DrJ™ CERTIFICATION

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

Approved. Sealed. Code Compliant.

Technical Evaluation Report

TER 1507-09

Thermo-Brace® Blue Structural Sheathing

Barricade® Building Products

Product:

Thermo-Brace® Blue Structural Sheathing

Issue Date:

February 16, 2019

Revision Date:

April 28, 2022

Subject to Renewal:

July 1, 2023

COMPANY INFORMATION:

Barricade® Building Products
PO Box 2002
10351 Verdon Rd
Doswell, VA 23047-1600

804-876-3135

barricadebp.com

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 25 00 - Water-Resistive Barriers/Weather Barriers

SECTION: 07 27 00 - Air Barriers

1 PRODUCT EVALUATED[1]

1.1 Thermo-Brace® Blue Structural Sheathing

2 APPLICABLE CODES AND STANDARDS[2,3]

2.1 *Codes*

2.1.1 *IBC—15, 18, 21: International Building Code®*

2.1.2 *IRC—15, 18, 21: International Residential Code®*

2.1.3 *IECC—15, 18, 21: International Energy Conservation Code®*

2.1.4 *FBC-B—17, 20: Florida Building Code – Building*[4]

2.1.5 *FBC-R—17, 20: Florida Building Code – Residential*[4]

2.1.6 *FBC-EC—17, 20: Florida Building Code – Energy Conservation*[4]

2.2 *Standards and Referenced Documents*

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

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

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

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

[2] Unless otherwise noted, all references in this TER are from the 2021 version of the codes and the standards referenced therein. This material, design, or method of construction also complies with the 2000-2018 versions of the referenced codes and the standards referenced therein.

[3] All terms defined in the applicable building codes are italicized.

[4] All references to the *FBC-B*, *FBC-R*, and *FBC-EC* are the same as the 2018 *IBC*, *IRC*, and *IECC* unless otherwise noted in the Florida Supplement found at the end of this TER.

2.2.4 *ASTM E2178: Standard Test Method for Air Permeance of Building Materials*

2.2.5 *ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure*

2.2.6 *ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

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

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

2.2.9 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*

2.2.10 *UL 723: Test for Surface Burning Characteristics of Building Materials*

3 PERFORMANCE EVALUATION

3.1 Thermo-Brace® Blue Structural Sheathing has been evaluated to determine the following:

3.1.1 Structural performance under lateral load conditions (wind and seismic) for use as an alternative to the *IRC* intermittent wall bracing provisions of *IRC* Section R602.10 Method WSP (wood structural panel) and the *IRC* continuous wall bracing provisions of *IRC* Section R602.10.4 Methods CS-WSP (continuously sheathed wood structural panel) and CS-PF (continuously sheathed portal frame).

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

3.1.2.1 Table 9 provides seismic design coefficients (SDC) that conform to the requirements in *ASCE 7* Section 12.2.1 and Table 12.2-1 for design of wall assemblies in buildings that require seismic design in accordance with *ASCE 7* (i.e., all seismic design categories).

3.1.2.2 The basis for equivalency testing is outlined in *ASCE 7* Section 12.2.1.1:[5]

> **12.2.1.1 Alternative Structural Systems.** Use of seismic force-resisting systems not contained in Table 12.2-1 shall be permitted contingent on submittal to and approval by the Authority Having Jurisdiction and independent structural design review of an accompanying set of design criteria and substantiating analytical and test data. The design criteria shall specify any limitations on system use, including Seismic Design Category and height; required procedures for designing the system's components and connections; required detailing; and the values of the response modification coefficient, R; overstrength factor, Ω_o; and deflection amplification factor, C_d.

3.1.2.3 The basis of the seismic evaluation performed as part of this TER is based on *ASTM D7989* and testing per *ASTM E2126* to establish SDCs that conform to the requirements of *ASCE 7* Section 12.2.1.1.

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

3.1.4 Resistance to transverse loads for wall assemblies used in light-frame wood construction in accordance with *IBC* Section 1609.1.1 and *IRC* Section R301.2.1.

3.1.5 Resistance to uplift loads for wall assemblies used for light-frame wood construction in accordance with *IBC* Section 1609 and *IRC* Section R301.2.1.

3.1.6 Performance for use as a water-resistive barrier (WRB) in accordance with *IBC* Section 1403.2[6] and *IRC* Section R703.2.

3.1.7 Performance for use as an air barrier in accordance with *IRC* Section N1102.4.1.1, *IECC* Section C402.5.1.1, and *IECC* Section R402.4.1.1.

[5] 2010 *ASCE 7* Section 12.2.1

[6] 2015 *IBC* Section 1404.2

3.1.8 Performance for use as a draftstop in accordance with *IBC* Section 708.4.2, Section 718.3, and Section 718.4 and *IRC* Section 302.12.

3.1.9 Surface burn characteristic performance for use as a Class C interior finish material in accordance with *IBC* Section 803.1.2[7] and *IRC* Section R302.9.

3.2 Use of Thermo-Brace® Blue Structural Sheathing in a portal frame with hold-down (PFH) is outside the scope of this TER.

3.3 Use of Thermo-Brace® Blue Structural Sheathing in a fire resistance rated assembly is outside the scope of this TER.

3.4 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

3.5 Any engineering evaluation conducted for this TER was performed within DrJ's ANAB accredited ICS code scope and/or the defined professional engineering scope of work on the dates provided herein.

4 Product Description and Materials

4.1 The product evaluated in this TER is shown in Figure 1.

Figure 1. Thermo-Brace® Blue Structural Sheathing

4.2 Thermo-Brace® Blue Structural Sheathing is composed of pressure laminated plies consisting of high-strength cellulosic fibers. These fibers are specially treated to be water resistant and are bonded with a proprietary water-resistive adhesive. A protective polymer layer is applied on both sides of the panel, and foil facings may be additionally applied on one or both faces.

4.2.1 Thermo-Brace® Blue Structural Sheathing panels have a nominal weight of 0.440 lbs. per square foot.

4.3 *Material Availability*

4.3.1 Thickness: 0.120" (3.05 mm)

4.3.2 Standard product widths: 48" (1219 mm) and 48¾" (1238 mm)

4.3.3 Standard lengths include 96" (2438 mm), 108" (2743 mm), and 120" (3048 mm)

4.3.4 Other custom widths and lengths can be manufactured.

[7] 2015 *IBC* Section 803.1.1

5 APPLICATIONS

5.1 Thermo-Brace® Blue Structural Sheathing panels are used in the following applications:

5.1.1 Wall sheathing in buildings constructed in accordance with *IBC* and *IRC* provisions for light-frame wood construction.

5.1.2 Structural wall sheathing to provide lateral load resistance (wind and seismic) for braced wall panels used in light-frame wood construction.

5.1.3 Wall sheathing in buildings constructed in accordance with the *IBC* requirements for Type V light frame construction.

5.1.4 Structural wall sheathing to provide resistance to transverse loads for wall assemblies used in light frame wood construction.

5.2 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

5.3 *Structural Applications*

5.3.1 *General Structural Provisions:*

5.3.1.1 Except as otherwise described in this TER, Thermo-Brace® Blue Structural Sheathing shall be installed in accordance with the applicable building codes listed in Section 2 using the provisions set forth herein for the design and installation of wood structural panels (WSP).

5.3.1.1.1 Thermo-Brace® Blue Structural Sheathing is permitted to be used for the design of shear walls in accordance with *SDPWS* 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 TER.

5.3.1.2 Anchorage for in-plane shear shall be provided to transfer the induced shear force into and out of each shear wall. Shear wall anchorage shall be in accordance with the applicable code referenced in Section 2.

5.3.1.3 Except as noted in Section 5.3.2, the maximum aspect ratio for Thermo-Brace® Blue Structural Sheathing shall be 4:1.

5.3.1.4 Except as noted in Section 5.3.2, the minimum full height panel width shall be 24" (610 mm).

5.3.1.5 Installation is permitted for single top plate or double top plate applications.

5.3.2 *Simplified IRC Bracing Provisions:*

5.3.2.1 Thermo-Brace® Blue Structural Sheathing is permitted to be used in accordance with the *IRC* simplified bracing method of *IRC* Section R602.12 as modified by Table 1 and Table 2. All other provisions of the *IRC* simplified bracing method shall be met.

TABLE 1. SIMPLIFIED BRACING FOR THERMO-BRACE® BLUE (STUDS 16" O.C.)[1,2,3,4,5,6,7,8]

Ultimate Design Wind Speed (mph)	Story Level	Eave to Ridge Height (ft)	Minimum Number of Bracing Units Required (Long Side)						Minimum Number of Bracing Units Required (Short Side)					
			Length of Short Side (ft)						Length of Long Side (ft)					
			10	20	30	40	50	60	10	20	30	40	50	60
115	One Story or Top of Two or Three Story	10	1	1	1	2	2	2	1	1	1	2	2	2
	First of Two Story or Second of Three Story		1	2	2	3	3	4	1	2	2	3	3	4
	First of Three Story		2	2	3	4	5	6	2	2	3	4	5	6
	One Story or Top of Two or Three Story	15	1	1	1	3	3	3	1	1	1	3	3	3
	First of Two Story or Second of Three Story		1	2	2	3	3	5	1	2	2	3	3	5
	First of Three Story		2	2	3	4	6	7	2	2	3	4	6	7
130	One Story or Top of Two or Three Story	10	1	1	2	2	2	3	1	1	2	2	2	3
	First of Two Story or Second of Three Story		1	2	3	4	4	5	1	2	3	4	4	5
	First of Three Story		2	3	4	5	6	7	2	3	4	5	6	7
	One Story or Top of Two or Three Story	15	1	1	3	3	3	4	1	1	3	3	3	4
	First of Two Story or Second of Three Story		1	2	3	5	5	6	1	2	3	5	5	6
	First of Three Story		2	3	4	6	7	8	2	3	4	6	7	8

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of *IRC* Section R602.12. All provisions therein shall be observed, except that this table shall replace *IRC* Table R602.12.4, and Thermo-Brace® Blue shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. Maximum stud spacing is 16" o.c.
7. Thermo-Brace® Blue installed with butted or lapped joints and attached with minimum 16 ga, $^{15}/_{16}$" crown x 1¼" leg staples or 0.120" x 1 1/4" smooth shank roofing nails fastened 3":3" (edge:field).
8. Minimum ½" gypsum wallboard (GWB) fastened 8":8" attached to the interior side of the wall in accordance with *IRC* Section R702.3.5 and Table R702.3.5. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in *IRC* Table R602.10.3(1 and 3), as modified by all applicable factors in Table R602.10.3(2 and 4), shall be used, except the factor for omitting the GWB shall be 1.7.

TABLE 2. SIMPLIFIED BRACING FOR THERMO-BRACE® BLUE (STUDS 24" O.C.)[1,2,3,4,5,6,7,8]

Ultimate Design Wind Speed (mph)	Story Level	Eave to Ridge Height (ft)	Minimum Number of Bracing Units Required (Long Side)						Minimum Number of Bracing Units Required (Short Side)					
			Length of Short Side (ft)						Length of Long Side (ft)					
			10	20	30	40	50	60	10	20	30	40	50	60
115	One Story or Top of Two or Three Story	10	1	1	2	2	2	3	1	1	2	2	2	3
	First of Two Story or Second of Three Story		1	2	3	3	4	5	1	2	3	3	4	5
	First of Three Story		2	3	4	5	6	7	2	3	4	5	6	7
	One Story or Top of Two or Three Story	15	1	1	3	3	3	4	1	1	3	3	3	4
	First of Two Story or Second of Three Story		1	2	3	3	5	6	1	2	3	3	5	6
	First of Three Story		2	3	4	6	7	8	2	3	4	6	7	8
130	One Story or Top of Two or Three Story	10	1	2	2	2	3	3	1	2	2	2	3	3
	First of Two Story or Second of Three Story		2	3	3	4	5	6	2	3	3	4	5	6
	First of Three Story		2	3	5	6	7	9	2	3	5	6	7	9
	One Story or Top of Two or Three Story	15	1	3	3	3	4	4	1	3	3	3	4	4
	First of Two Story or Second of Three Story		2	3	3	5	6	7	2	3	3	5	6	7
	First of Three Story		2	3	6	7	8	10	2	3	6	7	8	10

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of *IRC* Section R602.12. All provisions therein shall be observed, except that this table shall replace *IRC* Table R602.12.4, and Thermo-Brace® Blue shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. Maximum stud spacing is 24" o.c.
7. Thermo-Brace® Blue installed with butted or lapped joints and attached with minimum 16 ga., $^{15}/_{16}$" crown x 1¼" leg staples or 0.120" x 1 1/4" smooth shank roofing nails fastened 3":3" (edge:field).
8. Minimum ½" gypsum wallboard (GWB) fastened 8":8" attached to the interior side of the wall in accordance with *IRC* Section R702.3.5 and Table R702.3.5. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in *IRC* Table R602.10.3(1 and 3), as modified by all applicable factors in Table R602.10.3(2 and 4), shall be used, except the factor for omitting the GWB shall be 1.6.

5.3.3 *Prescriptive IRC Bracing Applications:*

5.3.3.1 Thermo-Brace® Blue Structural Sheathing may be used on braced wall lines as an equivalent alternative to *IRC* Method WSP when installed in accordance with *IRC* Section R602.10 and this TER.

5.3.3.2 For wind design, required braced wall panel lengths for Thermo-Brace® Blue Structural Sheathing shall be as shown in Table 3 and Table 5 and shall be used in conjunction with *IRC* Table R602.10.3(2), which provides the required adjustments.

5.3.3.3 For seismic design, required braced wall panel lengths for Thermo-Brace® Blue Structural Sheathing shall be as shown in Table 4 and Table 6 and shall be used in conjunction with *IRC* Table R602.10.3(4), which provides the required adjustments.

5.3.3.4 Use of Thermo-Brace® Blue with Method CS-PF is also permitted in accordance with Section 5.3.4 per *IRC* Section R602.10.6.4.

TABLE 3. REQUIRED BRACING LENGTHS FOR THERMO-BRACE® BLUE (STUDS 16" O.C.) – WIND[2,3,4,5]

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line											
		Intermittent Sheathing[1]						Continuous Sheathing[1]					
		Ultimate Design Wind Speed, V_{ult} (mph)											
		< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140	< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140
One Story or the Top of Two or Three Stories	10	1.0	1.4	1.4	1.7	1.7	2.1	1.0	1.0	1.4	1.4	1.7	1.7
	20	1.7	2.4	2.4	2.8	3.5	3.8	1.7	2.1	2.4	2.4	2.8	3.5
	30	2.8	3.5	3.8	4.1	4.8	5.5	2.4	3.1	3.1	3.5	4.1	4.8
	40	3.5	4.5	4.8	5.5	6.2	7.2	2.8	3.8	4.1	4.5	5.2	6.2
	50	4.1	5.5	6.2	6.6	7.6	9.0	3.5	4.8	5.2	5.5	6.6	7.6
	60	4.8	6.6	7.2	7.9	9.0	10.4	4.1	5.5	6.2	6.6	7.6	9.0
First Story of Two Stories or Second Story of Three Stories	10	2.1	2.4	2.8	3.1	3.5	4.1	1.7	2.1	2.4	2.4	3.1	3.5
	20	3.5	4.5	5.2	5.5	6.6	7.6	3.1	3.8	4.5	4.8	5.5	6.2
	30	4.8	6.6	7.2	7.9	9.3	10.7	4.1	5.5	6.2	6.6	7.9	9.0
	40	6.6	8.6	9.3	10.4	12.1	13.8	5.5	7.2	7.9	8.6	10.4	11.7
	50	7.9	10.7	11.4	12.4	14.8	16.9	6.9	9.0	9.7	10.7	12.4	14.5
	60	9.3	12.4	13.8	14.8	17.3	20.0	7.9	10.7	11.7	12.8	14.8	17.3
First Story of Three Stories	10	2.8	3.8	4.1	4.5	5.2	5.9	2.4	3.1	3.5	3.8	4.5	5.2
	20	5.2	6.9	7.6	7.9	9.3	11.0	4.5	5.9	6.2	6.9	7.9	9.3
	30	7.2	9.7	10.7	11.7	13.5	15.9	6.2	8.3	9.0	10.0	11.7	13.5
	40	9.3	12.8	13.8	15.2	17.6	20.4	7.9	10.7	11.7	12.8	15.2	17.3
	50	11.7	15.5	16.9	18.6	21.7	25.2	10.0	13.1	14.5	15.9	18.3	21.4
	60	13.8	18.3	20.0	22.1	25.9	29.7	11.7	15.9	17.3	18.6	21.7	25.2

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. Thermo-Brace® Blue shall be installed on 2x4 or 2x6 studs spaced 16" o.c. and fastened with minimum $^{15}/_{16}$" crown x 1¼" leg 16 gauge galvanized staples or 0.120" x 1 1/4" smooth shank roofing nails spaced 3":3" (edge:field) per Section 6. Joints may be butted or lapped.
2. Demonstrates equivalency to *IRC* Table R602.10.3(1). All adjustment factors from *IRC* Table R602.10.3(2) shall be applied. Except when used with method CS-PF, a minimum of ½" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum 5d cooler nails or 1¼" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
3. Minimum ½" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.7.
4. Bracing lengths are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in Section 2 that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which is the manufacturer of those products or the members of the associations that publish those design values.
5. Linear interpolation is permitted.

TABLE 4. REQUIRED BRACING LENGTHS FOR THERMO-BRACE® BLUE (STUDS 16" O.C.) – SEISMIC[1,3,4,5,6,7]

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line							
		Intermittent Sheathing[2]				Continuous Sheathing[2]			
		Seismic Design Category (SDC)							
		C	D_0	D_1	D_2	C	D_0	D_1	D_2
One Story or the Top of Two or Three Stories	10	1.1	1.2	1.4	1.7	1.0	1.1	1.2	1.5
	20	2.2	2.5	2.8	3.5	1.9	2.1	2.4	3.0
	30	3.3	3.7	4.1	5.2	2.8	3.2	3.5	4.4
	40	4.4	5.0	5.5	6.9	3.7	4.2	4.7	5.9
	50	5.5	6.2	6.9	8.6	4.7	5.3	5.9	7.3
First Story of Two Stories or Second Story of Three Stories	10	2.1	2.6	3.1	3.8	1.8	2.2	2.6	3.3
	20	4.1	5.2	6.2	7.6	3.5	4.4	5.3	6.5
	30	6.2	7.8	9.3	11.4	5.3	6.6	7.9	9.7
	40	8.3	10.3	12.4	15.2	7.0	8.8	10.6	12.9
	50	10.3	13.0	15.5	19.0	8.8	11.1	13.2	16.1
First Story of Three Stories	10	3.1	3.7	4.1	NP	2.6	3.1	3.5	NP
	20	6.2	7.2	8.3	NP	5.3	6.2	7.0	NP
	30	9.3	10.9	12.4	NP	7.9	9.3	10.6	NP
	40	12.4	14.5	16.6	NP	10.6	12.4	14.1	NP
	50	15.5	18.1	20.7	NP	13.2	15.4	17.6	NP

SI: 1 in = 25.4 mm

1. NP = Not Provided
2. Thermo-Brace® Blue to be installed on 2x4 or 2x6 studs spaced 16" o.c. and fastened with minimum $^{15}/_{16}$" crown x $1^{1}/_{4}$" leg 16 gauge galvanized staples or 0.120" x 1 1/4" smooth shank roofing nails spaced 3":3" (edge:field) per Section 6. Joints may be butted or lapped.
3. Minimum ½" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.7.
4. Demonstrates equivalency to *IRC* Table R602.10.3(3). All adjustment factors from *IRC* Table R602.10.3(4) shall be applied. Except when used with method CS-PF, a minimum of ½" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum 5d cooler nails or $1^{1}/_{4}$" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
5. Tabulated bracing lengths are based on the following:
   a. Soil Class D
   b. Wall height= 10'
   c. 10 psf floor dead load
   d. 15 psf roof/ceiling dead load
   e. Braced wall line spacing ≤ 25'
6. Linear interpolation is permitted.
7. Bracing lengths are the result of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in Section 2 that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which is the manufacturer of those products or the members of the associations that publish those design values.

TABLE 5. REQUIRED BRACING LENGTHS FOR THERMO-BRACE® BLUE (STUDS 24" O.C.) – WIND[2,3,4,5]

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line											
		Intermittent Sheathing[1]						Continuous Sheathing[1]					
		Ultimate Design Wind Speed, V_{ult} (mph)											
		< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140	< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140
One Story or the Top of Two or Three Stories	10	1.3	1.7	1.7	2.2	2.2	2.6	1.3	1.3	1.7	1.7	2.2	2.2
	20	2.2	3.0	3.0	3.4	4.3	4.7	2.2	2.6	3.0	3.0	3.4	4.3
	30	3.4	4.3	4.7	5.2	6.0	6.9	3.0	3.9	3.9	4.3	5.2	6.0
	40	4.3	5.6	6.0	6.9	7.7	9.0	3.4	4.7	5.2	5.6	6.5	7.7
	50	5.2	6.9	7.7	8.2	9.5	11.2	4.3	6.0	6.5	6.9	8.2	9.5
	60	6.0	8.2	9.0	9.9	11.2	12.9	5.2	6.9	7.7	8.2	9.5	11.2
First Story of Two Stories or Second Story of Three Stories	10	2.6	3.0	3.4	3.9	4.3	5.2	2.2	2.6	3.0	3.0	3.9	4.3
	20	4.3	5.6	6.5	6.9	8.2	9.5	3.9	4.7	5.6	6.0	6.9	7.7
	30	6.0	8.2	9.0	9.9	11.6	13.3	5.2	6.9	7.7	8.2	9.9	11.2
	40	8.2	10.8	11.6	12.9	15.1	17.2	6.9	9.0	9.9	10.8	13.3	14.6
	50	9.9	13.3	14.2	15.5	18.5	21.1	8.6	11.2	12.0	13.3	15.5	18.1
	60	11.6	15.5	17.2	18.5	21.5	24.9	9.9	13.3	14.6	15.9	18.5	21.5
First Story of Three Stories	10	3.4	4.7	5.2	5.6	6.5	7.3	3.0	3.9	4.3	4.7	5.6	6.5
	20	6.5	8.6	9.5	9.9	11.6	13.8	5.6	7.3	7.7	8.6	9.9	11.6
	30	9.0	12.0	13.3	14.6	16.8	19.8	7.7	10.3	11.2	12.5	14.6	16.8
	40	11.6	15.9	17.2	18.9	21.9	25.4	9.9	13.3	14.6	15.9	18.9	21.5
	50	14.6	19.4	21.1	23.2	27.1	31.4	12.5	16.3	18.1	19.8	22.8	26.7
	60	17.2	22.8	24.9	27.5	32.3	37.0	14.6	19.8	21.5	23.2	27.1	31.4

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. Thermo-Brace® Blue shall be installed on 2x4 or 2x6 studs spaced 24" o.c. and fastened with minimum $^{15}/_{16}$" crown x 1¼" leg 16 gauge galvanized staples or 0.120" x 1¼" smooth shank roofing nails spaced 3":3" (edge:field) per Section 6. Joints may be butted or lapped.
2. Demonstrates equivalency to *IRC* Table R602.10.3(1). All adjustment factors from *IRC* Table R602.10.3(2) shall be applied. Except when used with method CS-PF, a minimum of ½" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum 5d cooler nails or 1¼" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
3. Minimum ½" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.6.
4. Bracing lengths are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in Section 2 that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which is the manufacturer of those products or the members of the associations that publish those design values.
5. Linear interpolation is permitted.

TABLE 6. REQUIRED BRACING LENGTHS FOR THERMO-BRACE® BLUE (STUDS 24" O.C.) – SEISMIC[1,3,4,5,6,7]

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line							
		Intermittent Sheathing[2]				Continuous Sheathing[2]			
		Seismic Design Category (SDC)							
		C	D0	D1	D2	C	D0	D1	D2
One Story or the Top of Two or Three Stories	10	1.4	1.5	1.7	2.1	1.2	1.4	1.5	1.8
	20	2.7	3.1	3.4	4.3	2.3	2.6	2.9	3.7
	30	4.2	4.7	5.2	6.5	3.5	4.0	4.4	5.5
	40	5.5	6.2	6.9	8.6	4.7	5.3	5.9	7.3
	50	6.9	7.7	8.6	10.7	5.9	6.6	7.3	9.1
First Story of Two Stories or Second Story of Three Stories	10	2.6	3.2	3.8	4.8	2.2	2.7	3.2	4.1
	20	5.2	6.5	7.7	9.4	4.4	5.5	6.6	8.1
	30	7.7	9.7	11.6	14.2	6.6	8.3	9.9	12.1
	40	10.3	12.9	15.5	18.9	8.8	11.0	13.2	16.1
	50	12.9	16.2	19.3	23.7	11.0	13.8	16.4	20.1
First Story of Three Stories	10	3.8	4.6	5.2	NP	3.2	3.8	4.4	NP
	20	7.7	9.0	10.3	NP	6.6	7.7	8.8	NP
	30	11.6	13.6	15.5	NP	9.9	11.5	13.2	NP
	40	15.5	18.0	20.6	NP	13.2	15.4	17.5	NP
	50	19.3	22.6	25.8	NP	16.4	19.1	21.9	NP

SI: 1 in = 25.4 mm

1. NP = Not Provided
2. Thermo-Brace® Blue to be installed on 2x4 or 2x6 studs spaced 16" o.c. and fastened with minimum $^{15}/_{16}$" crown x $1^{1}/_{4}$" leg 16 gauge galvanized staples or 0.120" x 1 1/4" smooth shank roofing nails spaced 3":3" (edge:field) per Section 6. Joints may be butted or lapped.
3. Minimum ½" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.6.
4. Demonstrates equivalency to *IRC* Table R602.10.3(3). All adjustment factors from *IRC* Table R602.10.3(4) shall be applied. Except when used with method CS-PF, a minimum of ½" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum 5d cooler nails or $1^{1}/_{4}$" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
5. Tabulated bracing lengths are based on the following:
   a. Soil Class D
   b. Wall height= 10'
   c. 10 psf floor dead load
   d. 15 psf roof/ceiling dead load
   e. Braced wall line spacing ≤ 25'
6. Linear interpolation is permitted.
7. Bracing lengths are the result of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in Section 2 that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which is the manufacturer of those products or the members of the associations that publish those design values.

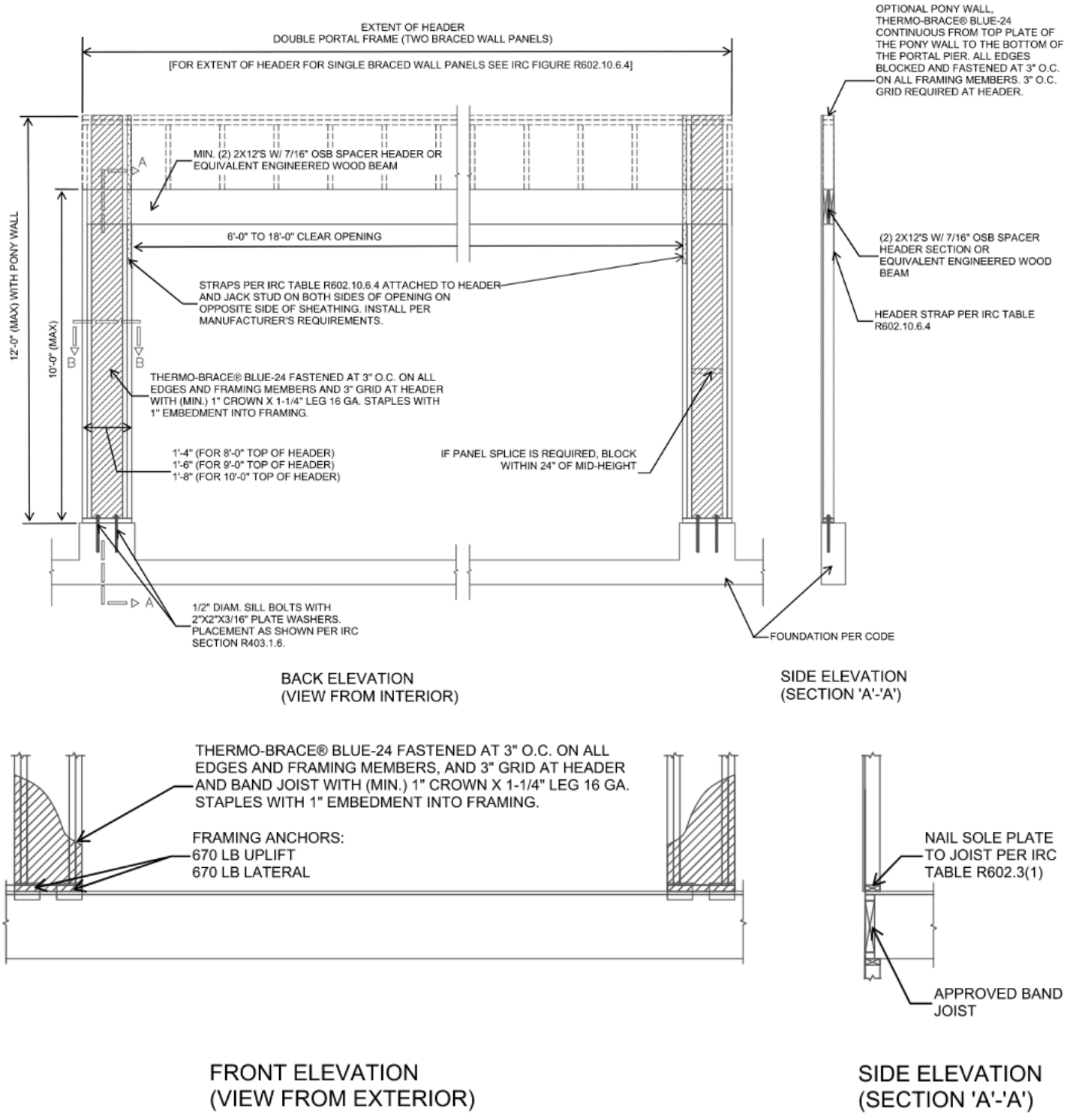
5.3.4 *Thermo-Brace® Blue CS-PF Portal Frame:*

5.3.4.1 Thermo-Brace® Blue Structural Sheathing was tested and evaluated for equivalency to the *IRC* Method CS-PF in accordance with *IRC* Section R602.10.6.4 and Table R602.10.5.

5.3.4.2 *IRC* Table R602.10.5 establishes the contributing length of bracing of the CS-PF as equivalent to 1.5 times its actual length and that it contributes this length of bracing to that required by Method CS-WSP.

5.3.4.3 The capacity of the Thermo-Brace® Blue Structural Sheathing CS-PF exceeds the capacity of the *IRC* Method CS-WSP and is, therefore, permitted to be substituted for an equivalent length of bracing (i.e., 1.5 times its actual length).

5.3.4.4 The Thermo-Brace® Blue Structural Sheathing CS-PF is shown in Figure 2.



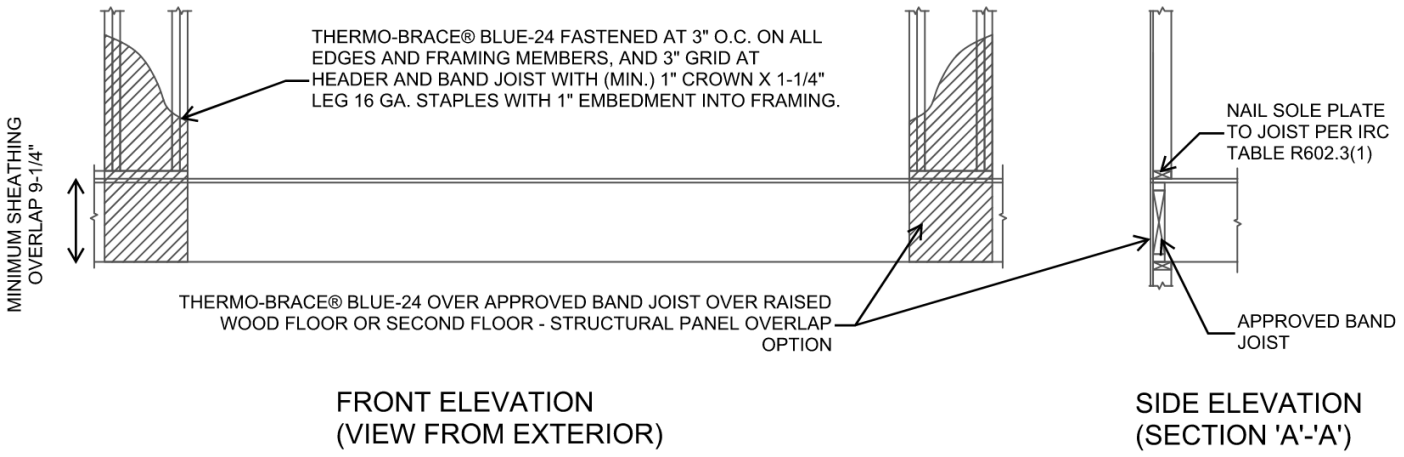


FIGURE 2. THERMO-BRACE® BLUE STRUCTURAL SHEATHING CS-PF

5.3.5 *Alternative to Prescriptive IRC Bracing Applications:*

5.3.5.1 As an alternative to the requirements of Section 5.3.2 of this TER, the following provisions are permitted:

5.3.5.1.1 Thermo-Brace® Blue Structural Sheathing may be used on braced wall lines as an equivalent alternative to the WSP method when installed in accordance with *IRC* Section R602.10 and this TER.

5.3.5.1.2 Thermo-Brace® Blue Structural Sheathing may be used to brace the walls of buildings as an alternative to the continuous wall bracing provisions of the CS-WSP method described in *IRC* Section R602.10.4.

5.3.5.1.3 Required braced wall panel lengths for Thermo-Brace® Blue Structural Sheathing shall be as determined by the equivalency factor shown in Table 7 and *IRC* Section R602.10.3 and Tables R602.10.3(1-4), including all footnotes.

5.3.5.1.3.1 Bracing lengths in the *IRC* tables for the WSP or CS-WSP methods shall be multiplied by the equivalency factors listed in Table 7 below.

TABLE 7. BRACED WALL LINE LENGTH EQUIVALENCY FACTORS[4,5]

Product	Fastener	Fastener Spacing (edge:field) (in)	Maximum Stud[1] Spacing (in)	Gypsum Wallboard[3] (GWB)	GWB Fastener Spacing (edge:field) (in)	Equivalency Factors[2] to *IRC* WSP or CS-WSP
Thermo-Brace® Blue	15/16" Crown x 1¼" Leg 16 ga. Staple or 0.120" x 1 1/4" smooth shank roofing nails	3:3	16 o.c.	-	-	0.85
				½" GWB	4:16	0.60
					8:8	0.69
					8:16	0.73
					16:16	0.83
			24 o.c.	-	-	1.00
				½" GWB	4:16	0.76
					8:8	0.86
					8:16	0.91
					16:16	1.00

SI: 1 in = 25.4 mm

1. Factors based on SPF framing materials.
2. Multiply the bracing lengths indicated for the WSP or CS-WSP continuous sheathing methods in *IRC* Table R602.10.3(1) and Table R602.10.3(3), and as modified by all applicable factors in *IRC* Tables 602.10.3(2) and Table R602.10.3(4), by the factors shown here to establish the required bracing length.
3. Gypsum wallboard shall be installed according to the provisions listed in *IRC* Table R702.3.5. Where gypsum wallboard fastened 8":8" is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by the following:
   a. 16" o.c. Stud Spacing: 1.7
   b. 24" o.c. Stud Spacing: 1.6
4. These equivalency factors are valid for single top plate (advanced framing method) wall installations or double top plate wall installations.
5. Equivalency factors are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in Section 2 of this TER that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which belongs to the manufacturer of those products or the members of the associations that publish those design values.

5.3.5.1.3.2 The braced wall line length equivalency factors in Table 7 are based on equivalency testing and are used to comply with Method WSP and Method CS-WSP of the *IRC*.

5.3.5.1.3.3 The length of bracing required shall be determined by multiplying the Thermo-Brace® Blue Structural Sheathing tested equivalency factors in Table 7 by the length shown in the WSP or CS-WSP methods in *IRC* Table R602.10.3(1 and 3), as modified by all applicable factors in *IRC* Table R602.10.3(2 and 4), respectively.

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

5.3.5.1.5 Where a building, or portion thereof, does not comply with one or more of the bracing requirements within the prescriptive section of the *IRC*, those portions shall be designed and constructed in accordance with *IRC* Section R301.1.

5.3.6 *Prescriptive IBC Conventional Light-Frame Wood Construction:*

5.3.6.1 Thermo-Brace® Blue Structural Sheathing may be used to brace exterior walls of buildings as an equivalent alternative to Method WSP of the *IBC* when installed with blocked or unblocked ½" gypsum fastened with a minimum 5d cooler nail or #6 type W or S screw spaced a maximum of 16" o.c. at panel edges and 16" o.c. in the field. Bracing shall be in accordance with the conventional light frame construction method of *IBC* Section 2308.6 and this TER.

5.3.7 *Performance-Based Wood-Framed Construction:*

5.3.7.1 Thermo-Brace® Blue Structural Sheathing 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 8 and Table 9.

5.3.7.2 Thermo-Brace® Blue Structural Sheathing shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in Table 8.

TABLE 8. ALLOWABLE STRESS DESIGN (ASD) CAPACITY – WIND

Product	Joint Condition	Fastener[1,2]	Fastener Spacing (edge:field) (in)	Maximum Stud Spacing (in)	Gypsum Wallboard[3] (GWB)	GWB Fastener Spacing[4] (edge:field) (in)	Allowable Unit Shear Capacity (plf)
Thermo-Brace® Blue	Butted or Lapped	15/16" Crown x 1¼" Leg 16 ga Staple or 0.120" x 1¼" smooth shank roofing nails	3:3	16 o.c.	None	-	370
					½" GWB	4:16	580
						8:8	515
						8:16	500
						16:16	445
				24 o.c.	None	-	320
					½" GWB	4:16	460
						8:8	420
						8:16	400
						16:16	370

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

1. Thermo-Brace® Blue staples shall penetrate a minimum of 1" into the stud. 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. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the Thermo-Brace® surface.
2. Thermo-Brace® Blue roofing nails are to be spaced a maximum of 3" o.c. at the panel edges and 3" o.c. in the field. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the Thermo-Brace® Blue surface.
3. Gypsum attached with minimum #6 Type W or S screws 1¼" long or 5d cooler nails with a minimum edge distance of 3/8".
4. Straight-line interpolation between fastening patterns is acceptable.

5.3.8 *Seismic Design:*

5.3.8.1 Thermo-Brace® Blue Structural Sheathing shear walls that require seismic design in accordance with *IBC* Section 1613 shall use the seismic allowable unit shear capacities set forth in Table 9.

5.3.8.1.1 The response modification coefficient, R, system overstrength factor, Ω_0, and deflection amplification factor, C_d, indicated in Table 9 shall be used to determine the base shear, element design forces, and design story drift in accordance with *ASCE 7* Chapter 12 and Section 14.5.

TABLE 9. SEISMIC ALLOWABLE UNIT SHEAR CAPACITY & SEISMIC DESIGN COEFFICIENTS[1,2,4]

Seismic Force-Resisting System	Joint Condition[5]	Maximum Stud Spacing (in)	Gypsum Wallboard[3] (GWB)	Seismic Allowable Unit Shear Capacity (plf)	Apparent Shear Stiffness, G_a (kips/in)	Response Modification Factor, R[6]	System Over-strength Factor, Ω_0[7]	Deflection Amplification Coefficient, C_d[8]	Structural System Limitations & Building Height (ft) Limit[9]				
									Seismic Design Category				
									B	C	D	E	F
Light-Frame (Wood) Walls Sheathed with Thermo-Brace® Blue	Butted or Lapped	16 o.c.	None	300	9.8	6.5	3	4	NL	NL	65	65	65
			½" GWB	380	12.0	6.5	3	4	NL	NL	65	65	65

SI: 1" = 25.4 mm, 1 lb = 4.45 N, 1 lb/ft = 0.0146 kN/m

1. Thermo-Brace® Blue sheathing attached with a minimum 16 gauge, $^{15}/_{16}$" crown staples shall penetrate a minimum of 1" into the stud. 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. Fastener edge distance shall be a minimum of $^{3}/_{8}$". Fastener head shall be in contact with the Thermo-Brace® Blue surface.
2. As an alternate to staples, Thermo-Brace® Blue may be attached with a minimum 0.120" x 1¼" smooth shank roofing nails. Fasteners are to be spaced a maximum of 3" o.c. at the panel edges and 3" o.c. in the field. Fastener edge distance shall be a minimum of $^{3}/_{8}$". Fastener head shall be in contact with the Thermo-Brace® Blue surface.
3. Gypsum attached with minimum #6 type W or S screws 1¼" long with a minimum edge distance of $^{3}/_{8}$", spaced 8" o.c. on the edge and 8" o.c. in the field.
4. All seismic design parameters follow the equivalency as defined in Section 3.
5. Thermo-Brace® Blue sheathing may be installed with either lapped joints or butted joints.
6. Response modification coefficient, R, for use throughout *ASCE 7*. Note: R reduces forces to a strength level, not an allowable stress level.
7. The tabulated value of the overstrength factor, Ω_0, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
8. Deflection amplification factor, C_d, for use with *ASCE 7* Section 12.8.6, 12.8.7, and 12.9.2
9. NL = Not Limited. Heights are measured from the base of the structure as defined in *ASCE 7* Section 11.2.

5.3.9 *Uplift Resistance:*

5.3.9.1 Thermo-Brace® Blue Structural Sheathing panels are permitted to resist uplift load forces using the allowable uplift loads (in pounds per linear foot) set forth in Table 10.

TABLE 10. UPLIFT PERFORMANCE

Product	Maximum Stud Spacing (in)	Fastener[2]	Fastener Spacing (edge:field) (in)	Allowable Unit Uplift Capacity[1] (plf)
Thermo-Brace® Blue with Single Bottom Plate	16 o.c.	$^{15}/_{16}$" Crown x 1¼" Leg 16 ga galvanized Staple or 0.120" x 1¼" Roofing Nail	3:3	400

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

1. Gypsum wallboard on the back (interior) side of the wall attached with minimum #6 type W or S screws 1¼" long spaced 8" o.c. on the edge and 8" o.c. in the field.
2. Staple crowns to be installed parallel to grain.

5.3.10 *Transverse Wind Loading:*

5.3.10.1 Thermo-Brace® Blue Structural Sheathing panels are permitted to resist transverse wind load forces using the allowable transverse loads (in pounds per linear foot) set forth in Table 11 and Table 12.

TABLE 11. TRANSVERSE (OUT-OF-PLANE) WIND LOAD RESISTANCE[1,2]

Product	Maximum Stud Spacing (in)	Fastener[3]	Fastener Spacing (edge:field) (in)	Allowable Design Value (psf)
Thermo-Brace® Blue	24	15/16" crown x 1¼" leg 16 ga galvanized Staple	3:3	90

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

1. The ASD allowable uniform load capacities to be used for wind design are determined by dividing the ultimate uniform load capacities by an ASD reduction factor of 1.6, per *SDPWS* Section 3.2.1 for determining the ASD allowable uniform load capacity.
2. Design wind load capacity shall be in accordance with *IBC* Section 1609.1.1.
3. Staple crowns shall be installed parallel to grain. Roofing nails (minimum 0.120" x 1¼" with a ⅜" head) are a permitted alternate fastener.

TABLE 12. BASIC WIND SPEED FOR USE IN EXTERIOR WALL COVERING ASSEMBLIES

Product	Allowable Components & Cladding Basic Wind Speed[1] (mph)	
	ASCE 7-05 (V_{asd})	ASCE 7-10 and 7-16 (V_{ult})
Thermo-Brace® Blue	155	200

SI: 1 mph = 1.61 km/h

1. Allowable wind speeds are based on the following: Components and Cladding wind loads, Mean roof height 30', Exposure B, 10 sq. ft. effective wind area. See the applicable building code for any adjustment needed for specific building location and configuration.

5.3.11 *Perforated Shear Walls:*

5.3.11.1 Thermo-Brace® Blue Structural Sheathing is permitted to be designed in accordance with the methodology found in *SDPWS* Section 4.3.3.5 with the following exceptions:

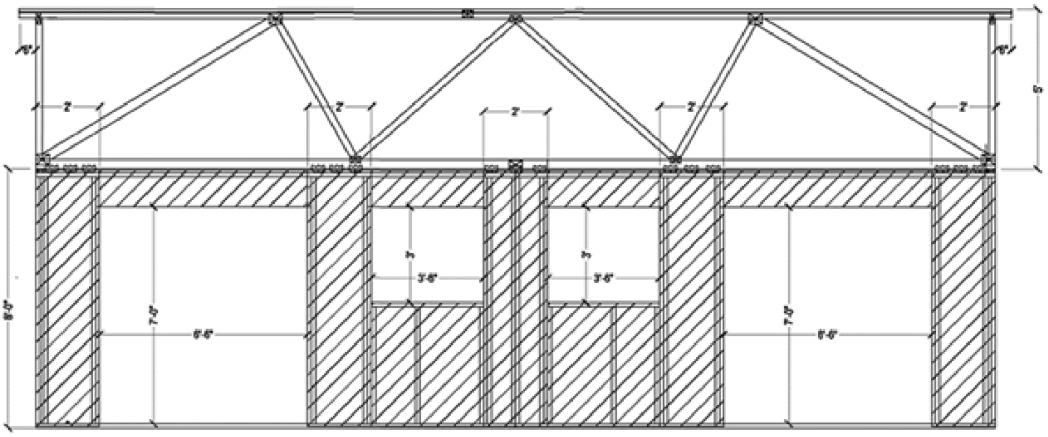
5.3.11.1.1 *SDPWS* Equation 4.3-5 for C_o shall be replaced with the equation from Table 13.

TABLE 13. C_O FOR USE WITH *SDPWS* PERFORATED SHEAR WALL METHODOLOGY

Wall Assembly	Replace SDPWS Eq. 4.3-5 with the Following
Thermo-Brace® Blue	$C_o = \frac{r}{(2-r)} * \frac{L_{tot}}{\sum L_i}$

SI: 1 in = 25.4 mm

5.3.11.2 Figure 3 shows how to calculate the capacity of a perforated shear wall with Thermo-Brace® Blue Structural Sheathing using Table 13.



$L_{tot} := 30\ ft$ — Total length of the perforated shear wall

$h := 8\ ft$ — Height of the perforated shear wall

$b_s := 2\ ft$ — Length of base of shear wall segment

$L_i := 2\ ft \cdot \left(\frac{2 \cdot b_s}{h}\right) = 1\ ft$ — Length of shear wall segment with aspect ratios greater than 2:1 adjusted in accordance with SDPWS Section 4.3.4.3

$\Sigma L_i := L_i \cdot 5 = 5\ ft$ — Summation of the five perforated shear wall segments

$A_o := \left(2 \cdot \left(7\ ft \cdot 6.5\ ft\right)\right) + \left(2 \cdot \left(3\ ft \cdot 3.5\ ft\right)\right) = 112\ ft^2$ — Total area of all four openings

$r := \frac{1}{\left(1 + \frac{A_o}{h \cdot \Sigma L_i}\right)} = 0.263$ — Sheathing area ratio, SDPWS Eq. 4.3-6

$C_o := \left(\frac{r}{2 - r}\right) \cdot \frac{L_{tot}}{\Sigma L_i} = 0.909$ — Shear capacity adjustment factor (replaces SDPWS Eq. 4.3-5)

$v := 230\ \frac{lb}{ft}$ — Allowable unit shear capacity for wind

$V_{perforated} := v \cdot \Sigma L_i \cdot C_o = 1045\ lb$ — Shear capacity of perforated shear wall, SDPWS Section 4.3.3.5

FIGURE 3. EXAMPLE OF A PERFORATED SHEAR WALL CALCULATION

5.4 *Water-Resistive Barrier*

5.4.1 Thermo-Brace® Blue Structural Sheathing may be used as a WRB as prescribed in *IBC* Section 1403.2[8] and *IRC* Section R703.2 when installed on exterior walls as described in this section.

5.4.2 Thermo-Brace® Blue Structural Sheathing shall be installed with board joints placed directly over exterior framing spaced a maximum of 24" (610 mm) o.c. The fasteners used to attach the board shall be installed in accordance with Section 6.

5.4.3 Where seams and joints between boards are overlapped nominally ¾" (19 mm) and fastened in accordance with Section 6, seam tape is not required for approval as a WRB.

5.4.4 Where seams and joints between boards are butt jointed, they shall be sealed with Barricade® Seam Tape or equivalent in accordance with Section 6. A slight gap of approximately 1/8" between panels is allowed.

5.4.5 A separate WRB system may also be provided. If a separate WRB system is used, taping of the sheathing joints is not required.

5.4.6 Flashing must be installed at all sheathing penetrations and shall comply with all applicable code sections.

5.5 *Air Barrier*

5.5.1 Thermo-Brace® Blue Structural Sheathing may be used as an air barrier material as prescribed in *IRC* Section N1102.4.1.1 and *IECC* Section R402.4.1.1 and *IECC* Section C402.5.1.1 in accordance with *ASTM E2178*.

5.6 *Draftstop*

5.6.1 Thermo-Brace® Blue Structural Sheathing may be used as a draftstop material in accordance with and *IBC* Section 708.4.2, Section 718.3, and Section 718.4 and *IRC* Section R302.12.

5.6.2 When installed as of a draftstop, Thermo-Brace® Blue Structural Sheathing shall be installed in accordance with Section 6.

5.7 *Surface Burn Characteristics*

5.7.1 Thermo-Brace® Blue Structural Sheathing may be used as a Class C interior finish material in accordance with *IBC* Section 803.1.2[9] and *IRC* Section R302.9.

5.7.2 Thermo-Brace® Blue Structural Sheathing has the flame spread characteristics shown in Table 14.

TABLE 14. SURFACE BURN CHARACTERISTICS[1]

Product	Flame Spread	Smoke Developed
Thermo-Brace® Blue	< 200	< 450

1. Tested in accordance with *ASTM E84* and *UL 723*

5.8 *Minimum Fastening Requirements for Non-Structural Applications*

5.8.1 Where other means of wall bracing are provided, or are not required, any grade of Thermo-Brace® Structural Sheathing may be used to provide other approved wall functions when installed in accordance with this section.

5.8.1.1 The sheathing panels are applied to wall framing with 16 ga. galvanized staples having a 15/16" crown and 1¼" leg lengths.

5.8.1.2 Fastener spacing shall be a maximum of 6" o.c in the field and 3" o.c. around the perimeter.

5.8.1.3 Stud spacing shall be a maximum of 24" o.c.

5.8.1.4 Minimum fastener penetration into the framing members is 1".

5.8.1.5 Fasten all staples parallel to the framing member, with an edge spacing of ⅜" (9.5 mm) minimum.

[8] 2015 *IBC* Section 1404.2

[9] 2015 *IBC* Section 803.1.1

5.8.1.6 All panels are vertically or horizontally installed with all joints backed by studs, plates, or blocks when water or air barrier functionality is desired.

5.8.1.7 When used as a WRB, joints shall overlap nominally ¾" (19.1 mm), or be butted and covered with Barricade® Seam Tape or equivalent. Overlapped joints are not required to the covered with Barricade® Seam Tape.

6 INSTALLATION

6.1 Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.

6.2 Basic instructions are printed on every Thermo-Brace® pallet or insert.

6.3 *Orientation*

6.3.1 Thermo-Brace® Blue Structural Sheathing shall be installed in either the vertical or horizontal orientation. To be recognized for the structural values listed in this TER, or as a water barrier, all joints must be fastened and backed by studs, plates, or blocks.

6.4 *Fastener Type*

6.4.1 *Thermo-Brace® Blue Structural Sheathing:*

6.4.1.1 Minimum $^{15}/_{16}$" crown x 1¼" leg, 16 ga. galvanized staples shall be installed per the staple manufacturer's instructions.

6.4.1.2 Where permitted in Section 5, 0.120" x 1 1/4" roofing nails shall be installed per the nail manufacturer's instructions.

6.4.1.3 Fasteners shall be driven such that the crown of the fastener is in contact with the surface of the Thermo-Brace® Structural Sheathing. Do not overdrive fasteners.

6.4.2 *Gypsum Wallboard:*

6.4.2.1 Where required, gypsum wallboard shall be a minimum ½" thickness and shall be attached with one of the following.

6.4.2.1.1 #6 x 1¼" Type W or S screws

6.4.2.1.2 5d cooler nails

6.5 *Fastener Edge Distance*

6.5.1 Fasteners shall be installed with a nominal edge distance of ⅜" (9.5 mm) for Thermo-Brace® Blue Structural Sheathing and gypsum.

6.6 *Treatment of Joints*

6.6.1 Thermo-Brace® Blue Structural Sheathing joints may be either butted or overlapped.

6.6.1.1 Butted joints shall be placed over framing members and fastened with a single row of fasteners at each panel edge. A slight gap of approximately $^{1}/_{8}$" between panels is allowed. Seal butted seams with Barricade® Seam Tape or equivalent when finished with attaching the wall panels and all fasteners in the wall line.

6.6.1.2 Lapped joints shall be overlapped by nominally ¾" (19.1 mm) and fastened with a single row of fasteners. Always run staples parallel with framing. Overlapped joints do not require Barricade® Seam Tape.

6.6.2 Thermo-Brace® Blue Structural Sheathing 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's installation instructions.

7 SUBSTANTIATING DATA

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

7.1.1 Lateral load testing in accordance with *ASTM E564* and *ASTM E2126* and analysis per *ASTM D7989*

7.1.2 Uplift load testing in accordance with *ASTM E72*

7.1.3 Transverse load testing in accordance with *ASTM E330*

7.1.4 Water-resistive barrier testing in accordance with *ASTM E331*

7.1.5 Air permeance testing in accordance with *ASTM E2178*

7.1.6 Flame spread and smoke developed ratings in accordance with *ASTM E84*

7.2 Information contained herein is the result of testing and/or data analysis by sources which conform to *IBC* Section 1703 and/or professional engineering regulations. DrJ relies upon accurate data to perform its ISO/IEC 17065 evaluations.

7.3 Where appropriate, DrJ's analysis is based on provisions that have been codified into law through state or local adoption of codes and standards. The providers of the codes and standards are legally responsible for their content. DrJ analysis may use code-adopted provisions as a control sample. A control sample versus a test sample establishes a product as being equivalent to that prescribed in this code in quality, *strength*, effectiveness, *fire resistance*, durability, and safety. Where the accuracy of the provisions provided herein is reliant upon the published properties of materials, DrJ relies upon the grade mark, grade stamp, mill certificate, and/or test data provided by material suppliers to be minimum properties. DrJ analysis relies upon these properties to be accurate.

8 FINDINGS

8.1 When used and installed in accordance with this TER and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:

8.1.1 Lateral load resistance due to wind and seismic loads carried by shear walls

8.1.2 Use as equivalent to the CS-PF as described in *IRC* Section R602.10.5 and Section R602.10.6.4

8.1.3 Uplift load resistance due to wind uplift loads carried by the walls

8.1.4 Transverse load resistance due to components and cladding pressures on building surfaces

8.1.5 Performance for use as a WRB in accordance with *IBC* Section 1403.2[10] and *IRC* Section R703.2

8.1.6 Performance for use as an air barrier material in accordance with *IRC* Section N1102.4.1.1 and *IECC* Section R402.4.1.1 and *IECC* Section C402.5.1.1

8.1.7 Performance for use as a draftstop in accordance with *IBC* Section 708.4.2, Section 718.3, and Section 718.4 and *IRC* Section R302.12

8.1.8 Performance for use as a Class C interior finish material in accordance with *IBC* Section 803.1.2[11] and *IRC* Section R302.9.

8.2 Building codes require data from valid *research reports* be obtained from *approved sources* (i.e., licensed *registered design professionals* [RDPs]).

8.2.1 Building official approval of a licensed RDP is performed by verifying the RDP and/or their business entity is listed by the licensing board of the relevant *jurisdiction*.

8.3 Agencies who are accredited through ISO/IEC 17065 have met the code requirements for approval by the *building official*. DrJ is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131 and employs RDPs.

[10] 2015 *IBC* Section 1404.2

[11] 2015 *IBC* Section 803.1.1

8.4 Through ANAB accreditation and the IAF MLA, DrJ certification can be used to obtain product approval in any *jurisdiction* or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – "certified once, accepted everywhere."

8.5 *IBC* Section 104.11 (*IRC* Section R104.11 and *IFC* Section 104.10[12] are similar) 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*.

9 Conditions of Use

9.1 Thermo-Brace® Blue Structural Sheathing shall not be used as a nailing base for claddings, trim, windows, or doors. Fastening through the Thermo-Brace® Blue Structural Sheathing into the framing is acceptable.

9.2 Walls sheathed with Thermo-Brace® Blue Structural Sheathing shall not be used to resist horizontal loads from concrete and masonry walls.

9.3 When Thermo-Brace® Blue Structural Sheathing is installed as a wall sheathing but is not installed per structural requirements, light-framed walls shall be braced by other means. When used as a WRB, installation shall be in accordance with Section 5.4.

9.3.1 When Thermo-Brace® Structural Sheathing is not installed as a WRB, other means of providing a WRB shall be required, as per the code.

9.4 When used in accordance with the *IBC* in Seismic Design Categories C, D, E, or F, special inspections shall comply with *IBC* Section 1705.13[13].

9.5 When used in accordance with the *IBC* in high wind areas, special inspections shall comply with *IBC* Section 1705.12[14]

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

9.6.1 Allowable shear loads shall not exceed values in Table 8 for wind loads and Table 9 for seismic loads.

9.6.2 Allowable uplift loads shall not exceed values in Table 10.

9.6.3 Transverse design loads and wind speeds shall not exceed those described in Table 11 and Table 12 respectively, unless an approved exterior wall covering capable of separately resisting loads perpendicular to the face of the walls is installed over the sheathing.

9.7 Where required by the *building official*, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of *permit* application.

9.8 Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.

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

9.10 At a minimum, this product shall be installed per Section 6 of this TER.

9.11 This product has an internal quality control program and a third-party quality assurance program in accordance with *IBC* Section 104.4 and Section 110.4 and *IRC* Section R104.4 and Section R109.2.

9.12 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the *owner* or the owner's authorized agent.

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[12] 2018 *IFC* Section 104.9

[13] 2018 *IBC* Section 1705.12

[14] 2018 *IBC* Section 1705.11

9.13 This TER shall be reviewed for code compliance by the AHJ in concert with *IBC* Section 104.

9.14 The implementation of this TER for this product is dependent on the design, quality control, third-party quality assurance, proper implementation of installation instructions, inspections required by *IBC* Section 110.3, and any other code or regulatory requirements that may apply.

10 Identification

10.1 The product(s) listed in Section 1.1 are identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.

10.2 Additional technical information can be found at barricadebp.com.

11 Review Schedule

11.1 This TER is subject to periodic review and revision. For the most recent version, visit drjcertification.org.

11.2 For information on the current status of this TER, contact DrJ Certification.

Issue Date: June 28, 2021
Subject to Renewal: July 1, 2023

FBC Supplement to TER 1507-09

REPORT HOLDER: Barricade® Building Products

1 Evaluation Subject

1.1 Thermo-Brace® Blue Structural Sheathing

2 Purpose and Scope

2.1 *Purpose*

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Thermo-Brace® Blue Structural Sheathing, recognized in TER 1507-09, has also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B—17, 20: Florida Building Code – Building*

2.2.2 *FBC-R—17, 20: Florida Building Code – Residential*

2.2.3 *FBC-EC—17, 20: Florida Building Code – Energy Conservation*

3 Conclusions

3.1 Thermo-Brace® Blue Structural Sheathing, described in TER 1507-09, complies with the *FBC-B, FBC-R*, and *FBC-EC* and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the *IBC*, *IRC*, and *IECC* and the *FBC-B*, *FBC-R*, and *FBC-EC* applicable to this TER, they are listed here.

3.2.1 *FBC-B* Section 104.4 and Section 110.4 are reserved.

3.2.2 *FBC-R* Section R104, Section R109, Section R602.10, Section R602.10.3, Table R602.10.3(1), Table R602.10.3(2), Table R602.10.3(3), Table R602.10.3(4), Section R602.10.4, Table R602.10.5, Section R602.10.6.4, Section R602.12, and Table R602.12.4 are reserved.

3.2.3 *FBC-R* Section N1101 replaces *IRC* Section N1102.4.1.1.

3.2.4 *FBC-B* Section 708.4 replaces *IBC* Section 708.4.2.

3.2.5 *FBC-B* Section 803.1.1 replaces *IBC* Section 803.1.2.

3.2.6 *FBC-B* Section 2308 replaces *IBC* Section 2308.6 and is reserved.

3.2.7 *FBC-B* Section 1404.2 replaces *IBC* Section 1403.2.

3.2.8 *FBC-B* Section 1705 replaces both *IBC* Section 1705.12 and Section 1705.11 and is reserved.

4 Conditions of Use

4.1 Thermo-Brace® Blue Structural Sheathing, described in TER 1507-09, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 1507-09

4.1.2 The design, installation, and inspections are in accordance with additional requirements of *FBC-B* Chapter 16 and Chapter 17, as applicable.