2.1.1 The proprietary application consists of DRYline TSX combined with:

2.1.1.1 Polyisocyanurate Rigid Foam Insulation (polyiso);

2.1.1.2 Extruded Polystyrene Rigid Foam Insulation (XPS); and

2.1.1.3 Expanded Polystyrene (EPS) or Graphite Infused Expanded Polystyrene (GPS)

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

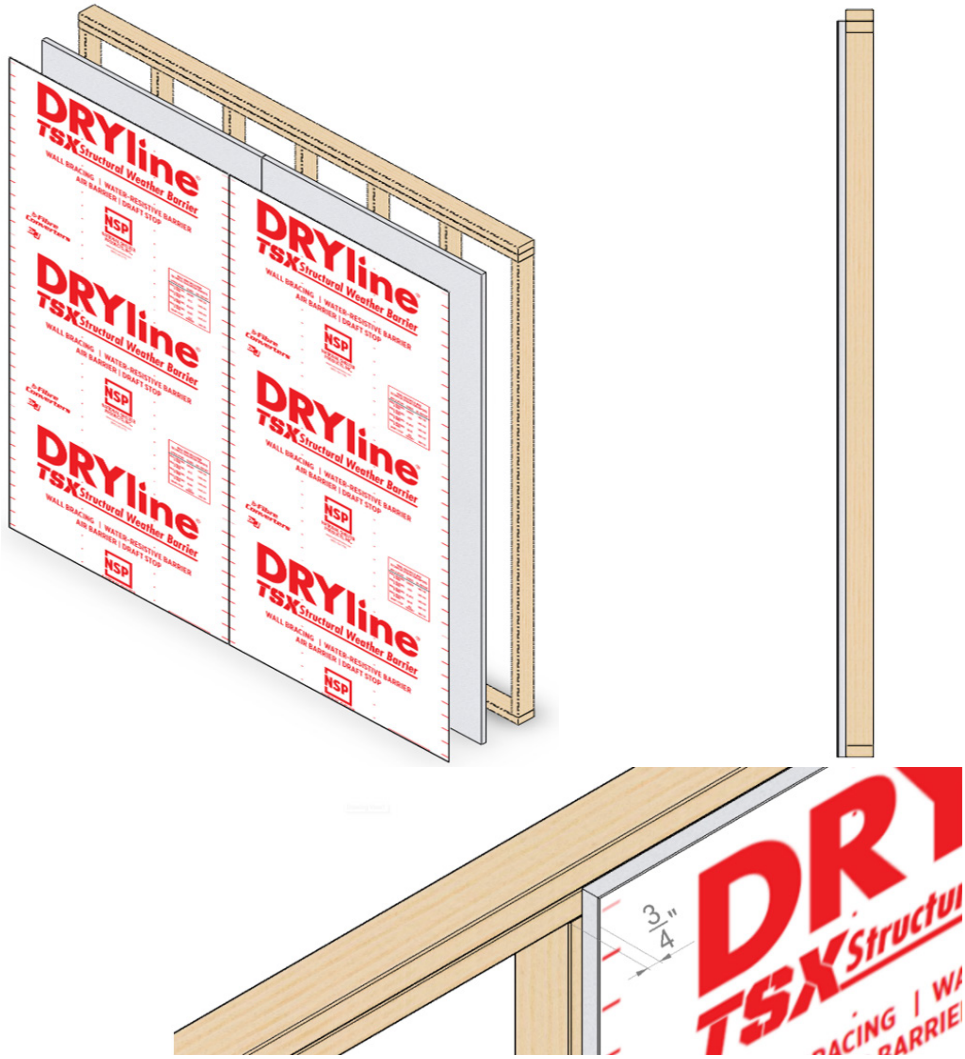

Figure 1. Brace-Plate Wall Assembly - DRYline TSX Red Shown

2.3 The Brace-Plate wall assembly is comprised of the following materials:

2.3.1 Fibre Converters Red or Blue DRYline TSX Structural Sheathing

2.3.1.1 Structural sheathing is installed over the foam panels in accordance with **Section 9** and shall be flush with the edge of the bottom plate.

2.3.2 One of the following Foam Plastic Insulating Sheathing (FPIS):

2.3.2.1 $^3/_4$" or thinner polyiso conforming to ASTM C1289

2.3.2.2 1" or thinner XPS, EPS, or GPS conforming to ASTM C578

2.3.2.3 FPIS shall be mechanically fastened to framing in accordance with **Section 9**.

2.3.3 Wood framing members with a minimum published specific gravity of 0.42

2.3.3.1 Nominal 2 x 4 wood studs and wood plates fastened in accordance with IBC Section 2304.10.2[2] or IRC Section R602.3

2.3.3.2 16" o.c. stud spacing

2.3.4 *Gypsum Wallboard (GWB):*

2.3.4.1 Minimum 1/2" lightweight GWB conforming to ASTM C1396 installed on the interior side of the wall assembly in accordance with **Section 6** and **Section 9**.

2.4 *Material Availability*

2.4.1 *Standard Product Width:*

2.4.1.1 48" (1,219 mm)

2.4.1.2 48 3/4" (1,238 mm)

2.4.2 *Standard Product Length:*

2.4.2.1 96" (2,438 mm)

2.4.2.2 108" (2,743 mm)

2.4.2.3 120" (3,048 mm)

2.4.3 Other sizes are available by request.

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

3 Definitions[3]

3.1 New Materials[4] 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.[5] The design strength and permissible stresses shall be established by tests[6] and/or engineering analysis.[7]

3.2 Duly authenticated reports[8] and research reports[9] are test reports and related engineering evaluations that are written by an approved agency[10] and/or an approved source.[11]

3.2.1 These reports utilize intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secretes under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[12]

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

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[13]

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB[14] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[15] 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[16] 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.[17]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.[18] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[19] and can be used in any country that is an MLA signatory found at this link: https://iaf.nu/en/recognised-abs/

3.9 Approval equity is a fundamental commercial and legal principle.[20]

4 Applicable Local, State, and Federal Approvals; Standards; Regulations[21]

4.1 *Local, State, and Federal*

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, Texas Department of Insurance, and Wichita.[22]

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.[23]

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[24] and Part 3280[25] pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 *Regulations*

4.2.1 *IBC – 18, 21, 24: International Building Code®*

4.2.2 *IRC – 18, 21, 24: International Residential Code®*

4.2.3 *IECC – 18, 21, 24: International Energy Conservation Code®*

4.3 *Standards*

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

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

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

5 Listed[26]

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

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 *General*

6.1.1 Brace-Plate is used as wall sheathing in buildings constructed in accordance with the IRC and IBC for light-frame wood construction.

6.1.2 Brace-Plate is used as structural wall sheathing to provide lateral load resistance (wind) for braced wall panels used in light-frame wood construction.

6.1.3 Brace-Plate panels are permitted to be used as wall sheathing in buildings constructed in accordance with the IBC requirements for Type V light-frame construction.

6.2 *Structural Applications*

6.2.1 *General Structural Provisions:*

6.2.1.1 Except as otherwise described in this report, Brace-Plate shall be installed in accordance with the applicable building codes listed in **Section 4**, using the provisions set forth herein for the design and installation of WSP.

6.2.1.1.1 Brace-Plate is permitted to be designed in accordance with SDPWS for the design of shear walls using the methods set forth therein, including the perforated shear wall methodology and subject to the SDPWS boundary conditions, except as specifically allowed in this report.

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

6.2.1.2.1 For wind design, anchor bolt spacing shall not exceed 6' o.c. (1,829 mm).

6.2.1.3 The maximum aspect ratio for Brace-Plate shall be 4:1.

6.2.1.4 The minimum full height panel width shall be 24" (610 mm).

6.2.1.5 All panel edges shall be blocked with a minimum 2" (51 mm) nominal lumber.

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

6.2.2 *Prescriptive IRC Bracing Applications:*

6.2.2.1 The following provisions are permitted:

6.2.2.1.1 Brace-Plate may be used on braced wall lines as an equivalent alternative to Method WSP of the IRC, when installed in accordance with IRC Section R602.10 and this report.

6.2.2.1.2 Brace-Plate may be used to brace walls of buildings as an alternative to the Continuous Wall Bracing provisions of IRC Section R602.10.4.

6.2.2.1.3 Required braced wall panel lengths for Brace-Plate shall be as determined by the equivalency factor shown in **Table 1**, IRC Table R602.10.3(1) and IRC Table R602.10.3(2), including all footnotes. Brace-Plate tested equivalency factors in **Table 1** allow the user to determine the length of bracing required by multiplying the factor from **Table 1**, by the length shown in the WSP or CS columns in IRC Table R602.10.3(1), as modified by all applicable factors in IRC Table R602.10.3(2).

Table 1. Brace-Plate Braced Wall Line Length Equivalency Factors Based on Equivalency Testing for Use with the IRC

Product[2,3]	Maximum Stud Spacing (in)	Fastener Type	Fastener Spacing	Wind SPF Framing Brace-Plate Tested Equivalency Factors[1] to IRC WSP or CS-WSP
Brace-Plate[4] (Blue DRYline TSX installed over 3/4" or Thinner Polyiso, or 1" or Thinner XPS, EPS, or GPS)	16 o.c.	1 3/4" x 0.120" Ring Shank Galvanized Roofing Nail, or 15/16" Crown, 1 3/4" Leg, 16-gauge Galvanized Staple	3:3	0.98
Brace-Plate (Red DRYline TSX Installed Over 1/2" or Thinner Polyiso)	16 o.c.	1 3/4" x 0.120" Ring Shank Galvanized Roofing Nail, or 15/16" Crown, 1 3/4" Leg, 16-gauge Galvanized Staple	3:3	1.02

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

1. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied. A minimum of 1/2" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum 5d cooler nails or #6 x 1 1/4" Type W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
2. Brace-Plate attached with 1 3/4" x 0.120 ring shank galvanized roofing nail. Fasteners are to be spaced a maximum of 3" o.c. at the edges and 3" o.c. in the field with a minimum edge distance of 3/8".
3. Brace-Plate joints shall be butted at framing members and a single row of fasteners must be applied to each panel framing.
4. When Blue DRYline TSX is installed over 1" XPS, EPS, or GPS foam sheathing, 15/16" crown, 2" leg, 16-gauge galvanized staples shall be used.

6.2.2.1.3.1 These braced wall line length equivalency factors are based on equivalency testing and are used to comply with Method WSP and CS-WSP of the IRC.

6.2.2.1.4 All IRC prescriptive bracing minimums, spacing requirements, and rules must still be met.

6.2.3 *Performance-Based Wood-Framed Construction:*

6.2.3.1 Brace-Plate panels used in wall assemblies designed as shear walls are permitted to be designed in accordance with the methodology used in SDPWS for WSP using the capacities shown in **Table 2**.

6.2.3.2 Brace-Plate panel shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 2**.

Table 2. Allowable Unit Shear Design Values for Brace-Plate Structural Sheathing – Wind

Brace-Plate Design Values[3]	Brace-Plate Fastener[1] (Spaced 3":3" o.c. edge:field)	Maximum Stud Spacing (in)	Gypsum Wallboard[2] (GWB)	GWB Fastener Spacing (edge:field) (in)	Allowable Unit Shear Capacity (plf)
Brace-Plate (Blue DRYline TSX over 3/4" or Thinner Polyiso,)	1 3/4" x 0.120 Ring Shank Galvanized Roofing Nail, or 15/16" Crown, 1 3/4" Leg, 16-gauge Galvanized Staple	16	1/2" GWB	8:8	400
Brace-Plate (Blue DRYline TSX over 1" or Thinner XPS, EPS, or GPS)	1 3/4" x 0.0120 Ring Shank Galvanized Roofing Nail, or 15/16" Crown, 2" Leg, 16-gauge Galvanized Staple	16	1/2" GWB	8:8	395

Table 2. Allowable Unit Shear Design Values for Brace-Plate Structural Sheathing – Wind

Brace-Plate Design Values[3]	Brace-Plate Fastener[1] (Spaced 3":3" o.c. edge:field)	Maximum Stud Spacing (in)	Gypsum Wallboard[2] (GWB)	GWB Fastener Spacing (edge:field) (in)	Allowable Unit Shear Capacity (plf)
Brace-Plate (Red DRYline TSX over 1/2" or Thinner Polyiso)	1 3/4" x 0.120 Ring Shank Galvanized Roofing Nail, or 15/16" Crown, 1 3/4" Leg, 16-gauge Galvanized Staple	16	1/2" GWB	8:8	375

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

1. Fasteners are to be spaced a maximum of 3" o.c. at the edges and 3" o.c. in the field, with a minimum edge distance of 3/8".
2. Gypsum attached with minimum 5d cooler nail or #6 x 1 1/4" Type W or S screws. Fastener spacing shall be as required above.
3. Brace-Plate joints shall be butted at framing members, and a single row of fasteners must be applied to each panel edge into the stud below.

6.3 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance[27]

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

7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.[29]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 Brace-Plate was evaluated to determine:

8.1.1 Structural performance under lateral load conditions (wind) for use as an alternative to the IRC Intermittent Wall Bracing provisions of IRC Section R602.10, Method Wood Structural Panels (WSP).

8.1.2 Structural performance under lateral load conditions for use as an alternative to the IRC Continuous Wall Bracing provisions of IRC Section R602.10.4, Method Continuous Sheathing – Wood Structural Panels (CS-WSP).

8.1.3 Structural performance under lateral load conditions for use as an alternative to the IBC Conventional Wall Bracing provisions, IBC Section 2308.10,[30] Method WSP, for Type V construction.

8.1.4 Structural performance under lateral load conditions for wind loading for use with the IBC performance based provisions, IBC Section 2306.1 and IBC Section 2306.3 for light-frame wood wall assemblies.

8.1.5 Structural performance under lateral load conditions for use as an alternative to SDPWS Section 4.3 Wood Frame Shear Walls.

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, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[31] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[32] respectively.

8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

9 Installation

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

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

9.3 A copy of the manufacturer published installation instructions shall be available at all times on the jobsite during installation.

9.4 *Orientation*

9.4.1 Brace-Plate must be installed vertically or horizontally with all panel edges supported by framing or blocking.

9.4.2 Brace-Plate must be installed over studs with framing that has a nominal thickness of not less than 2" (51 mm) and a spacing of not more than 16" (406 mm) o.c.

9.5 *Fastener Type*

9.5.1 *Brace-Plate:*

9.5.1.1 Minimum 0.120" x $1^{3}/_{4}$" (3 mm x 44 mm) ring shank galvanized roofing nail installed with the underside of the head flush with the surface of the sheathing.

9.5.1.2 Minimum 16-gauge galvanized staples with a $^{15}/_{16}$" crown. Staple leg length shall be sufficient to penetrate the sheathing and foam and extend a minimum of 1" into the wood framing.

9.5.1.2.1 Staples shall be installed with the crown parallel to the framing member and driven flush with the surface of the sheathing.

9.5.2 *Gypsum Wallboard:*

9.5.2.1 Gypsum wallboard shall be installed with a minimum:

9.5.2.1.1 #6 x $1^{1}/_{4}$" (32 mm) Type W or S screws

9.5.2.1.2 5d cooler nails

9.6 *Fastener Spacing*

9.6.1 *Brace-Plate:*

9.6.1.1 Maximum of 3" o.c. (76 mm) along the edge and 3" o.c. in the field.

9.6.2 *Gypsum Wallboard:*

9.6.2.1 For IRC and IBC prescriptive applications, gypsum fasteners shall be spaced 8" (203 mm) o.c. at panel edges and 8" o.c. at intermediated framing. For engineered design, see **Table 2**.

9.7 *Fastener Edge Distance*

9.7.1 Fastener edge distance is a minimum of $^{3}/_{8}$" (10 mm) for both Brace-Plate and gypsum.

9.8 *Treatment of Joints*

9.8.1 Brace-Plate joints shall be installed over framing members. Joints are permitted to be butted or lapped.

9.8.1.1 *Butted Joints:*

9.8.1.1.1 Panel edges shall be butted at the approximate centerline of the framing member. A single row of fasteners must be applied to each panel edge into the framing member below.

9.8.1.2 *Lapped Joints:*

9.8.1.2.1 Vertical panel edges shall be lapped a minimum of $^{3}/_{4}$". A single row of fasteners shall be installed through the overlap, penetrating both layers of sheathing and into the framing member below. Horizontal joints must be blocked.

9.8.2 Do not tack Brace-Plate to framing but fasten each panel completely once fastening begins.

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 Lateral load testing in accordance with ASTM E564

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

10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

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

10.5 *Testing and Engineering Analysis*

10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[33]

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

11 Findings

11.1 As outlined in **Section 6**, Brace-Plate has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Brace-Plate shall be approved for the following applications:

11.2.1 Lateral load resistance due to wind loads carried by shear walls

11.3 Unless exempt by state statute, when Brace-Plate 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 Fibre Converters, Inc.

11.5 IBC Section 104.2.3[34] (IRC Section R104.2.2[35] and IFC Section 104.2.3[36] are similar) in pertinent part state:

> **104.2.3 Alternative Materials, Design and Methods of Construction and Equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.

11.6 **Approved:**[37] Building regulations require that the building official shall accept duly authenticated reports.[38]

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

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

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

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

11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.[39]

12 Conditions of Use

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

12.2 As listed herein, Brace-Plate shall not be used:

12.2.1 As a nailing base

12.2.2 To resist horizontal loads from concrete and masonry walls

12.3 When Brace-Plate is not installed for use as wall bracing as described in this report, the walls shall be braced by other materials in accordance with the applicable code.

12.4 When used in accordance with the IBC in high wind areas, special inspections shall comply with IBC Section 1705.12.[40]

12.5 Loads applied shall not exceed those recommended by the manufacturer as follows:

12.5.1 Allowable shear loads do not exceed values in **Table 2** for wind loads.

12.6 The manufacturer installation instructions shall be available on the jobsite for inspection.

12.7 All panel edges shall be supported by wall framing or solid blocking a minimum of 2" (51 mm) nominal in thickness.

12.8 Brace-Plate is manufactured in Constantine, Michigan under a quality control program with quality control inspections in accordance with IRC Section R109.2, IBC Section 110.3.10,[41] and IBC Section 110.4.

12.9 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:

12.9.1 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.

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

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

12.9.4 At a minimum, this innovative product shall be installed per **Section 9**.

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

12.9.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.

12.9.7 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.

12.10 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.

12.11 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).

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

13.2 Additional technical information can be found at www.fibreconverters.com or nationalshelter.com.

14 Review Schedule

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

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

Notes

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 2018 IBC Section 2304.10.1

3 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

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

5 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

6 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

7 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

8 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

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

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

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

12 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.

13 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/

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

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

16 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

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

18 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

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

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

21 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

22 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by the local jurisdiction. https://up.codes/codes/general

23 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

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

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

26 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

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

28 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

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

[30] 2021 IBC Section 2308.6

[31] 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.

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

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

[34] 2021 IBC Section 104.11

[35] 2021 IRC Section R104.11

[36] 2018: https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9 AND 2021: https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11

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

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

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

[40] 2018 IBC Section 1705.11

[41] 2018 IBC Section 110.3.9