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 1212-01

Versetta Stone® Panelized Stone Veneer Applications over Continuous Insulation

Boral Stone Group

Product:

Versetta Stone® Panelized Stone Veneer

Issue Date:

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Revision Date:

April 1, 2022

Subject to Renewal:

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COMPANY INFORMATION:

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DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 44 53 - Glass-Fiber-Reinforced Cementitious Panels07 44 53 - Glass-Fiber-Reinforced Cementitious Panels

SECTION: 07 44 63 - Fabricated Faced Panel Assemblies07 44 63 - Fabricated Faced Panel Assemblies

1 PRODUCTPRODUCT EVALUATED[1]

1.1 Versetta Stone® Panelized Stone Veneer

2 APPLICABLE CODES AND STANDARDS[2,3]

2.1 *Codes*

2.1.1 *IBC—12, 15, 18: International Building Code®*

2.1.2 *IRC—12, 15, 18: International Residential Code®*

2.2 *Standards and Referenced Documents*

2.2.1 *ASTM C1186: Standard Specification for Flat Fiber-Cement Sheets*

2.2.2 *ASTM D3679: Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Siding*

2.2.3 *ASTM D5206: Standard Test Method for Windload Resistance of Rigid Plastic Siding*

2.2.4 *ASTM E2273: Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*

[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 2018 version of the codes and the standards referenced therein. This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein.

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

3 Performance Evaluation

3.1 Versetta Stone® was evaluated for use as an exterior wall covering in accordance with *IBC* Section 1402[4] and *IRC* Section R703.

3.1.1 Specifically, Versetta Stone® was evaluated for use as a weather-resistant covering in accordance with *IBC* Section 1403.2[5] and *IRC* Section R703.1.1.

3.1.2 Versetta Stone® was evaluated to determine its ability to resist wind loads in accordance with *IBC* Section 1609 and *IRC* Section R703.1.2.

3.1.3 Versetta Stone® was evaluated for installation over wood framing and wood structural panel (WSP) sheathing with the addition of continuous insulation installed between the WSP and Versetta Stone® panels.

3.2 Versetta Stone® was evaluated for installation over steel framing and gypsum sheathing for use on the exterior side of the exterior wall with the addition of continuous insulation installed between the gypsum sheathing and the Versetta Stone® panels.

3.3 Use in applications requiring a fire-resistance rating are outside the scope of this evaluation.

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 Versetta Stone® is a non-structural, fiber-reinforced, cement-based masonry wall cladding that is mechanically attached to wall framing.

4.2 The panels have a simulated stone veneer surface.

4.3 The panels measure 36.4" long, 9.5" tall, and 1.8" thick and have tongue-and-groove edges that engage adjacent panels.

4.3.1 The finished exposure of the panels is 8" x 36".

4.4 A 0.0217"-thick painted G90 galvanized steel nailing flange is molded along the top edge of the panels for attachment to the framing and/or nail base.

4.5 The bottom edge and the ends of the panels fit together using tongue-and-groove technology.

4.6 The panels have an installed weight of approximately 8.5 psf (17 pounds per panel).

4.7 Additionally, the stone veneer panels are supplemented with various accessories to aid with installation.

Figure 1: Versetta Stone® Panel with Nailing Hem (across Top of Panel)

[4] 2015 *IBC* Section 1403

[5] 2015 *IBC* Section 1404.2

5 APPLICATIONS

5.1 Versetta Stone® is used as an exterior wall covering in accordance with the applicable sections of *IBC* Chapter 14 and *IRC* Section R703 and is installed over wood-framed walls and WSP capable of supporting the imposed loads in accordance with *IBC* Section 1609 and *IRC* Section R301.2.1 including all required transverse wind loads.

5.2 Versetta Stone® is also used as an exterior wall covering installed over wood- or steel-framed walls where the WSPs are over-sheathed with continuous insulation. Connections for this installation are as shown in Table 1.

5.3 Unless designed as provided in Section 6.3.1, Versetta Stone® shall not be installed in areas where the design wind pressure exceeds the capacity of the cladding and its attachment to resist the load in accordance with Table 2 for wood-framed walls and Table 3 for steel-framed walls. See Table 4 for wind pressures associated with V_{ult} per *ASCE 7*.

5.3.1 Design in accordance with generally accepted engineering practice may be used as an alternative to Section 5.3.

5.4 Table 4 provides an aid for designers in determining the allowable wind pressures for Versetta Stone® panel installation.

5.4.1 For example:

5.4.1.1 Given the following:

5.4.1.1.1 Wind Speed, V_{ult} = 180 mph

5.4.1.1.2 Exposure D

5.4.1.1.3 Wood Framing

5.4.1.2 From Table 2, the maximum mean roof height allowed for this condition is 25'.

5.4.1.3 This application assumes at least two (2) fasteners into the studs and two (2) additional fasteners into the WSP sheathing.

5.4.1.4 The corresponding wind pressure from Table 4 shows that this installation corresponds to an allowable wind pressure of 125.6 psf.

5.5 For additional information or use in other applications, consult the manufacturer's installation instructions.

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

TABLE 1: FASTENER REQUIREMENTS TO SUPPORT VERSETTA STONE® INSTALLATION OVER CONTINUOUS INSULATION, SHEATHING, AND WOOD OR STEEL FRAMING[1,2,3,4,5,6]

Fastener Type	Fastener Diameter (in)	Fastener Length (in)	Fasteners Required								
			Thickness of Continuous Insulation (in)								
			0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Nails	0.120	2.5	x	x	x						
	0.131	2.5	x	x	x	n					
	0.148	3.0	x	x	x	x	n				
	0.162	3.5	x	x	x	x	x	n			
	0.192	4.0	x	x	x	x	x	x	n	n	n
Screws	#8 screw (0.164)	2.0	x	x	x	n	n	n			
	#10 (0.190)	2.5	x	x	x	x	n	n	n	n	n
	#12 (0.216)	3.0	x	x	x	x	x	n	n	n	n
	#14 (0.242)	4.0	x	x	x	x	x	x	x	n	n

SI: 1 in = 25.4 mm

1. Fastener lengths are the maximum length commonly available for a given diameter. Longer fasteners may be available from proprietary sources. See Footnote 4.
2. Table values are based on *NDS* allowable lateral loads for fasteners as modified by *APA TR 12* for use with a gap parameter for gravity load only (i.e., fasteners sized to support weight of cladding, while cantilevered from framing a distance equal to the foam sheathing thickness).
3. Each panel shall contain a minimum of four (4) fasteners. Two (2) of the fasteners must be installed into the stud and penetrate a minimum of 1" for wood studs or three (3) threads beyond the backside of steel studs. The other two (2) fasteners are permitted to be fastened through the WSP and must protrude out of the backside of the WSP a minimum of ½". Where nail-base sheathing is not used or studs are greater than 16" o.c. and not greater than 24" o.c., Versetta Bridging must be used to transfer the loads back to the studs.
4. 'n' – non-standard or proprietary fasteners may be available with the additional length required to meet the penetration requirements.
5. Where a substrate other than nail-base sheathing is used, its thickness shall be added to the continuous insulation thickness for the purpose of determining the fastener size.
6. Table assumes ½" sheathing applied to framing. For other sheathings thicknesses, evaluate fasteners accordingly for minimum penetration into framing.

TABLE 2: WIND PRESSURE CAPACITY OF VERSETTA STONE® INSTALLATION IN WOOD FRAMING OVER CONTINUOUS INSULATION AND WSP SHEATHING

Exposure Category	Wind Speed[1,2] (mph) (V_{ult}/V_{asd})	Permitted Wind Capacity[3,4,5,6]					
		Mean Roof Height (ft)					
		15	20	25	30	35	40
B	≤ 200/155	ST	ST	ST	ST	ST	ST
C	≤ 180/140	ST	ST	ST	ST	ST	ST
	200/155	ST	NP	NP	NP	NP	NP
D	≤ 160/125	WSP	ST	ST	ST	ST	ST
	180/140	ST	ST	ST	NP	NP	NP

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

1. Listed wind speed is V_{ult} per *ASCE 7-10* and *7-16*, the maximum allowed wind speed condition for the fastening method shown.
2. Maximum allowable wind speeds are based on the average ultimate loads tested for each condition divided by 1.5.
3. ST – Each Versetta Stone® panel contains two (2) fasteners installed into studs (ST) and at least two (2) fasteners into WSP only.
4. NP – Not Permitted
5. Assumes a minimum ¼"-diameter self-tapping, pan head screw with 2" of penetration into the wood framing (e.g., ½" WSP sheathing plus 1½" into wood studs) and a minimum of ½" of screw protruding out of the backside of the WSP.
6. Pressure equalization factor in accordance with *ASTM D5206* Procedure B equals 1.0.

TABLE 3: WIND PRESSURE CAPACITY OF VERSETTA STONE® INSTALLATION IN STEEL FRAMING OVER EXTERIOR GYPSUM SHEATHING (DENSGLASS OR EQUAL)

Exposure Category	Wind Speed[1,2] (mph) (V_{ult}/V_{asd})	Permitted Wind Capacity[3,4,5,6,7]					
		Mean Roof Height (ft)					
		15	20	25	30	35	40
B	≤ 110/85	ST	ST	ST	ST	ST	STVB
	115/90	ST	ST	ST	ST	ST	STVB
	120/95	ST	ST	ST	ST	ST	STVB
	130/100	ST	ST	ST	ST	STVB	STVB
	140/110	STVB	STVB	STVB	STVB	STVB	STVB
	150/115	STVB	STVB	STVB	STVB	STVB	STVB
	160/125	STVB	STVB	STVB	STVB	NP	NP
C	≤ 110/85	ST	ST	ST	ST	STVB	STVB
	115/90	ST	ST	STVB	STVB	STVB	STVB
	120/95	ST	STVB	STVB	STVB	STVB	STVB
	130/100	STVB	STVB	STVB	STVB	STVB	STVB
	140/110	STVB	STVB	NP	NP	NP	NP
D	≤ 120/95	STVB	STVB	STVB	STVB	STVB	STVB
	130/100	STVB	STVB	NP	NP	NP	NP

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

1. Listed wind speed is V_{ult} per *ASCE 7-10* and *7-16*, the maximum allowed wind speed condition for the fastening method shown.
2. Maximum allowable wind speeds are based on the average ultimate loads tested for each condition divided by 1.5.
3. ST – each panel contains two (2) fasteners installed into the studs (ST) only.
4. STVB – each panel contains two (2) fasteners installed into studs and at least two (2) fasteners into Versetta Bridging. At least two (2) fasteners shall be installed to attach Versetta Bridging (STVB) to studs.
5. NP – Not Permitted.
6. Assumes a minimum 1¼" ceramic-coated self-tapping pan head screw into studs. Where Versetta bridging is used, the additional fasteners are #8 x ¾" truss head screw.
7. Pressure Equalization factor in accordance with *ASTM D5206*, Procedure B equals 1.0.

TABLE 4: GENERAL WIND PRESSURE RESISTANCE CRITERIA PER *ASCE 7-10* FOR COMPONENTS & CLADDING, METHOD 1

Exposure Category	Wind Speed (mph) (V_{ult}/V_{asd})	Permitted Wind Pressure Resistance (psf)					
		Mean Roof Height (ft)					
		15	20	25	30	35	40
B	110	29.1	29.1	29.1	29.1	30.6	31.7
	115	31.9	31.9	31.9	31.9	33.5	34.8
	120	34.7	34.7	34.7	34.7	36.4	37.8
	130	40.7	40.7	40.7	40.7	42.7	44.4
	140	47.2	47.2	47.2	47.2	49.6	51.4
	150	54.2	54.2	54.2	54.2	56.9	59.1
	160	61.7	61.7	61.7	61.7	64.8	67.3
	180	78.0	78.0	78.0	78.0	81.9	85.0
	200	96.3	96.3	96.3	96.3	101.1	105.0
C	110	35.2	37.5	39.3	40.7	42.2	43.4
	115	38.6	41.2	43.1	44.7	46.3	47.5
	120	42.0	44.8	46.8	48.6	50.3	51.7
	130	49.2	52.5	54.9	57.0	59.0	60.6
	140	57.1	60.9	63.7	66.1	68.4	70.3
	150	65.6	69.9	73.2	75.9	78.6	80.8
	160	74.7	79.6	83.3	86.4	89.5	91.9
	180	94.4	100.6	105.3	109.2	113.1	116.2
	200	116.5	124.2	130.0	134.8	139.6	143.5
D	110	42.8	45.1	46.9	48.3	49.5	50.6
	115	46.9	49.4	51.4	53.0	54.2	55.5
	120	51.0	53.8	55.9	57.6	59.0	60.4
	130	59.8	63.1	65.5	67.6	69.2	70.8
	140	69.4	73.2	76.0	78.4	80.2	82.1
	150	79.7	84.0	87.3	90.0	92.1	94.3
	160	90.7	95.6	99.3	102.4	104.9	107.4
	180	114.7	120.9	125.6	129.5	132.6	135.7
	200	141.6	149.3	155.0	159.9	163.7	167.6

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m^2, 1 mph = 1.61 km/h

6 INSTALLATION

6.1 *General*

6.1.1 Versetta Stone® shall be installed in accordance with the manufacturer's published 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.

6.1.2 Installation is subject to the conditions of use set forth in Section 9.

6.1.3 A water-resistive barrier (WRB) is required behind Versetta Stone® in accordance with *IBC* Section 1403.2[6] and *IRC* Section R703.2. The WRB may be comprised of a liquid-applied, sheet material or continuous insulation product evaluated for use as a WRB with all joints taped per the manufacturer's installation instructions.

6.1.4 All Versetta Stone® vertical joints shall be staggered between courses.

6.1.5 All other installation and flashing details germane to the project shall be in accordance with the applicable building code and the manufacturer's installation instructions.

6.2 *Wood-Framed Walls*

6.2.1 Versetta Stone® shall be installed over structural sheathing (nailing base) capable of resisting 100% of the design wind loads and shall be attached, at a minimum, in accordance with Table 1.

6.2.2 Versetta Stone® may be installed with (an) intervening layer(s) of continuous insulation and attached in accordance with Table 1.

6.2.3 Each Versetta Stone® panel shall be installed with a minimum of four (4) fasteners as follows:

6.2.3.1 Two (2) of the fasteners must be installed into the wood stud framing and penetrate a minimum of 1" into the framing.

6.2.3.2 The other two (2) fasteners must be installed into the nail base and must protrude out the backside of the nail base a minimum of ½".

6.2.4 Fastener sizes shall be in accordance with Table 1 or with generally accepted engineering practice.

6.3 *Steel-Framed Walls*

6.3.1 Versetta Stone® shall be installed over sheathing capable of resisting 100% of the design wind loads and shall be attached, at a minimum, with screws in accordance with Table 1.

6.3.2 Versetta Stone® may be installed over (an) intervening layer(s) of continuous insulation and attached in accordance with Table 1.

6.3.3 Each Versetta Stone® panel shall be installed as follows:

6.3.3.1 Two (2) fasteners must be installed into the steel stud framing and penetrate a minimum of three (3) threads into the framing (i.e., one fastener into each stud covered by the Versetta Stone® panel).

6.3.3.2 Two (2) fasteners must be installed into the nail base and must protrude out the backside of the nail base a minimum of ½". Where nail-base sheathing is not used, Versetta Bridging shall be used to transfer loads to studs.

[6] 2015 *IBC* 1405.2

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 Physical and mechanical property compliance in accordance with *ASTM C1186*

7.1.2 Nail hem bond strength testing in accordance with *ASTM C1185*

7.1.3 Water drainage testing in accordance with *ASTM E2273*

7.1.4 Pressure equalization testing in accordance with *ASTM D3679*, Annex A1

7.1.5 Transverse wind load testing in accordance with *ASTM D5206*, Procedure B

7.2 Reports showing compliance with required quality control procedures and documentation

7.3 Fastening Systems for Continuous Insulation, Final Report 10-11; New York State Energy Research and Development Authority (NYSERDA); Albany, NY; April 2010.

7.4 Baker, P. and Lepage, R.; Cladding Attachment Over Thick Exterior Insulating Sheathing; Prepared by the Building Science Corporation for the National Renewable Energy Laboratory on behalf of the U.S. Department of Energy's Building America Program; January 2014.

7.5 Baker, P; Initial and Long-Term Movement of Cladding Installed Over Exterior Rigid Insulation; Prepared by the Building Science Corporation for the National Renewable Energy Laboratory on behalf of the U.S. Department of Energy's Building America Program; September, 2014.

7.6 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.

7.7 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 Versetta Stone® is equivalent to the products listed in the applicable building code for use as an exterior wall covering in accordance with *IBC* Section 1403.10[7] and the *IRC* Section R703.10.

8.2 Versetta Stone® is suitable for use as an exterior wall covering assembly when installed over sheathing separately capable of resisting 100% of the design wind pressures. An intervening layer(s) of continuous insulation may be installed between the Versetta Stone® and the sheathing in accordance with Table 1, Table 2, and Table 3.

8.3 This product has been evaluated in the context of the codes listed in Section 2 and is compliant with all known state and local building codes. Where there are known variations in state or local codes applicable to this TER, they are listed here.

8.3.1 No known variations

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

8.4.1 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*.

[7] 2015 *IBC* Section 1404.10

8.5 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.

8.6 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."

8.7 *IBC* Section 104.11 (*IRC* Section R104.11 and *IFC* Section 104.9 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 Installation shall be on exterior walls consisting of wood or steel framing and sheathing capable of supporting the imposed loads, including transverse wind loads.

9.2 A WRB is required over the sheathing and may consist of a liquid-applied, sheet good material or continuous insulation.

9.3 Where the seismic provisions of *IRC* Section R301.2.2 apply, the Versetta Stone® wall assembly shall not exceed the weight limits of *IRC* Section R301.2.2.1 unless an engineered design is provided in accordance with *IRC* Section R301.1.3.

9.4 Walls shall be braced to resist shear (racking) load by other means in accordance with the applicable code.

9.5 This product shall not be used in areas where the design wind pressure exceeds the resistance of the product in accordance with Table 2 or Table 3.

9.6 Wall framing shall be limited to a maximum out of plane deflection of H/240 per *IBC* Table 1604.3 and *IRC* Table R301.7.

9.7 Where Versetta Bridging is used, wall framing shall be limited to a maximum stud spacing of 24" o.c.

9.8 Where Versetta Bridging is not used, wall framing shall be limited to a maximum stud spacing of 16" o.c.

9.9 Use of Versetta Stone® panels in installations exceeding 30' in height are outside the scope of this TER.

9.10 Use of Versetta Stone® panels in the high velocity hurricane zone of southern Florida is outside the scope of this TER.

9.11 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.

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

9.13 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).

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

9.15 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.

9.16 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.

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

9.18 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 listed in Section 1.1 is 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 versettastone.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.