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 1703-08

Versetta Stone® Panelized Stone Veneer in Post-Framed Applications

Boral Stone Products LLC

Product:

Versetta Stone® Panelized Stone Veneer

Issue Date:

June 19, 2019

Revision Date:

April 1, 2022

Subject to Renewal:

April 1, 2023

COMPANY INFORMATION:

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DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

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

SECTION: 07 44 63 - Fabricated Faced Panel Assemblies

1 PRODUCT 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 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

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

3 PERFORMANCE EVALUATION

3.1 Walls using Versetta Stone® as cladding in post-framed construction were evaluated for the purpose of defining the allowable spacing of the posts based on the following criteria:

3.1.1 Deflection of the girts spanning between the posts is limited to L/240 and L/360

3.1.2 Girts are one of the following materials:

3.1.2.1 2x4 SPF No. 1 or No. 2

3.1.2.2 2x4 SPF 2100 1.8E

3.1.2.3 2x6 SPF No. 1 or No. 2

3.1.2.4 $^{5}/_{4}$x6 SPF No. 1 or No. 2

[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.

3.1.3 Wind speeds considered are as defined in *ASCE 7-16,* where V_{ult} is 115 mph, 130 mph, 150 mph, or 180 mph in accordance with *IBC* Section 1609.3.

3.2 Structural analysis of the posts, connection of OSB to girts, girts to post and Versetta Stone® to girts is outside the scope of this TER.

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

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

4 Product Description and Materials

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

Figure 1. Versetta Stone® Panel with Nailing Hem (across top of panel)

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

4.3 The panels have a simulated stone veneer surface.

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

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

4.5 A 0.0217"-thick painted G90 galvanized steel nailing flange is molded along the top edge of the panels for attachment to the substrate.

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

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

4.8 Additionally, the stone veneer panels are supplemented with various accessories (e.g., starter strips, bridging, corner pieces) to aid with installation.

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 post-framed buildings. As an option, Versetta Stone® may be installed over oriented strand board (OSB) sheathing attached directly to the posts. In both assemblies, walls must be 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 The general construction considered is as shown in Figure 2.

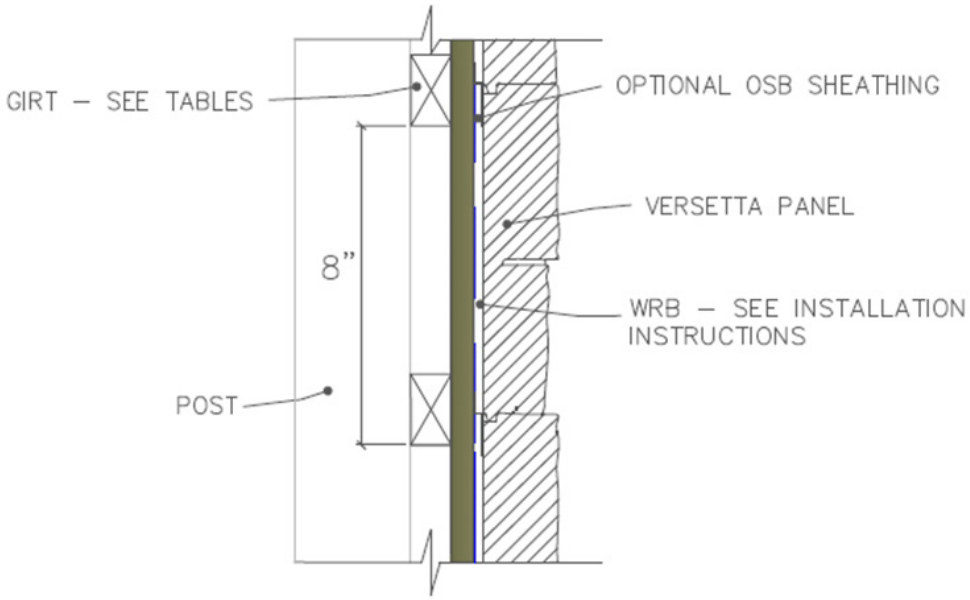

FIGURE 2. GENERAL CONSTRUCTION

5.3 Analysis of girts installed between the posts was conducted to assess their ability to resist wind loads and remain within set deflection limits.

5.4 See Table 1, Table 2, and Table 3 for maximum spacing of posts for the conditions evaluated.

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. MAXIMUM SPACING BETWEEN POSTS (FT-IN) [MM] FOR 15 FT TALL BUILDING[2,5]

Girt[3,4]	Species	Grade	Exposure	Basic Wind Speed, V_{ult} (mph)							
				115		130		150		180	
				L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]
2x4	SPF	No.1/No.2	B	(8' - 2") [2,486]	(7' - 1") [2,159]	(7' - 6") [2,283]	(6' - 6") [1,983]	(6' - 9") [2,066]	(5' - 11") [1,795]	(5' - 12") [1,821]	(5' - 2") [1,585]
			C	(7' - 1") [2,171]	(6' - 2") [1,885]	(6' - 6") [1,993]	(5' - 8") [1,731]	(5' - 11") [1,805]	(5' - 2") [1,572]	(5' - 3") [1,593]	(4' - 7") [1,392]
2x4	SPF (MSR)	2100f-1.8E	B	(8' - 11") [2,713]	(7' - 9") [2,356]	(8' - 2") [2,491]	(7' - 1") [2,164]	(7' - 5") [2,255]	(6' - 5") [1,959]	(6' - 6") [1,987]	(5' - 8") [1,726]
			C	(7' - 9") [2,369]	(6' - 9") [2,057]	(7' - 2") [2,175]	(6' - 2") [1,889]	(6' - 6") [1,969]	(5' - 7") [1,711]	(5' - 8") [1,735]	(4' - 12") [1,513]
2x6	SPF	No.1/No.2	B	(9' - 7") [2,909]	(8' - 3") [2,527]	(8' - 9") [2,671]	(7' - 7") [2,320]	(7' - 11") [2,418]	(6' - 11") [2,100]	(6' - 12") [2,130]	(6' - 1") [1,850]
			C	(8' - 4") [2,540]	(7' - 3") [2,206]	(7' - 8") [2,332]	(6' - 8") [2,026]	(6' - 11") [2,111]	(6' - 0") [1,834]	(6' - 1") [1,860]	(5' - 4") [1,618]
5/4x6	SPF	No.1/No.2	B	(6' - 3") [1,906]	(5' - 5") [1,656]	(5' - 9") [1,750]	(5' - 0") [1,526]	(5' - 3") [1,588]	(4' - 7") [1,387]	(4' - 7") [1,406]	(4' - 0") [1,228]
			C	(5' - 6") [1,665]	(4' - 9") [1,454]	(5' - 0") [1,534]	(4' - 5") [1,340]	(4' - 7") [1,394]	(3' - 12") [1,218]	(4' - 1") [1,235]	(3' - 6") [1,079]

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

1. 42% of Wind Load is used for determining deflection per *IBC* Table 1604.3 footnote f, deflection criteria set by footnote a. (Based on *ASCE 7-16* Loads)
2. Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed, K_{zt}=1.0, K_d=0.85, C_d=1.6.
3. Girts located at 8" o.c. maximum.
4. Girts analyzed as flatwise simple spanning member.
5. Sheathing capacity (OSB) is not taken into account.

TABLE 2. MAXIMUM SPACING BETWEEN POSTS (FT-IN) [MM] FOR 30 FT TALL BUILDING[2,5]

Girt[3,4]	Species	Grade	Exposure	Basic Wind Speed, V_{ult} (mph)							
				115		130		150		180	
				L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]
2x4	SPF	No.1/No.2	B	(7' - 7") [2,320]	(6' - 7") [2,015]	(6' - 12") [2,131]	(6' - 1") [1,851]	(6' - 4") [1,929]	(5' - 6") [1,676]	(5' - 7") [1,700]	(4' - 10") [1,484]
			C	(6' - 9") [2,063]	(5' - 11") [1,792]	(6' - 3") [1,895]	(5' - 5") [1,647]	(5' - 8") [1,715]	(4' - 11") [1,497]	(4' - 12") [1,517]	(4' - 4") [1,326]
2x4	SPF (MSR)	2100f-1.8E	B	(8' - 4") [2,532]	(7' - 3") [2,199]	(7' - 8") [2,325]	(6' - 8") [2,020]	(6' - 11") [2,105]	(5' - 12") [1,828]	(6' - 1") [1,855]	(5' - 4") [1,613]
			C	(7' - 5") [2,252]	(6' - 5") [1,956]	(6' - 9") [2,068]	(5' - 11") [1,796]	(6' - 2") [1,872]	(5' - 4") [1,628]	(5' - 5") [1,650]	(4' - 9") [1,441]
2x6	SPF	No.1/No.2	B	(8' - 11") [2,716]	(7' - 9") [2,358]	(8' - 2") [2,494]	(7' - 1") [2,166]	(7' - 5") [2,257]	(6' - 5") [1,960]	(6' - 6") [1,989]	(5' - 8") [1,727]
			C	(7' - 11") [2,414]	(6' - 11") [2,097]	(7' - 3") [2,217]	(6' - 4") [1,926]	(6' - 7") [2,007]	(5' - 9") [1,743]	(5' - 10") [1,768]	(5' - 1") [1,541]
$^5/_4$x6	SPF	No.1/No.2	B	(5' - 10") [1,779]	(5' - 1") [1,550]	(5' - 4") [1,635]	(4' - 8") [1,429]	(4' - 11") [1,486]	(4' - 3") [1,299]	(4' - 4") [1,316]	(3' - 9") [1,150]
			C	(5' - 2") [1,585]	(4' - 7") [1,385]	(4' - 10") [1,461]	(4' - 2") [1,276]	(4' - 4") [1,328]	(3' - 10") [1,160]	(3' - 10") [1,176]	(3' - 4") [1,027]

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

1. 42% of Wind Load is used for determining deflection per *IBC* Table 1604.3 footnote f, deflection criteria set by footnote a. (Based on *ASCE 7-16* Loads)
2. Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed, K_{zt}=1.0, K_d=0.85, C_d=1.6.
3. Girts located at 8" o.c. maximum.
4. Girts analyzed as flatwise simple spanning member.
5. Sheathing capacity (OSB) is not taken into account.

TABLE 3. MAXIMUM SPACING BETWEEN POSTS (FT-IN) [MM] FOR 45 FT TALL BUILDING[2,5]

Girt[3,4]	Species	Grade	Exposure	Basic Wind Speed, V_{ult} (mph)							
				115		130		150		180	
				L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]	L/240[1]	L/360[1]
2x4	SPF	No.1/No.2	B	(7' - 4") [2,229]	(6' - 4") [1,936]	(6' - 9") [2,047]	(5' - 10") [1,778]	(6' - 1") [1,853]	(5' - 3") [1,612]	(5' - 4") [1,634]	(4' - 8") [1,427]
			C	(6' - 7") [2,003]	(5' - 8") [1,740]	(6' - 0") [1,839]	(5' - 3") [1,601]	(5' - 6") [1,665]	(4' - 9") [1,455]	(4' - 10") [1,475]	(4' - 3") [1,288]
2x4	SPF (MSR)	2100f-1.8E	B	(7' - 12") [2,432]	(6' - 11") [2,113]	(7' - 4") [2,234]	(6' - 4") [1,940]	(6' - 8") [2,022]	(5' - 9") [1,756]	(5' - 10") [1,781]	(5' - 1") [1,552]
			C	(7' - 2") [2,186]	(6' - 3") [1,898]	(6' - 7") [2,007]	(5' - 9") [1,743]	(5' - 12") [1,817]	(5' - 2") [1,582]	(5' - 3") [1,604]	(4' - 7") [1,401]
2x6	SPF	No.1/No.2	B	(8' - 7") [2,608]	(7' - 5") [2,265]	(7' - 10") [2,395]	(6' - 10") [2,080]	(7' - 1") [2,168]	(6' - 2") [1,883]	(6' - 3") [1,910]	(5' - 5") [1,660]
			C	(7' - 8") [2,344]	(6' - 8") [2,036]	(7' - 1") [2,152]	(6' - 2") [1,869]	(6' - 5") [1,948]	(5' - 7") [1,692]	(5' - 8") [1,717]	(4' - 11") [1,498]
$^5/_4$x6	SPF	No.1/No.2	B	(5' - 7") [1,709]	(4' - 11") [1,491]	(5' - 2") [1,573]	(4' - 6") [1,374]	(4' - 8") [1,430]	(4' - 1") [1,249]	(4' - 2") [1,266]	(3' - 8") [1,106]
			C	(5' - 1") [1,541]	(4' - 5") [1,346]	(4' - 8") [1,420]	(4' - 1") [1,241]	(4' - 3") [1,291]	(3' - 8") [1,128]	(3' - 9") [1,143]	(3' - 3") [999]

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

1. 42% of Wind Load is used for determining deflection per *IBC* Table 1604.3 footnote f, deflection criteria set by footnote a. (Based on *ASCE 7-16* Loads)
2. Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed, K_{zt}=1.0, K_d=0.85, C_d=1.6.
3. Girts located at 8" o.c. maximum.
4. Girts analyzed as flatwise simple spanning member.
5. Sheathing capacity (OSB) is not taken into account.

6 INSTALLATION

6.1 Versetta Stone® shall be installed in accordance with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.

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

6.3 Versetta Stone® shall be installed over walls capable of resisting 100% of the design wind loads.

6.4 A water-resistive barrier (WRB) is required behind Versetta Stone® in assemblies with or without OSB in accordance with *IBC* Section 1403.2.[4] The WRB may be comprised of a liquid-applied, sheet material or a continuous insulation product evaluated for use as a WRB with all joints taped per the manufacturer's installation instructions.

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

[4] 2015 *IBC* Section 1404.2

7 SUBSTANTIATING DATA

7.1 Analysis of Girts for Loading and Deflection Limitations by DrJ Engineering, LLC.

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

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

8 FINDINGS

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

8.1.1 When Versetta Stone® is used as an exterior wall covering installed over post-framed walls separately capable of resisting 100% of the design wind pressures, the spacing of the posts shall not exceed that described in Table 1, Table 2, or Table 3 for the application specified.

8.2 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.

8.2.1 No known variations

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

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

8.4 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.

8.5 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."

8.6 *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 Versetta Stone® panels described in this TER comply with, or are a code compliant alternative material to, codes described in Section 2, subject to the following conditions.

9.2 Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, this TER governs.

9.3 Installation shall be on post-framed walls constructed with girts 8" o.c. and shall be capable of supporting the imposed loads.

9.3.1 As an option, Versetta Stone® may be installed over OSB sheathing attached directly to the posts. Walls shall be capable of supporting the imposed loads.

9.4 Where the seismic provisions of IRC Section R301.2.1 apply, the Versetta Stone® wall assembly shall not exceed the weight limits of Section R301.2.2.1, unless an engineered design is provided in accordance with Section R301.1.3.

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

9.6 Versetta Stone® panels shall be manufactured under the direction of a third-party quality assurance program to ensure continued compliance with this TER and the applicable building code.

9.7 Use of Versetta Stone® panels in installations exceeding 45' in height are outside the scope of this TER.

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

9.9 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.

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

9.11 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).

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

9.13 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.

9.14 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.

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

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

10 Identification

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

10.2 Additional technical information can be found at 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.