

DL 2302-03

Performance Characteristics Related to StoneCoat 2" Composite Fusion Panel

StoneCoat International, Inc

Product:

StoneCoat Fusion Panels

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 05 23.10 - Adhesives

SECTION: 06 12 00 - Structural Panels

SECTION: 06 12 19 - Shear Wall Panels

SECTION: 06 16 00 - Sheathing

SECTION: 06 16 13 - Insulated Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00 - Thermal Insulation

SECTION: 07 21 13 - Foam Board Insulation

SECTION: 07 25 00 - Water-Resistive Barriers/Weather Barriers

SECTION: 07 26 00 - Vapor Retarders

SECTION: 07 27 00 - Air Barriers

SECTION: 07 42 43 - Composite Wall Panels

SECTION: 07 44 63 - Fabricated Faced Panel Assemblies

SECTION: 07 48 00 - Exterior Wall Assemblies

SECTION: 07 84 26 - Thermal Barriers for Plastics

DIVISION: 09 00 00 - FINISHES

SECTION: 09 70 00 - Wall Finishes

SECTION: 09 75 23 - Simulated Stone Wall Facing

SECTION: 09 77 00 - Special Wall Surfacing

SECTION: 09 97 26 - Cementitious Coatings

1 Listed Performance Characteristics Related to the StoneCoat Fusion Panel^{1,2}

1.1 StoneCoat Fusion Panels

1.1.1 The Performance Characteristics Related to the StoneCoat Fusion Panel evaluated in this Listing are shown in Figure 1.



Figure 1. StoneCoat Fusion Composite Structural Assembly (StoneCoat Fusion Panel)

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

² **Federal Regulation Definition.** 24 CFR 3280.2 "Listed or certified" means included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection 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. **International Building Code (IBC) Definition of Listed.** Equipment, materials, products or services included in a list published by an organization acceptable to the [building official](#) and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. **IBC Definition of Labeled.** Equipment, materials or products to which has been affixed a [label](#), seal, symbol or other identifying mark of a nationally recognized testing laboratory, [approved agency](#) or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

1.2 StoneCoat Fusion Panels is described in Table 1:

Table 1. Description of SF from Exterior to Interior: Exterior Floor, Wall or Roof Envelope

Product	Description	Fastening
Cladding or Exterior Floor Wall or Roof Covering - StoneCoat	Factory-prepared mixture of crushed limestone and other proprietary ingredients used as an exterior wall covering. StoneCoat is applied to directly to a proprietary foam sheathing and laminate composite panel with no additional lath.	Spread onto the exterior sheathing per manufacturer instructions
Exterior Sheathing	2" XPS foam plastic insulation factory adhered to a proprietary laminate. The laminate faces the exterior and is attached to structural members a maximum of 16" o.c. All panel edges and ends require the exterior sheathing to be glued and fastened to a structural member. When StoneCoat is used as the cladding, StoneCoat is applied directly to the laminate.	The exterior sheathing with the laminate facing the exterior is fastened to wood structural members with #9 x 3" screws at 12" on center spacing around the perimeter and 12" on center in the field. A 3/8" bead of <u>LIQUID NAILS® Heavy Duty Construction Adhesive</u> is applied each structural member, along the length of the structural member and top/bottom plates/rim boards. The foam sheathing side (i.e. non-laminate side) is adhered to each structural member post adhesive application.
Structural Member	Minimum 2x4 #2 SPF (minimum SG of 0.42) grade marked lumber applied at a maximum of 16" o.c. Other lumber types, grades and sizes can be used if their design values are equal to or better than 2x4 #2 SPF.	(3) Nails 3" x 0.131" per structural member are required at top/bottom plates when used in walls and for rim board attachment when used in floors or roofs.
Cavity Insulation	Any type of cavity insulation can be used.	Per cavity insulation manufacturer instructions.
Interior Sheathing	Minimum 1/2" gypsum wallboard attached to a structural member.	Fastened to each structural member with #6 1/4" Type W screws at 16" on center spacing around the perimeter and 16" on center in the field. Adhesive can also be applied but is not a requirement.

2 Scope of Listing^{3,4}

2.1 StoneCoat Fusion Panels have been tested and/or evaluated in accordance with the following Standards and Referenced Documents for use as specified herein:

- 2.1.1 *ASTM C297: Standard Test Method For Flatwise Tensile Strength Of Sandwich Constructions*
- 2.1.2 *ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*
- 2.1.3 *ASTM C1860 - Standard Test Methods for Measurement of Tensile Strength or Bond Strength of Portland Cement-Based Plaster by Direct Tension*
- 2.1.4 *ASTM D779: Standard Test Method for Determining the Water Vapor Resistance of Sheet Materials in Contact with Liquid Water by the Dry Indicator Method*
- 2.1.5 *ASTM D882: Standard Test Method For Tensile Properties Of Thin Plastic Sheeting*
- 2.1.6 *ASTM D1623: Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics*
- 2.1.7 *ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

³ This Listing is a code defined research report, which is also known as a duly authenticated report, provided by an approved agency (see IBC Section 1703.1) and/or an approved source (see IBC Section 1703.4.2). An approved agency is "approved" as an approved agency when it is ANAB accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory. A professional engineer is "approved" as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a duly authenticated report certified by an approved source. (i.e., Registered Design Professional). DrJ is an ANAB accredited product certification body.

⁴ Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

- 2.1.8 *ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials*
- 2.1.9 *ASTM E96 - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials*
- 2.1.10 *ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*
- 2.1.11 *ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*
- 2.1.12 *ASTM E564 - Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*
- 2.1.13 *ASTM E2126 - Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*
- 2.1.14 *ASTM E2556 - Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment*
- 2.1.15 *FBC-B—20, 23: Florida Building Code – Building (FL 42094)*
- 2.1.16 *FBC-R—20, 23: Florida Building Code – Residential (FL 42094)*
- 2.1.17 *Testing Application Standard (TAS) 201-94 Impact Test Procedures*
- 2.1.18 *Testing Application Standard (TAS) 202-94 Criteria for Testing Impact & Nonimpact Resistant Building Envelope Components Using Uniform Static Air Pressure*
- 2.1.19 *Testing Application Standard (TAS) 203-94 Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*
- 2.1.20 *UL 723: Test for Surface Burning Characteristics of Building Materials*
- 2.1.21 *UL 1715 Fire Test of Interior Finish Material*

3 Performance Evaluation

- 3.1 Tests, testing, test reports, research reports, duly authenticated reports and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2018 (DTSA).⁵
- 3.2 Testing and/or inspections conducted for this TER were performed by CBI, ISO/IEC 17025 accredited testing laboratory,⁶ and ISO/IEC 17020 accredited inspection body,⁷ which are internationally recognized accreditations through International Accreditation Forum (IAF).
- 3.3 Independent testing and/or inspections conducted for this Listing were performed by an ISO/IEC 17025 accredited testing laboratory, ISO/IEC 17020 accredited inspection body, and/or a licensed Registered Design Professional (RDP).

⁵ <https://www.law.cornell.edu/uscode/text/18/part-11/chapter-90>. As our professional duty to inform, please be aware that whoever, with intent to convert a trade secret (TS), that is related to a product or service used in or intended for use in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; shall be fined under this title or imprisoned not more than 10 years, or both. 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. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.

⁶ Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

⁷ Ibid.



3.4 Prescriptive Residential Design

3.4.1 Simplified Bracing for StoneCoat Fusion Panel

3.4.1.1 When using Table 2 the following requirements apply to SFs (please also refer to Table 1):

3.4.1.1.1 A minimum 2x4 #2 SPF grade marked lumber is required to be applied at a maximum of 16" o.c.

3.4.1.1.1.1 Other types, grades and sizes can be used if their design values are equal to or better than 2x4 #2 grade SPF.

3.4.1.1.2 The exterior sheathing, with the laminate facing the exterior, is fastened to each structural member with #9 x 3" screws at 12" on center spacing around the perimeter and 12" on center in the field.

3.4.1.1.2.1 A $\frac{3}{8}$ " bead of LIQUID NAILS® Heavy Duty Construction Adhesive - LN-903 is applied to each structural member along the length of the structural member and top/bottom plates/rim boards.

3.4.1.1.2.2 The foam sheathing side (i.e., non-laminate side) is adhered to structural members post glue application.

3.4.1.1.2.3 Any unsupported SF exterior sheathing edges or ends need to be supported by a structural member.

3.4.1.1.2.4 All panel edges and ends require the exterior sheathing to be glued and attached to a structural member.

3.4.1.1.3 Three (3) Nails 3" x 0.131" per structural member are required at top/bottom plates when used in walls and for rim board attachment when used in floors or roofs.

3.4.1.1.4 A minimum $\frac{1}{2}$ " gypsum wallboard (GWB) is attached to the interior side of the wall to the structural members.

3.4.1.1.4.1 The GWB is fastened with #6 1 $\frac{1}{4}$ " Type W screws at 16" o.c. spacing around the perimeter and 16" o.c. in the field.

3.4.1.1.4.2 Any unsupported GWB edges or ends need to be supported by a structural member.

3.4.2 All connections will need to be designed separately to transfer load from the SF to other structural members to the foundation. Please refer to the manufacturer details and installation instructions or email to support@stonecoat.com.

3.4.3 When StoneCoat is used as the exterior floor, wall or roof covering (i.e., cladding), the proprietary laminate is the substrate required for the StoneCoat to be directly applied to. Please refer to the manufacturer details and installation instructions for applying StoneCoat to the laminate.

3.4.3.1 All provisions of the International Residential Code (IRC) simplified bracing method shall be met when using Table 2, where Table 2 replaces IRC language and tables, as pertinent.



Table 2. Simplified Bracing Amounts for use with the International Residential Code (IRC)^{1,2,3,4,5,6,7}

	Ultimate Design Wind Speed	Story Level	Eave to Ridge Height	Minimum Number of Bracing Units/ft of Bracing Required (Long Side)						Minimum Number of Bracing Units/ft of Bracing Required (Short Side)					
				Length of Short Side						Length of Long Side					
				10	20	30	40	50	60	10	20	30	40	50	60
Minimum 6" wide SF	115	One Story or Top of Two or Three Story	10	1	1	2	2	3	3	1	1	2	2	3	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	4	4	1	1	3	3	4	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
	130	One Story or Top of Two or Three Story	10	1	2	2	3	3	4	1	2	2	3	3	4
		First of Two Story or Second of Three Story		2	3	4	5	6	6	2	3	4	5	6	6
		First of Three Story		2	4	5	7	8	9	2	4	5	7	8	9
		One Story or Top of Two or Three Story	15	1	3	3	4	4	5	1	3	3	4	4	5
		First of Two Story or Second of Three Story		2	3	5	6	7	7	2	3	5	6	7	7
		First of Three Story		2	4	6	8	9	10	2	4	6	8	9	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 SF shall replace specified wall assembly.
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. Minimum ½" gypsum wallboard (GWB) fastened 16":16" attached to the interior side of the wall in accordance with [IRC Section R702.3.5](#) and [IRC Table R702.3.5](#).



3.4.4 **Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line**

- 3.4.4.1 StoneCoat Fusion Panels may be used on braced wall lines as an equivalent alternative to the IRC Method WSP and Method CS-WSP, when installed in accordance with [IRC Section R602.10](#) and this listing.
- 3.4.4.2 For wind design, required braced wall panel lengths for StoneCoat Fusion Panels shall be as shown in Table 3 and shall be used in conjunction with [IRC Table R602.10.3\(2\)](#), which provides the required adjustments.

Table 3. Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line-Wind Design^{1,2,3,4,5,6,7}

Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line											
		Intermittent Sheathing						Continuous Sheathing					
		Ultimate Design Wind Speed											
		< 95 mph	≤110 mph	≤115 mph	≤120 mph	≤130 mph	<140 mph	< 95 mph	≤110 mph	≤115 mph	≤120 mph	≤130 mph	<140 mph
One Story or the Top of Two or Three Stories	10	1.4	1.9	1.9	2.4	2.4	2.9	1.4	1.4	1.9	1.9	2.4	2.4
	20	2.4	3.4	3.4	3.8	4.8	5.3	2.4	2.9	3.4	3.4	3.8	4.8
	30	3.8	4.8	5.3	5.8	6.7	7.7	3.4	4.3	4.3	4.8	5.8	6.7
	40	4.8	6.2	6.7	7.7	8.6	10.1	3.8	5.3	5.8	6.2	7.2	8.6
	50	5.8	7.7	8.6	9.1	10.6	12.5	4.8	6.7	7.2	7.7	9.1	10.6
	60	6.7	9.1	10.1	11.0	12.5	14.4	5.8	7.7	8.6	9.1	10.6	12.5
First Story of Two Stories or Second Story of Three Stories	10	2.9	3.4	3.8	4.3	4.8	5.8	2.4	2.9	3.4	3.4	4.3	4.8
	20	4.8	6.2	7.2	7.7	9.1	10.6	4.3	5.3	6.2	6.7	7.7	8.6
	30	6.7	9.1	10.1	11.0	13.0	14.9	5.8	7.7	8.6	9.1	11.0	12.5
	40	9.1	12.0	13.0	14.4	16.8	19.2	7.7	10.1	11.0	12.0	14.9	16.3
	50	11.0	14.9	15.8	17.3	20.6	23.5	9.6	12.5	13.4	14.9	17.3	20.2
	60	13.0	17.3	19.2	20.6	24.0	27.8	11.0	14.9	16.3	17.8	20.6	24.0
First Story of Three Stories	10	3.8	5.3	5.8	6.2	7.2	8.2	3.4	4.3	4.8	5.3	6.2	7.2
	20	7.2	9.6	10.6	11.0	13.0	15.4	6.2	8.2	8.6	9.6	11.0	13.0
	30	10.1	13.4	14.9	16.3	18.7	22.1	8.6	11.5	12.5	13.9	16.3	18.7
	40	13.0	17.8	19.2	21.1	24.5	28.3	11.0	14.9	16.3	17.8	21.1	24.0
	50	16.3	21.6	23.5	25.9	30.2	35.0	13.9	18.2	20.2	22.1	25.4	29.8
	60	19.2	25.4	27.8	30.7	36.0	41.3	16.3	22.1	24.0	25.9	30.2	35.0

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

1. Generally, for SF the continuous insulation portion of this table will be used. There may be times when other sheathing types are required to resist lateral loads. For assistance with intermittent sheathing design, please call the SF manufacturer.
2. Linear interpolation is permitted.
3. StoneCoat Fusion Panels constructed as described in Table 1.
4. Maximum stud spacing is 16" o.c.
5. Demonstrates equivalency to [IRC Table R602.10.3\(1\)](#). All adjustment factors from [IRC Table R602.10.3\(2\)](#) shall be applied.
6. Minimum 1/2" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly.
7. Wind speeds are V_{ur} in accordance with ASCE 7-22. Convert to equivalent V_{asd} wind speed per [IBC Section 1609.3.1](#).



3.4.5 Required Bracing Lengths for SF (Method WSP and CS-WSP) – Seismic

3.4.5.1 For seismic design, required braced wall panel lengths for StoneCoat Fusion Panels shall be as shown in Table 4 and shall be used in conjunction with [IRC Table R602.10.3\(4\)](#), which provides the required adjustments.

Table 4. Required Bracing Lengths for SF (Method WSP and CS-WSP) – Seismic^{1,2,3,4,5,6}

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line							
		Intermittent Sheathing				Continuous Sheathing			
		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	1.6	1.7	1.9	2.4	1.4	1.6	1.6	2.0
	20	3.1	3.5	3.8	4.8	2.6	2.9	3.3	4.1
	30	4.6	5.2	5.8	7.2	4.0	4.4	4.9	6.1
	40	6.1	6.9	7.7	9.6	5.2	5.9	6.6	8.1
	50	7.7	8.6	9.6	12.0	6.6	7.3	8.1	10.2
First Story of Two Stories or Second Story of Three Stories	10	2.9	3.6	4.3	5.3	2.5	3.1	3.6	4.5
	20	5.8	7.2	8.6	10.5	4.9	6.1	7.3	9.0
	30	8.6	10.9	13.0	15.8	7.3	9.2	11.0	13.5
	40	11.5	14.4	17.3	21.1	9.8	12.3	14.7	18.0
	50	14.4	18.0	21.6	26.4	12.3	15.4	18.3	22.5
First Story of Three Stories	10	4.3	5.1	5.8	NP	3.6	4.3	4.9	NP
	20	8.6	10.1	11.5	NP	7.3	8.6	9.8	NP
	30	13.0	15.2	17.3	NP	11.0	12.9	14.7	NP
	40	17.3	20.1	23.0	NP	14.7	17.2	19.6	NP
	50	21.6	25.2	28.8	NP	18.3	21.4	24.5	NP

1. Generally, for SF the continuous insulation portion of this table will be used. There may be times when other sheathing types are required to resist lateral loads. For assistance with intermittent sheathing design, please call the SF manufacturer.
2. Linear interpolation is permitted.
3. SF is constructed as described in Table 1.
4. Maximum stud spacing is 16" o.c.
5. Demonstrates equivalency to [IRC Table R602.10.3\(3\)](#). All adjustment factors from [IRC Table R602.10.3\(4\)](#) shall be applied.
6. Minimum ½" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly.

3.4.6 *SF Equivalency Factor to IRC Wall Bracing Provisions*

- 3.4.6.1 Table 5 provides an equivalency factor that can be used to adjust the IRC bracing tables for use with StoneCoat Fusion Panels.
- 3.4.6.2 Simply multiply the bracing lengths derived from the [IRC Table R602.10.3\(1\)](#) and [IRC Table R602.10.3\(3\)](#), including all adjustments found in [IRC Table R602.10.3\(2\)](#) and [IRC Table R602.10.3\(4\)](#).
- 3.4.6.3 All other IRC prescriptive bracing minimums, spacing requirements and rules must still be met.

Table 5. SF Equivalency Factor to IRC Wall Bracing Provisions

Product	Maximum Stud Spacing (in)	Fastener ^{1,2}	Maximum Fastener Spacing (edge:field) (in)	Gypsum Wallboard Fastening Spacing ² (edge:field)	Wind
					Minimum SPF Structural Member
					Equivalency Factors to IRC WSP or CS-WSP ¹
6" StoneCoat Fusion Panel Assembly	16 o.c.	#9 x 3" screw plus adhesive	12:12	16:16	0.96

SI: 1 in = 25.4 mm

1. SF tested equivalency factors allow the user to determine the length of bracing required, by multiplying the factor by the length of bracing shown in the WSP or CS-WSP columns in [IRC Table R602.10.3\(1\)](#) and [IRC Table R602.10.3\(3\)](#), as modified by all applicable factors in [IRC Table R602.10.3\(2\)](#) and [IRC Table R602.10.3\(4\)](#), respectively.

2. Gypsum wallboard shall be installed on the interior of the assembly according to the provisions listed in [IRC Table R702.3.5](#).

3.5 *SF Design Properties*

- 3.5.1 To design StoneCoat Fusion Panels applications where the design requires a shorter span, longer span, a cantilever, a concentrated load and so forth, the design properties found in Table 9 can be used in standard engineering beam/column equations⁸ to obtain SF resistance to loads.
 - 3.5.1.1 To properly size SF beams or columns, treat the SF member as a 2x__ as found in Table 6. Analyze the resistance needed using standard engineering beam/column equations⁹ per the member properties defined in Table 6. To install the sized member as the required assembly, for the specific floor, wall or roof application, it is required to implement all of Section 3.5.2.
 - 3.5.1.2 For assistance with SF beam or column specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com.
- 3.5.2 The final application of SF shall conform to the following requirements:
 - 3.5.2.1 A minimum 2x4 #2 SPF grade marked lumber is required to be applied at a maximum of 16" o.c.
 - 3.5.2.1.1 Other types, grades and sizes can be used if their design values are equal to or better than 2x4 #2 grade SPF.
 - 3.5.2.2 The exterior sheathing, with the laminate facing the exterior, is fastened to each structural member with #9 x 3" screws at 12" o.c. spacing around the perimeter and 12" o.c. in the field.
 - 3.5.2.2.1 A 3/8" bead of [LIQUID NAILS® Heavy Duty Construction Adhesive - LN-903](#) is applied to each structural member along the length of the structural member and top/bottom plates/rim boards.

⁸ <https://www.fao.org/3/i2433e/i2433e04.pdf>. For assistance with SF beam or column specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com

⁹ <https://www.fao.org/3/i2433e/i2433e04.pdf>. For assistance with SF beam or column specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com

- 3.5.2.2.2 The foam sheathing side (i.e. non-laminate side) is adhered to structural members post glue application.
- 3.5.2.2.3 Any unsupported SF exterior sheathing edges or ends need to be supported by a structural member.
- 3.5.2.2.4 All panel edges and ends require the exterior sheathing to be glued and attached to a structural member.
- 3.5.2.2.5 Three (3) Nails 3" x 0.131" per structural member are required at top/bottom plates when used in walls and for rim board attachment when used in floors or roofs.
- 3.5.2.2.6 A minimum ½" gypsum wallboard (GWB) is attached to the interior side of the wall to the structural members.
 - 3.5.2.2.6.1 The GWB is fastened with #6 1¼" Type W screws at 16" o.c. spacing around the perimeter and 16" o.c. in the field.
 - 3.5.2.2.6.2 Any unsupported GWB edges or ends need to be supported by a structural member.
- 3.5.3 All connections will need to be designed separately to transfer load from SF to other structural members to the foundation. Please refer to the manufacturer details and installation instructions or email at support@stonecoat.com.
- 3.5.4 When StoneCoat is used as the exterior floor, wall or roof covering (i.e., cladding), the proprietary laminate is the substrate required for the StoneCoat to be directly applied to. Please refer to the manufacturer details and installation instructions for applying StoneCoat to the laminate.
- 3.5.5 The allowable design values for SF used in structural resistance applications¹⁰ are shown in Table 6.

Table 6. SF Design Properties for Use in Standard Engineering Beam and Column Equations (plf)^{1,2,3,4,5}

Member Size (2x__)	Fb ² (psi)	Ft (psi)	Fv (psi)	Fc (psi)	FcL	EI (lb-in ²)	MOE (psi)	I (in ⁴)	S (in ⁴)
6" SF	1555	450	160	1,325	425	12,800,000	600,000	20.8	7.6
8" SF	1210	450	135	1265	425	34,412,500	700,000	52.7	14.1
10" SF	1075	450	135	1208	425	71,985,500	700,000	98.9	21.4
12" SF	1090	450	135	1150	425	143,801,100	800,000	178.0	31.6

SI: 1 in = 25.4 mm, 1 psi = 0.00689 MPa

1. Composite design properties to design a 2-inch x 6-inch structural member, when used in the following application examples: 1) the design of one or more trimmers around a window/door, 2) design a double member required to carry a concentrated load, 3) design a cantilevered floor, wall or roof panel and so forth. See Section 3.5.1 and Section 3.5.2 for the specialty engineered design procedure.
2. Fb includes 1.15 repetitive member factor per NDS requirements.
3. To properly size SF beams or columns, treat the SF member as a 2x__ as found in Table 6.
4. Analyze the resistance needed using standard engineering beam/column equations per the member properties defined in Table 6.
5. To install the sized member as the required assembly for any specific floor, wall or roof application, it is required to implement all of Section 3.5.2.

¹⁰ <https://www.fao.org/3/i2433e/i2433e04.pdf>. For assistance with SF beam or column specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com



3.6 Transverse Load Resistance

3.6.1 The maximum allowable transverse load resistance capacities for various deflection limits and structural member spacings are shown in Table 7 (16" o.c.) and Table 8 (12" o.c.).

Table 7. Allowable Transverse Load (psf) at Various Deflection Limits for SF structural members @ 16" o.c.¹

Assembly Size	Span (ft)	Maximum Allowable Load (psf)	L/120	L/180	L/240	L/360	L/480
6" SF	2	658	658	658	658	658	658
	4	329	329	329	329	222	167
	6	163	163	132	99	66	49
	8	92	83	56	42	28	21
	9	73	59	39	29	20	15
	10	59	43	28	21	14	11
	11	49	32	21	16	11	8
	12	41	25	16	12	8	6
8" SF	2	759	759	759	759	759	759
	4	380	380	380	380	380	380
	6	237	237	237	237	177	133
	8	133	133	133	112	75	56
	9	105	105	105	79	52	39
	10	85	85	76	57	38	29
	11	70	70	57	43	29	22
	12	59	59	44	33	22	17
10" SF	6	312	312	312	312	312	278
	8	180	180	180	180	156	117
	9	142	142	142	142	110	82
	10	115	115	115	115	80	60
	11	95	95	95	90	60	45
	12	80	80	80	69	46	35
12" SF	6	380	380	380	380	380	380
	8	270	270	270	270	270	234
	9	213	213	213	213	213	164
	10	173	173	173	173	160	120
	11	143	143	143	143	120	90
	12	120	120	120	120	92	69

SI: 1 in = 25.4 mm, 1 ft. = 30.48 cm, 1 psi = 0.00689 MPa, 1 psf = 0.993 Mpa

1. To install the SF assembly, for any specific floor, wall or roof application, it is required to implement all of Section 3.5.2.



Table 8. Allowable Transverse Load (psf) at Various Deflection Limits for SF Structural Members @ 12" o.c.¹

Assembly Size	Span (ft)	Maximum Allowable Load (psf)	L/120	L/180	L/240	L/360	L/480
6" SF	2	878	878	878	878	878	878
	4	439	439	439	439	296	222
	6	218	218	176	132	88	66
	8	123	111	74	56	37	28
	9	97	78	52	39	26	20
	10	78	57	38	28	19	14
	11	65	43	28	21	14	11
	12	54	33	22	16	11	8
8" SF	2	2,840	1,013	1,013	1,013	1,013	1,013
	4	710	506	506	506	506	506
	6	316	316	316	316	316	316
	8	178	178	149	100	75	178
	9	140	140	105	70	52	140
	10	114	102	76	51	38	114
	11	94	77	57	38	29	94
	12	79	59	44	30	22	79
10" SF	6	416	416	416	416	416	370
	8	240	240	240	240	208	156
	9	189	189	189	189	146	110
	10	153	153	153	153	107	80
	11	127	127	127	120	80	60
	12	107	107	107	93	62	46
12" SF	6	506	506	506	506	506	506
	8	360	360	360	360	360	312
	9	284	284	284	284	284	219
	10	230	230	230	230	213	160
	11	190	190	190	190	160	120
	12	160	160	160	160	123	92

SI: 1 in = 25.4 mm, 1 ft. = 30.48 cm, 1 psi = 0.00689 MPa, 1 psf = 0.993 Mpa

1. To install the SF assembly, for any specific floor, wall or roof application, it is required to implement all of Section 3.5.2.



3.6.2 Basic Wind Speed (mph) for SF Used in Exterior Sheathed Assemblies

3.6.2.1 The maximum basic wind speed for StoneCoat Fusion Panels for various deflection limits used in wall applications are shown in Table 9.

Table 9. Maximum Basic Wind Speed for SF for Various Deflection Limits Used in Wall Applications^{1,2}

Assembly Size	Span (ft)	Max. Stud Spacing (in)	Max. Allow. Wind Speed (mph)	L/120	L/180	L/240	L/360	L/480
6" SF	2	16	200	200	200	200	200	200
	4		200	200	200	200	200	200
	6		200	200	200	200	180	
	8		200	200	195	170	140	120
	9		200	200	160	140	120	100
	10		200	170	140	120	100	85
	11		185	150	120	105	85	-
	12		170	130	105	90	-	-
8" SF	2		200	200	200	200	200	200
	4		200	200	200	200	200	200
	6		200	200	200	200	200	200
	8		200	200	200	200	200	195
	9		200	200	200	200	190	165
	10		200	200	200	200	160	140
	11		200	200	200	175	140	125
	12		200	200	175	150	125	110
10" SF	6		200	200	200	200	200	200
	8		200	200	200	200	200	200
	9		200	200	200	200	200	200
	10		200	200	200	200	200	200
	11		200	200	200	200	200	175
	12		200	200	200	200	180	155
12" SF	6		200	200	200	200	200	200
	8		200	200	200	200	200	200
	9	200	200	200	200	200	200	
	10	200	200	200	200	200	200	
	11	200	200	200	200	200	200	
	12	200	200	200	200	200	200	

1. Wind speeds are V_{ult} per ASCE 7-22.
 2. Allowable wind speeds are based on the following: Components and Cladding wind loads, Zone 5, 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.

3.7 Lateral Load Diaphragm Shear Resistance for Wall, Floor and Roof Applications

3.7.1 For wind design, the allowable design values for SF used in lateral (shear) applications are shown in Table 10. Walls shall be designed in accordance with the methodology used in SDPWS for WSP using the capacities shown in Table 10, Table 11, and Table 12.

Table 10. SF Allowable Unit Diaphragm Shear Capacity with Lateral Load Applied to One Chord¹

Assembly Size	Maximum Structural Member Spacing (in)	Proprietary Foam Sheathing Panel to Stud Fastener/ Spacing (edge/field) (in)	Gypsum Wallboard (GWB)	Fastener Schedule	Allowable Unit Shear Capacity (plf)
Minimum 6" SF	16"	Minimum #9 x 3" Screw 12":12" plus Adhesive	1/2"	Minimum #6x1 1/4" Type S or W spaced 16":16"	380
1. Where higher capacities are needed for structural member spacing less than 16" on center, an engineered design may be used.					

3.7.2 For seismic design, the allowable design values for StoneCoat Fusion Panels used in lateral (shear) applications are shown in Table 11.

Table 11. SF Allowable Unit Diaphragm Shear Capacity for Seismic Applications with Lateral Load Applied to One Chord^{1,2}

Seismic Force Resisting System	Maximum Stud Spacing (in)	GWB Fastening Spacing ² (edge:field)	Seismic Allowable Unit Shear Capacity (plf)	Apparent Shear Stiffness, G _a (kips/in)	Response Modification Factor, R	System Over-strength Factor, Ω ₀	Deflection Amplification Coefficient, C _d	Structural System Limitations and Building Height Limit (ft)				
								Seismic Design Category				
								B	C	D	E	F
Minimum 6" SF	16	16:16	310	11.6	2	2.5	2	NL ¹	NL	65	65	65
1. NL= Not limited.												
2. Where higher capacities are needed for structural member spacing less than 16" on center, an engineered design may be used. For assistance with SF specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com .												

3.7.3 Lateral load diaphragm shear resistance equations for perforated wall, floor and roof applications with lateral load applied to one chord are shown in Table 12.

3.7.3.1 Shear walls and diaphragms are permitted to be designed in accordance with the methodology found in SDPWS Section 4.3.3.5 except as follows:

3.7.3.1.1 SDPWS Equation 4.3-5 for C₀ shall be replaced with the equation from Table 12.

Table 12. SF C₀ Equations for use with the SDPWS Perforated Diaphragm Shear Methodology¹

Structural Assembly Type	SDPWS Version, Equation	Replace with the Following
Minimum 6" SF	2018 SDPWS, Eq 4.3-5	$C_0 = \frac{r}{(0.83 - 0.17r)} \frac{L_{tot}}{\sum L_i}$
	2021 SDPWS, Eq 4.3-6	$C_0 = \frac{A_{wall}}{0.83A_0 + A_{fhs}} \leq 1.0$
1. For assistance with SF perforated diaphragm shear designs please contact StoneCoat International, Inc via email at support@stonecoat.com .		

- 3.7.4 For floor and roof diaphragm design, the requirements of SDPWS Section 4.2 for blocked diaphragms shall be followed.
- 3.7.5 For wall diaphragm design, the maximum aspect ratio for full height braced wall segments shall be 4:1, instead of 3.5:1 as listed in SDPWS Section 4.3.4.3. The other requirements of SDPWS Section 4.3 shall be followed, including the adjustment factor for aspect ratio of perforated shear wall segments greater than 2:1 found in SDPWS Section 4.3.4.3.

3.8 Axial Load Resistance

- 3.8.1 Structural performance for axial compression resistance are provided in Table 13.

Table 13. Compressive Resistance¹

Composite Panel System	Maximum Structural Member Spacing (in)	Allowable Compression Resistance (plf) for Nominal Wall Heights (ft)						
		8	9	10	11	12	13	14
6" SF	12 o.c.	2,230	2,230	2,230	2,230	2,230	2,230	2,060
8" SF		3,510	3,510	3,510	3,510	3,510	3,510	3,510
10" SF		4,620	4,620	4,620	4,620	4,620	4,620	4,620
12" SF		5,900	5,900	5,900	5,900	5,900	5,900	5,900
6" SF	16 o.c.	1,670	1,670	1,670	1,670	1,670	1,670	1,550
8" SF		2,630	2,630	2,630	2,630	2,630	2,630	2,630
10" SF		3,470	3,470	3,470	3,470	3,470	3,470	3,470
12" SF		5,900	5,900	5,900	5,900	5,900	5,900	5,900

1. Resistance is limited by the lesser of compression perpendicular to grain of the structural members on the bottom plate or panel buckling

- 3.8.2 Structural performance under axial uplift load conditions are provided in Table 14.

Table 14. Uplift Resistance

Composite Panel System	Maximum Structural Member Spacing (in)	Allowable Uplift Resistance (plf)
StoneCoat Fusion Panels	16 o.c.	265

1. Where higher capacities are needed for structural member spacing less than 16" on center, an engineered design may be used. For assistance with SF specialty engineered designs please contact StoneCoat International, Inc via email at support@stonecoat.com.

3.9 Pull-Off Resistance of the Exterior Covering Attached to Exterior Sheathing Attached to Structural Members

- 3.9.1 The allowable pull-off resistance design value of StoneCoat Covering adhered to proprietary exterior sheathing is shown in Table 15.

Table 15. Pull-Off Resistance of StoneCoat Cladding Adhered to Proprietary Exterior Sheathing

StoneCoat Cladding	Allowable Pull-off Resistance of StoneCoat Attached to Proprietary Exterior Sheathing as Attached to Structural Members (psf)
Pull-off resistance of StoneCoat	260

3.10 *Axial Shear Resistance of the of Exterior Covering Attached to Exterior Sheathing Attached to Structural Members at the Structural Member Interface (Gravity)*

3.10.1 The allowable axial shear resistance design value of StoneCoat Covering adhered to proprietary exterior sheathing at the wood structural member connection interface is shown in Table 16.

Table 16. Axial Shear Resistance of the Proprietary Exterior Sheathing Connection to Structural Member (Gravity)

StoneCoat Cladding	Allowable Resistance of the Proprietary Exterior Sheathing Connection to the Structural Member (Gravity) (psf)
Cladding/Sheathing Shear Capacity & Resistance to Dead Load	360

3.11 *Cracking Resistance of the Exterior Covering Attached to Exterior Sheathing Attached to Structural Members Under Uniform Transverse Load*

3.11.1 The allowable cracking resistance design values for the StoneCoat Fusion Panels are shown in Table 17.

Table 17. Cracking Resistance of the Exterior Covering Under Uniform Transverse Load

StoneCoat Cladding	Allowable Capacity Before StoneCoat Cracks (psf)
Maximum uniform transverse load that can be applied to the StoneCoat cladding prior to cracking	70

3.12 *Tensile Strength of the Internal Bond of the Proprietary Exterior Sheathing*

3.12.1 The allowable StoneCoat Fusion Panels flatwise tensile strength of the proprietary exterior sheathing panel is shown in Table 18.

Table 18. Tensile Strength of the Internal Bond of the Exterior Sheathing Panel

Internal Bond of the Exterior Sheathing Panel	Allowable Tensile Strength (psi)
Minimum 2 inch to Maximum 8 inch of SF	50

3.13 *High Velocity Hurricane Zone (HVHZ) TAS 201, 203 and 203 Testing*

3.13.1 The allowable properties for HVHZ zone applications of the proprietary exterior sheathing was conducted in accordance with Testing Application Standard (TAS) 201-94 Impact Test Procedures, TAS 202-94 Criteria for Testing Impact & Nonimpact Resistant Building Envelope Components Using Uniform Static Air Pressure, and TAS 203-94 Criteria for Testing Products Subject to Cyclic Wind Pressure Loading. The HVHZ results are found in Table 19.

Table 19. Impact Testing for High Velocity Hurricane Zone Applications

Product Description	Large Missile Impact (TAS 201)	Design Pressure Test (psf) (TAS 202)	Test Pressure (psf) (TAS 203)
Minimum 2 inch to maximum 8 inch SF	No penetration – Exposure D	+/- 50	+/- 50

3.14 *Thermal Resistance*

3.14.1 StoneCoat Fusion Panels contains 2 inches of continuous insulation. The continuous insulation performance of StoneCoat Fusion Panels is shown in Table 20.

Table 20. R-Value of the Continuous Insulation Component for SF

StoneCoat Fusion Panels Continuous Insulation	Resistance to Heat Transfer (ft ² ·°F·h/btu)
R-Value	10

3.15 *Moisture Vapor Permeance*

3.15.1 The moisture vapor permeance of the proprietary exterior sheathing panel is shown in Table 21.

Table 21. Moisture Vapor Permeance of the Proprietary Exterior Sheathing Panel

Product Description	Exterior Sheathing
Proprietary Exterior Sheathing Panel	1.19 perm

3.16 *Water-Resistive Barrier*

3.16.1 The water-resistive barrier properties of the proprietary foam sheathing panel of the SF is shown in Table 22.

Table 22. Water-Resistive Barrier Performance of the Proprietary Foam Sheathing Panel of the SF

Product Description	Standard	Test Result
SF	ASTM E2556- Type II (60 Minute)	Pass

3.17 *Fire Performance*

3.17.1 The flame spread and smoke developed index performance of the proprietary foam sheathing panel of the StoneCoat Fusion Panels is shown in Table 23.

Table 23. Flame Spread and Smoke Developed Index Performance of the Proprietary Foam Sheathing Panel of the SF

Product Description	Standard	Test Result
StoneCoat Fusion Panel	ASTM E2556- Type II (60 Minute)	Pass
StoneCoat Fusion Panel	ASTM E331	Pass

3.18 Any building code and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDPs / approved sources. DrJ is qualified¹¹ to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.

¹¹ 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.

4 Installation

- 4.1 Installation shall comply with the manufacturer installation instructions, this Listing, the approved construction documents, and the applicable building code.
- 4.2 In the event of a conflict between the manufacturer installation instructions, this Listing, the approved construction documents and the applicable building code, the most restrictive shall govern.

5 Findings

- 5.1 As described in Section 3, StoneCoat Fusion Panels have performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.
- 5.2 When used and installed in accordance with this Listing and the manufacturer installation instructions, StoneCoat Fusion Panels shall be approved for:
 - 5.2.1 The structural performance as described in Table 2 through Table 19.
 - 5.2.2 The Thermal performance as described in Table 20.
 - 5.2.3 The water vapor permeance as described in Table 21.
 - 5.2.4 The water resistance as described in Table 22.
 - 5.2.5 The fire performance characteristics as described in Table 23.
- 5.3 Unless exempt by state statute, when the StoneCoat Fusion Panels 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.
- 5.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from StoneCoat International, Inc.
- 5.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10¹² are similar) in pertinent part states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

- 5.6 **Approved:**¹³ Building codes require that the building official shall accept duly authenticated reports¹⁴ or research reports¹⁵ from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.
 - 5.6.1 Acceptability of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).
 - 5.6.2 Acceptability of a licensed RDP, by a building official, is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.

¹² 2018 IFC Section 104.9

¹³ Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

¹⁴ <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

¹⁵ <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

- 5.7 CBI is an ISO/IEC 17025 testing and an ISO/IEC 17020 inspection approved agency. DrJ Engineering is an ISO/IEC 17065 accredited product certification agency. DrJ employs RDPs and is ANAB-Accredited.
- 5.8 Through ANAB accreditation and the IAF Multilateral Agreements, this TER 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.*” IAF specifically says, “*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.*”¹⁶

6 Conditions of Use

- 6.1 Performance characteristics are specified in Section 3.
- 6.2 As defined in Section 3, 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.
- 6.3 When required by adopted legislation and enforced by the building official (AHJ)¹⁷ in which the project is to be constructed:
 - 6.3.1 This Listing and the installation instructions shall be submitted at the time of permit application.
 - 6.3.2 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when requirements of adopted legislation are met.
 - 6.3.3 These products have an internal quality control program and a third-party quality assurance program.
 - 6.3.4 At a minimum, these products shall be installed per Section 4 of this Listing.
- 6.4 The approval of this TER by the AHJ shall comply with IBC Section 1707.1, where legislation states in pertinent part, “*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 104.11*”, all of IBC Section 104, and IBC Section 105.4.
- 6.5 This product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4 and IRC Section R109.2.
- 6.6 The application of this product in the context of this TER 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.
- 6.7 The actual design, suitability, and use of this Listing for any particular building is the responsibility of the owner or the owner’s authorized agent.
- 6.8 Any required design loads shall be provided by the building designer (i.e., owner or RDP) and/or determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.
- 6.9 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 6.10 Where pertinent, testing and/or engineering analysis is based upon state or local code and/or standard provisions that have been codified into law through legislation. The developers of the codes and standards are legally responsible for the accuracy of any legislatively adopted material properties and/or analytical methods. Any testing and/or engineering mechanics-based analysis may use legislatively and/or code adopted provisions as the control condition. The use of a control condition to compare to a test condition establishes equivalency to that prescribed in the adopted legislation with respect to quality, strength, effectiveness, fire resistance, durability, and safety.

¹⁶ <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>

¹⁷ Also known as the Authority Having Jurisdiction (AHJ)

- 6.11 The reliability of the attributes provided herein may be dependent upon published design properties by others. These properties are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports, and/or research reports prepared by approved agencies and/or approved sources furnished by suppliers of products, materials, designs, assemblies, and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate.
- 6.12 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.¹⁸
- 6.13 Where additional condition of use and/or code compliance information is required, please search for StoneCoat Fusion Panels on the DrJ Engineering website.

7 Identification

- 7.1 Labeling^{19,20} shall include, but not be limited to, the manufacturer name, manufacturing location/identifier, and the CBI Listing number.
- 7.2 Labeling may include, but not be limited to, the CBI mark and any other numerical designations related to layout locations for a given project.

8 Review Schedule

- 8.1 This TER is subject to periodic review and revision. For the most recent version, visit drjcertification.org.
- 8.2 For information on the status of this TER, contact DrJ Certification.

9 Approved for Use Pursuant to US and International Legislation Defined in Appendix A

- 9.1 StoneCoat Fusion Panels are included in this list published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services, and whose TER Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This TER meets the legislative intent and definition of being acceptable to the AHJ.

¹⁸ See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

¹⁹ LABEL: An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material and the name and identification of an approved agency, and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency (see IBC Section 1703.5, "Manufacturer designation" and "Mark").

²⁰ LABELED: Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

Appendix A

1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:
 - 1.1.1 Advance Innovation,
 - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
 - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize StoneCoat Fusion Panels to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
 - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”
 - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation, and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
 - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2018 (DTSA).
 - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.
 - 1.2.4 For new materials that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
 - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.²¹
 - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
 - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.²²

²¹ IBC 2021, Section 1706.1 Conformance to Standards

²² IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

- 1.3 **Approved by Los Angeles:** The [Los Angeles Municipal Code](#) (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of [Division 35, Article 1, Chapter IX](#) of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards that apply. Whenever tests or certificates of any material or fabricated assembly are required by [Chapter IX](#) of the LAMC, such tests or certification shall be made by a [testing agency](#) approved by the Superintendent of Building to conduct such tests or provide such certifications. The Superintendent of Building [shall accept duly authenticated reports](#) from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the [California Building Code](#) (CBC) [Section 104.11](#). The testing agency shall publish the scope and limitation(s) of listed material or fabricated assembly.²³ The Superintendent of Building [roster of approved testing agencies](#) is provided by the Los Angeles Department of Building and Safety (LADBS).
- 1.4 **Approved by Chicago:** The [Municipal Code of Chicago](#) (MCC) states in pertinent part that an [Approved Agency](#) is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the [American National Standards Institute](#) (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined [Approved Agencies](#)).
- 1.5 **Approved by New York City:** The [NYC Building Code 2022](#) (NYCBC) states in pertinent part that [an approved agency shall be deemed](#)²⁴ an approved testing agency via [ISO/IEC 17025 accreditation](#), an approved inspection agency via [ISO/IEC 17020 accreditation](#), and an approved product evaluation agency via [ISO/IEC 17065 accreditation](#). Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement²⁵ (i.e., [ANAB](#), [International Accreditation Forum](#) (IAF), etc.).
- 1.6 **Approved by Florida:** [Statewide approval of products](#), methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For [local product approval](#), products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida [Department of Business and Professional Regulation](#) (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., [CER10642](#)), and as a Florida Registered Engineer (i.e., [ANE13741](#)).

²³ [Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES](#)

²⁴ [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)

²⁵ [New York City, The Rules of the City of New York, § 101-07 Approved Agencies](#)

- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami Dade shall accept the statewide and local Florida Product Approval as provided for in Florida legislation § [553.842](#) and § [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to Building Code 2018 of New Jersey in [IBC Section 1707.1 General](#),²⁶ it states: “In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the [Uniform Construction Code \(N.J.A.C. 5:23\)](#)”.²⁷ Furthermore N.J.A.C § 5:23-3.7 states: Municipal approvals of alternative materials, equipment, or methods of construction. **(a) Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations.
1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. 2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item 2 given that the listed entities are no longer in existence.
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#)²⁸ and [Part 3280](#),²⁹ “*the Department encourages innovation and the use of new technology in manufactured homes*” and the design and construction of a manufactured home shall conform with the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow: 1) “*All construction methods shall be in conformance with accepted engineering practices*”, 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.*”, and 3) “*The design stresses of all materials shall conform to accepted engineering practice.*”
- 1.10 **Approved by US, Local, and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For [new materials](#) that are not specifically provided for in this code, the [design strengths and permissible stresses](#) shall be established by tests.³⁰
- 1.10.2 For [innovative alternative products, materials, designs, services and/or methods of construction](#), in the absence of approved rules or other approved standards...the building official shall accept [duly authenticated reports](#) (i.e., listing and/or research report) from [approved agencies](#) with respect to the quality and manner of use of [new materials or assemblies](#).³¹ A building official [approved agency](#) is deemed to be approved via certification from an [accreditation body](#) that is listed by the [International Accreditation Forum](#)³² or equivalent.

²⁶ https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1

²⁷ <https://www.nj.gov/dca/divisions/codes/codereg/ucc.html>

²⁸ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>

²⁹ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

³⁰ [IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials](#). Adopted law pursuant to IBC model code language 1706.2.

³¹ [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#). Adopted law pursuant to IBC model code language 1707.1.

³² Please see the [ANAB directory](#) for building official approved agencies.

- 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.³³ An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report certified by a PE, shall be approved.
- 1.11 **Approved by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements state in relevant part:
- 1.11.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country.
- 1.11.2 Conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
- 1.11.3 Conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.
- 1.11.4 **Approved:** The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

³³ IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.



Issue Date: May 31, 2023
 Subject to Renewal: April 1, 2024

FBC Supplement to DL 2302-03

REPORT HOLDER: StoneCoat International, Inc

1 Evaluation Subject

1.1 StoneCoat Fusion Panels

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Listing supplement is to show StoneCoat Fusion Panels, recognized in DL 2302-03, 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—20, 23: Florida Building Code – Building (FL 42094)*

2.2.2 *FBC-R—20, 23: Florida Building Code – Residential (FL 42094)*

3 Conclusions

- 3.1 StoneCoat Fusion Panels, described in DL 2302-03, complies with the FBC-B and FBC-R and is subject to the conditions of use described in this supplement.
- 3.2 StoneCoat Fusion Panels comply with the FBC, Chapter 14.
- 3.3 StoneCoat Fusion Panels were tested to and have passed the requirements of ASTM E331 for use as a water resistive barrier.
- 3.4 StoneCoat Fusion Panels were tested in accordance with TAS 201, TAS 202 and TAS 203 with the results as shown in Table 1 below.

Table 1. Impact Testing for High Velocity Hurricane Zone Applications

Product Description	Large Missile Impact (TAS 201)	Design Pressure Test (psf) (TAS 202)	Test Pressure (psf) (TAS 203)
Minimum 2 inch to maximum 8 inch panel	No penetration – Exposure D	+/- 50	+/- 50



- 3.5 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this TER, they are listed here:
- 3.5.1 FBC-B Section 104.4 and Section 110.4 are reserved.
 - 3.5.2 FBC-R Section R104, Section R109, Section R602.10, Table R602.10.3(1), Table R602.10.3(2), Table R602.10.3(3), Table R602.10.3(4), Section R602.12, Section R602.12.4 are reserved.
 - 3.5.3 FBC-B Section 1609.3.1 replaces IBC Section 1609.3.1.
 - 3.5.4 FBC-R Section R702.3.5 replaces IRC Section R702.3.5.
 - 3.5.5 FBC-R Table R702.3.5 replaces IRC Table R702.3.5.

4 Conditions of Use

- 4.1 StoneCoat Fusion Panels, described in DL 2302-03, must comply with all of the following conditions:
- 4.1.1 All applicable sections in DL 2302-03.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.