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## 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:

June 8, 2020

Subject to Renewal:

July 1, 2021





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

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## 1 PRODUCT EVALUATED<sup>1</sup>

1.1 Versetta Stone® Panelized Stone Veneer

## 2 APPLICABLE CODES AND STANDARDS<sup>2,3</sup>

### 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*

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<sup>1</sup> Building codes require data from valid [research reports](#) be obtained from [approved sources](#). 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.

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.”

Building official approval of a licensed [registered design professional](#) (RDP) is performed by verifying the RDP and/or their business entity complies with all professional engineering laws of the relevant [jurisdiction](#). Therefore, the work of licensed RDPs is accepted by [building officials](#), except when plan (i.e., peer) review finds an error with respect to a specific section of the code. Where this TER is not approved, the [building official](#) responds in writing stating the reasons for [disapproval](#).

For more information on any of these topics or our mission, product evaluation policies, product approval process, and engineering law, visit [drjcertification.org](http://drjcertification.org) or call us at 608-310-6748.

<sup>2</sup> Unless otherwise noted, all references in this TER are from the 2018 version of the codes and the standards referenced therein (e.g., *ASCE 7, NDS, ASTM*). This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein.

<sup>3</sup> All terms defined in the applicable building codes are italicized.



### 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 5/4x6 SPF No.1 or No.2
  - 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 on the dates provided in this TER and within DrJ's professional scope of work.

### 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.

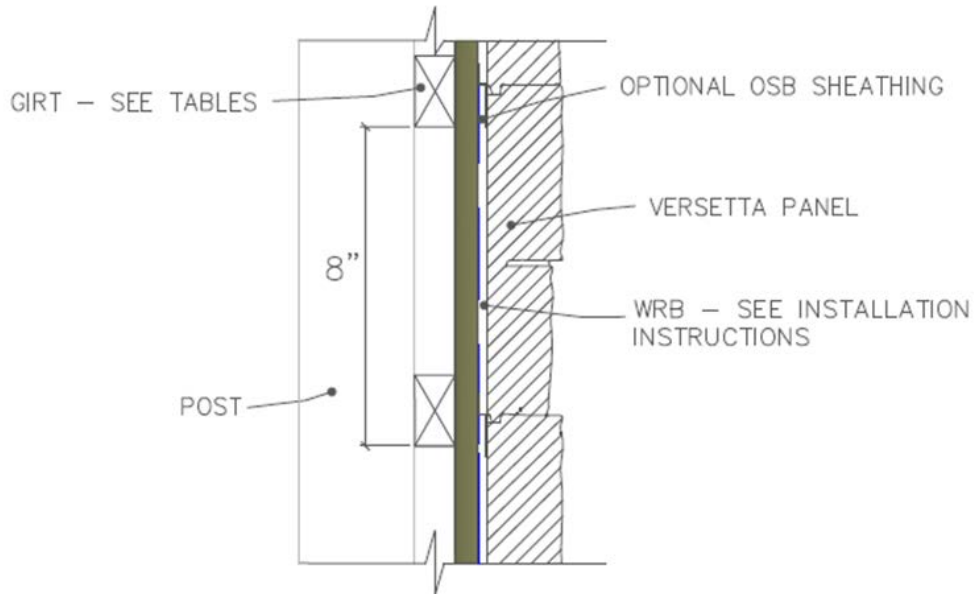


FIGURE 2. GENERAL CONSTRUCTION

- 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

Girt	Species	Grade	Exposure	Basic Wind Speed, $V_{ult}$ (mph)							
				115		130		150		180	
				L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360
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

- 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)
- Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed,  $K_{zt}=1.0$ ,  $K_d=0.85$ ,  $C_d=1.6$ .
- Girts located at 8" o.c. maximum.
- Girts analyzed as flatwise simple spanning member.
- Sheathing capacity (OSB) is not taken into account.

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

Girt	Species	Grade	Exposure	Basic Wind Speed, $V_{ult}$ (mph)							
				115		130		150		180	
				L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360
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]
5/4x6	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

- 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)
- Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed,  $K_{zt}=1.0$ ,  $K_d=0.85$ ,  $C_d=1.6$ .
- Girts located at 8" o.c. maximum.
- Girts analyzed as flatwise simple spanning member.
- Sheathing capacity (OSB) is not taken into account.

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

Girt	Species	Grade	Exposure	Basic Wind Speed, $V_{ult}$ (mph)							
				115		130		150		180	
				L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360
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]
5/4x6	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

- 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)
- Tabulated values based on the following assumptions: Importance Category II (I=1.0), Enclosed,  $K_{zt}=1.0$ ,  $K_d=0.85$ ,  $C_d=1.6$ .
- Girts located at 8" o.c. maximum.
- Girts analyzed as flatwise simple spanning member.
- Sheathing capacity (OSB) is not taken into account.

## 6 INSTALLATION

- 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.
- Installation is subject to the conditions of use set forth in Section 9.
- Versetta Stone® shall be installed over walls capable of resisting 100% of the design wind loads.
- A water-resistive barrier (WRB) is required behind Versetta Stone® in assemblies with or without OSB in accordance with *IBC Section 1403.2*.<sup>4</sup> 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.
- 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.

<sup>4</sup> 2015 IBC Section 1404.2



## 7 TEST ENGINEERING SUBSTANTIATING DATA

- 7.1 Analysis of Girts for Loading and Deflection Limitations by DrJ Engineering, LLC.
- 7.2 Some information contained herein is the result of testing and/or data analysis by other sources which conform to IBC Section 1703 and relevant professional engineering law. DrJ relies on accurate data from these sources to perform engineering analysis. DrJ has reviewed and found the data provided by other professional sources to be credible.
- 7.3 Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IBC*, *IRC*, *NDS*®, and *SDPWS*). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, and concrete), DrJ relies upon the grade mark, stamp, and/or design values provided by raw material suppliers to be accurate and conforming to the mechanical properties defined in the relevant material standard.

## 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 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, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in 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*.
- 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

## 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 R301.2.2 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 registered design professional).
- 9.12 At a minimum, this product shall be installed per Section 6 of this TER.
- 9.13 This product is manufactured under a third-party quality control program in accordance with IBC Section 104.4 and 110.4 and IRC Section R104.4 and 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. Therefore, the TER shall be reviewed for code compliance by the building official for acceptance.
- 9.15 The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the building official's inspection, and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

## 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](http://versettastone.com).

## 11 REVIEW SCHEDULE

- 11.1 This TER is subject to periodic review and revision. For the most recent version of this TER, visit [drjcertification.org](http://drjcertification.org).
- 11.2 For information on the current status of this TER, contact [DrJ Certification](http://DrJ Certification).

