

Technical Evaluation Report™ - Canada

A Duly Authenticated Report from an Approved Agency

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Versetta Stone® Panelized Stone Veneer Applications - Canada

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CSI Designations:

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 Innovative Product Evaluated¹

1.1 Versetta Stone Panelized Stone Veneer

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**.



Figure 1. Versetta Stone – Full Panel

2.2 Versetta Stone panels are mechanically attached precast, glass-fiber-reinforced cement panels composed of a proprietary blend of Portland cement and glass fibers molded to have a simulated stone veneer surface.

2.2.1 Full panels measure 925 mm (36.4") long, 241 mm (9.5") tall, and approximately 46 mm (1.8") thick.

2.2.1.1 The finished exposure of the panels is 203 mm x 914 mm (8" x 36").



- 2.2.2 Full panels weigh approximately 7.7 kg (17 lb) and have an installed weight of approximately 41.5 kg/m² (8.5 psf).
- 2.2.3 The top and bottom edges as well as the ends of Versetta Stone panels have tongue-and-groove features that engage adjacent panels.
- 2.2.4 Panels have a 0.55 mm (0.0217") thick painted G90 galvanized steel nailing flange embedded in, and molded along the top edge of the panels for attachment to various substrates (see **Figure 1**).
- 2.3 Versetta Stone panels are supplemented with various accessories to aid with installation.
- 2.4 As needed, review material properties for design in **Section 4** and the regulatory evaluation in **Section 5**.

3 Applicable Codes and Standards²

3.1 Codes

- 3.1.1 *NBC—10, 15, 20: National Building Code of Canada*
- 3.1.2 *NECB—17, 20: National Energy Code of Canada for Buildings*
- 3.1.3 *O Reg. 163/24: Ontario Building Code (OBC)³*

3.2 Standards and Referenced Documents

- 3.2.1 *AISI S100: North American Specification for the Design of Cold-Formed Steel Structural Members*
- 3.2.2 *ASTM C67: Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile*
- 3.2.3 *ASTM C90: Standard Specification for Loadbearing Concrete Masonry Units*
- 3.2.4 *ASTM C1185: Standard Test Method for Sampling and testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards*
- 3.2.5 *ASTM C1186: Standard Specification for Flat Fiber-Cement Sheets*
- 3.2.6 *ASTM D3679: Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding*
- 3.2.7 *ASTM D5206: Standard Test Method for Wind Load Resistance of Rigid Plastic Siding*
- 3.2.8 *ASTM E2273: Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*
- 3.2.9 *CAN/ULC-S102: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*
- 3.2.10 *CAN/ULC-S114: Standard Method of Test for Determination of Non-Combustibility in Building Materials*
- 3.2.11 *CSA A370: Connectors for Masonry*
- 3.2.12 *CSA A23.3: Design of Concrete Structures*
- 3.2.13 *CSA O86: Engineering Design in Wood*
- 3.2.14 *CSA S304: Design of Masonry Structures*

4 Tabulated Properties Generated from Nationally Recognized Standards

4.1 General

- 4.1.1 Versetta Stone panels are composed of a proprietary blend of Portland cement and glass fibers.
 - 4.1.1.1 Portland cement conforms to CSA A3001.
 - 4.1.1.2 Physical properties of the concrete stone component of the Versetta Stone Panelized Stone Veneer panels are listed in **Table 1**.



Table 1. Versetta Stone – Physical Properties

Property		Test Method	Result
Weight	kg/m ²	-	41.5
Density	kg/m ³	ASTM C1185	1,200
Moisture Movement	%	ASTM C1185	0.06% linear change
Water Absorption	%	ASTM C1185	16% weight gain after 48 hours in water
Moisture Content	%	ASTM C1185	7.7
Water Tightness	-	ASTM C1185	Pass – no water droplets present
Heat/Rain Resistance	-	ASTM C1185	Pass - No damage or structural alterations
Efflorescence	-	ASTM C67	No notable efflorescence

Imperial: 1 kg/m² = 0.205 psf, 1 kg/m³ = 0.062 lb/ft³

4.1.1.3 Mechanical properties of the concrete stone component of the Versetta Stone panels are listed in **Table 2**.

Table 2. Versetta Stone – Mechanical Properties¹

Property		Test Method	Result
Flexural Strength ¹	MPa	ASTM C1185	5.96
Water Immersion	%	ASTM C1185	15.6% Strength Loss
Freeze/Thaw Resistance	%	ASTM C1185	12.6% Strength Loss
		ASTM C67	< 3% Mass Loss
Warm Water Resistance	%	ASTM C1185	23.3% Strength Loss

Imperial: 1 MPa = 145.038 psi

1. Flexural strength value is the nominal value and exceeds the Grade I requirement listed in ASTM C1186 Table 1.

4.2 Versetta Stone panels are used as an alternative non-structural wall cladding to the prescriptive cladding types specified in NBC Article 9.27.1.1.

4.2.1 Panels are permitted to be installed via mechanical fasteners to wood-framed walls (including post-framed walls), Cold-Formed Steel (CFS) wall systems, concrete walls and masonry (CMU) walls. Walls must be capable of supporting the imposed loads in accordance with NBC Division B, Part 4, including all required transverse wind loads.

4.2.2 *Wood/Steel Framed Walls:*

4.2.2.1 Versetta Stone panels are also permitted to be installed over continuous insulation.

4.2.2.1.1 For sheathed wood-framed walls and sheathed light-gauge steel-framed walls, where continuous insulation is installed in between the Versetta Stone panels and structural framing, the permitted fasteners for this application, gravity-loaded single shear connection, are shown in **Table 3**.



Table 3. Fastener Requirements to Support Versetta Stone Installation over Continuous Insulation, Sheathing and Wood or Steel Framing^{1,2,3,4,6}

Fastener Type	Fastener Diameter, mm (in)	Fastener Length mm (in)	Thickness of Continuous Insulation (mm)								
			0	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6
Nails	3.05 (0.12)	63.5 (2.5)	x	x	x	-	-	-	-	-	-
	3.33 (0.131)	63.5 (2.5)	x	x	x	n ⁵	-	-	-	-	-
	3.76 (0.148)	76.2 (3)	x	x	x	x	n	-	-	-	-
	4.11 (0.162)	88.9 (3.5)	x	x	x	x	x	n	-	-	-
	4.88 (0.192)	101.6 (4)	x	x	x	x	x	x	n	n	n
Screws	#8 [4.17 (0.164)]	50.8 (2)	x	x	x	n	n	n	-	-	-
	#10 [4.83 (0.19)]	63.5 (2.5)	x	x	x	x	n	n	n	n	n
	#12 [5.49 (0.216)]	76.2 (3)	x	x	x	x	x	n	n	n	n
	#14 [6.15 (0.242)]	101.6 (4)	x	x	x	x	x	x	x	n	n

Imperial: 1 mm = 0.0394 in

- Fastener lengths are the maximum length commonly available for a given diameter. Longer fasteners may be available from proprietary sources. (See Footnote 5, below.)
- Table values are based on accepted engineering analysis for fasteners as modified 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).
- Fastener Quantity:
 - Wood Framing:* 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 six fastener diameters (6D) into the framing. The other two (2) fasteners are permitted to be fastened through the nailbase and must protrude out of the backside of the sheathing a minimum of 12.7 mm (1/2").
 - Steel Framing:* Each panel shall contain a minimum of two (2) fasteners installed into the stud. Fasteners must penetrate a minimum of three (3) threads beyond the backside of steel studs.
- Where nailbase sheathing is not used or studs are greater than 406 mm (16") o.c. and not greater than 610 mm (24") o.c., Versetta Bridging must be used. In this application, 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 to studs. Fasteners shall be #8 x 3/4" (19 mm) truss head screws or equivalent.
- "n" = non-standard or proprietary fasteners may be available with the additional length essential to meet the penetration requirements.
- Where a substrate other than nailbase sheathing is used, its thickness shall be added to the continuous insulation thickness for the purpose of determining the fastener size. Table assumes 12.7 mm (1/2") sheathing applied to framing. For other sheathing thicknesses, evaluate fasteners accordingly for minimum penetration into framing



4.2.2.2 Versetta Stone shall not be installed in areas where the factored wind pressure exceeds the capacity of the cladding and its attachment to resist the load in accordance with **Table 4** when installed onto wood framing or onto light-gauge steel framing.

Table 4. Factored Pressure Resistance of Versetta Stone Installation in Wood and Steel Framing

Substrate	Sheathing	Fastener	Fastening Details: Full Panel	Fastening Details: Partial Panel	Stud Spacing (mm o.c.)	Factored Wind Pressure (kPa)
Wood ¹	12.7 mm (1/2") Plywood	6.35 mm x 102 mm (1/4" diameter) Self-Tapping, Pan Head Screws	2 into Studs ⁵ , 1 into Sheathing ⁶	1 into Stud ⁵ , 1 into Sheathing ⁶	406	5.2
	12.7 mm (1/2") Plywood				3 into Sheathing ⁶	2 into Sheathing ⁶
	11 mm (7/16") OSB	3.18 mm x 38.1 mm (1/8" x 1 1/2") Roofing Nail	2 into Studs, 2 into Sheathing	1 into Stud, 1 into Sheathing	406	4.2
	11 mm (7/16") Plywood	#9 x 42.3 mm (1 5/8") Serrated Head Cement Board Screws	5 Screws Spaced 203 mm (8") o.c. Along the Nail Hem	3 Screws Minimum Spaced 203 mm (8") o.c. Along the Nail Hem	406	6.4
406					5.5	
Steel ²	12.7 mm (1/2") DensGlass	#8 x 31.8 mm (1 1/4") Self-Tapping Screws	2 into Studs	1 into Stud	406	1.4
					406	2.4 ⁽³⁾
					406	1.8 ⁽⁴⁾
					610	2.0 ⁽⁴⁾

Imperial: 1 mm = 0.0394 in, 1 kPa = 20.885 psf

1. Wood framing members shall have a minimum specific gravity, G, of 0.42.
2. Steel framing members shall be minimum 20-gauge.
3. Versetta Bridging shall be installed over the nail hem of each partial panel connecting it to the adjacent full panel. Each seam utilizing the Versetta Bridge shall be secured with one additional #8 x 19 mm (3/4") long truss head screw at the seam.
4. Versetta Bridging shall be installed over the nail hem of each partial panel connecting it to the adjacent full panel. Each seam utilizing the Versetta Bridge shall be secured with two additional #8 x 19 mm (3/4") long truss head screws, one on each side of the seam.
5. Attachment over 2" maximum thickness continuous insulation with 2" of penetration into the wood framing (i.e., 1/2" WSP sheathing plus 1 1/2" into wood studs).
6. Attachment over 2" maximum thickness continuous insulation with 1/2" of screw protruding out of the backside of the WSP sheathing.



4.2.3 Concrete/Masonry Walls:

4.2.3.1 Where continuous insulation is installed in between the Versetta Stone panels and concrete walls or masonry (CMU) walls, the permitted fasteners for this application, gravity-loaded single shear connection, are shown in **Table 5**.

Table 5. Fastener Requirements for Installation Over Continuous Insulation (Concrete/Masonry)^{2,3}

Material	Fastener ⁵	Fastener Diameter mm (in)	Minimum Fastener Embedment ⁶ mm (in)	Thickness of Continuous Insulation Allowed ⁴ (mm)								
				0	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6
Concrete ¹	3/16" Tapcon	4.78 (0.188)	38.1 (1.50)	x	x	x	x	x	x	x	x	x
	1/4" Tapcon	6.35 (0.250)	38.1 (1.50)	x	x	x	x	x	x	x	x	x
	Hilti X-C	3.51 (0.138)	19.05 (0.75)	x	x	x	x	-	-	-	-	-
	Hilti X-U	3.99 (0.157)	19.05 (0.75)	x	x	x	x	x	x	x	-	-
	Hilti X-C	3.51 (0.138)	25.4 (1.00)	x	x	x	x	x	x	-	-	-
	Hilti X-U	3.99 (0.157)	25.4 (1.00)	x	x	x	x	x	x	x	-	-
Masonry (Medium/Normal Hollow CMU per ASTM C90)	3/16" Tapcon	4.78 (0.188)	25.4 (1.00)	x	x	x	x	x	x	x	x	-
	1/4" Tapcon	6.35 (0.250)	25.4 (1.00)	x	x	x	x	x	x	x	x	x
Masonry (Lightweight Hollow CMU per ASTM C90)	Masonry Nail	3.76 (0.148)	25.4 (1.00)	x	x	x	x	x	x	x	-	-
	3/16" Tapcon	4.78 (0.188)	25.4 (1.00)	x	x	x	x	x	x	-	-	-
	1/4" Tapcon	6.35 (0.250)	25.4 (1.00)	x	x	x	x	x	x	x	x	x
	Hilti X-C	3.51 (0.138)	25.4 (1.00)	x	x	-	-	-	-	-	-	-
	Hilti X-U	3.99 (0.157)	25.4 (1.00)	x	x	x	x	-	-	-	-	-

Imperial: 1 in = 25.4 mm

- Concrete shall have a minimum compressive strength of 17.2 MPa (2,500 psi).
- Table values are based on the manufacturer published fastener properties. The methodology for reducing fastener capacities to account for the insulation thickness is based on accepted engineering analysis for gravity loads only (i.e., fasteners sized to support the weight of the cladding while cantilevered from the framing a distance equal to the foam sheathing thickness).
- Each panel shall contain a minimum of three (3) fasteners and penetrate the concrete or masonry wall as identified above.
- Where a substrate other than nailable sheathing is used, its thickness shall be added to the continuous insulation thickness for the purpose of determining the fastener size.
- Fasteners shall have the following minimum head diameter: Masonry nails, 7.92 mm (0.312"); Hilti fasteners, 8.15 mm (0.321"); Tapcon fasteners, 8.25 mm (0.325").
- Tools used for driving pneumatic or powder actuated fasteners shall be adjusted to avoid over driving the fasteners and damaging the panel.



4.2.3.2 Versetta Stone shall not be installed in areas where the factored wind pressure exceeds the capacity of the cladding and its attachment to resist the load in accordance with **Table 6** when installed onto concrete or masonry walls.

Table 6. Factored Pressure Resistance of Versetta Stone Installation in Concrete or Masonry

Substrate	Fastener ²	Embedment ³ mm (in)	Fastening Details: Full Panel	Fastening Details: Partial Panel	Factored Wind Pressure ¹ (kPa)
Concrete, 2500 psi	3/16" Tapcon	38.1 (1.50)	3 Fasteners	2 Fasteners	9.1
	1/4" Tapcon	38.1 (1.50)			9.1
	Hilti X-C	25.4 (1.00)			9.1
		19.1 (0.75)			7.3
	Hilti X-U	25.4 (1.00)			9.1
		19.05 (0.75)			9.1
Hollow CMU, (Medium/Normal Weight)	3/16" Tapcon	25.4 (1.00)	3 Fasteners	2 Fasteners	8.8
	1/4" Tapcon	25.4 (1.00)			9.1
	Hilti X-C	19.1 (0.75)			1.9
	Hilti X-U	19.1 (0.75)			3.2
Hollow CMU, (Light Weight)	3/16" Tapcon	25.4 (1.00)	3 Fasteners	2 Fasteners	5.7
	1/4" Tapcon	25.4 (1.00)			6.5
	Hilti X-C	19.1 (0.75)			1.9
	Hilti X-U	19.1 (0.75)			3.2

Imperial: 1 mm = 0.0394 in, 1 kPa = 20.885 psf

- Reported maximum wind pressure is the lower of the wind pressure at which a crack may form, or the manufacturer published withdraw capacity per fastener or the calculated allowable pull over capacity of the nail hem.
- Fasteners shall have the following minimum head diameter: Hilti fasteners, 8.15 mm (0.321"), Tapcon fasteners, 8.25 mm (0.325").
- Tools used for driving pneumatic or powder actuated fasteners shall be adjusted to avoid over driving the fasteners and damaging the panel.

4.2.4 *Post-Framed Construction:*

4.2.4.1 Versetta Stone is permitted to be used as an exterior wall covering on post-framed buildings.

4.2.4.1.1 Where sheathing is used, Versetta Stone may be installed over the sheathing. Walls shall be designed to limit deflection to L/240 maximum.

4.2.4.1.2 Where sheathing is not used, Versetta Stone may be installed over horizontal girts spaced 203 mm (8") o.c. as shown in **Figure 2**. Walls shall be designed to limit deflection to L/240 maximum.

4.2.4.2 Analysis of girts installed between the posts was conducted to assess their ability to resist wind loads and remain within the deflection limits set forth in **Table 7**.

4.2.4.2.1 See **Table 7** for maximum spacing of posts for the conditions evaluated.

4.2.4.2.2 For additional information or use in other applications, consult the manufacturer installation instructions.



Table 7. Maximum Spacing Between Posts for Post-Frame Construction^{3,4,5,6}

Girt Size ^{1,2}	Species and Grade	Building Height (m)	Exposure	1-in-50 Hourly Wind Pressure, q							
				0.30 kPa		0.67 kPa		1.00 kPa		1.30 kPa	
				L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360
5/4 x 6	SPF No. 1/No.2	5.0	Open	1,740	1,520	1,330	1,160	1,160	1,010	1,060	930
			Rough	1,890	1,650	1,450	1,260	1,260	1,100	1,160	1,010
		9.0	Open	1,680	1,470	1,290	1,120	1,120	980	1,030	900
			Rough	1,890	1,650	1,450	1,260	1,260	1,100	1,160	1,010
		14.0	Open	1,640	1,430	1,260	1,100	1,100	960	1,000	880
			Rough	1,860	1,620	1,420	1,240	1,240	1,090	1,140	990
2 x 6	SPF No. 1/No.2	5.0	Open	2,610	2,280	2,000	1,740	1,740	1,520	1,600	1,400
			Rough	2,840	2,480	2,170	1,900	1,900	1,660	1,740	1,520
		9.0	Open	2,530	2,210	1,930	1,690	1,690	1,480	1,550	1,350
			Rough	2,840	2,480	2,170	1,900	1,900	1,660	1,740	1,520
		14.0	Open	2,460	2,150	1,890	1,650	1,650	1,440	1,510	1,320
			Rough	2,790	2,440	2,140	1,870	1,870	1,630	1,710	1,490
2 x 4	SPF No. 1/No.2	5.0	Open	2,240	1,960	1,720	1,500	1,500	1,310	1,370	1,200
			Rough	2,440	2,130	1,870	1,630	1,630	1,420	1,490	1,300
		9.0	Open	2,170	1,900	1,660	1,450	1,450	1,270	1,330	1,160
			Rough	2,440	2,130	1,870	1,630	1,630	1,420	1,490	1,300
		14.0	Open	2,120	1,850	1,620	1,420	1,420	1,240	1,300	1,130
			Rough	2,400	2,100	1,840	1,610	1,610	1,400	1,470	1,280
2 x 4	SPF 2100f-1.8E	5.0	Open	2,450	2,140	1,880	1,640	1,640	1,430	1,500	1,310
			Rough	2,670	2,330	2,040	1,780	1,780	1,560	1,630	1,430
		9.0	Open	2,370	2,070	1,820	1,590	1,590	1,390	1,450	1,270
			Rough	2,670	2,330	2,040	1,780	1,780	1,560	1,630	1,430
		14.0	Open	2,310	2,020	1,770	1,550	1,550	1,350	1,420	1,240
			Rough	2,620	2,290	2,010	1,760	1,760	1,530	1,610	1,400

Imperial: 1 mm = 0.0394 in, 1 kPa = 20.885 psf

- Vertical spacing of girts shall be a maximum of 203 mm (8") o.c. to align with the panel nailing flange.
- Girts are analyzed as flatwise, simple spanning members.
- Sheathing capacity (e.g., OSB) is not taken into account. Listed post spacings are applicable to both sheathed and unsheathed post-frame buildings.
- Values represent the maximum allowable spacing between vertical posts (girt span) to support Versetta Stone. Posts shall be designed to resist the applied loads.
- Specified external pressure based on the following assumptions:
 - Importance factor, $I_w = 1.0$, Topographic factor, $C_t = 1.0$, Gust effect factor x External pressure coefficient, $C_g C_p = 2.0$ (windward) and -2.1 (leeward)
- Specified internal pressure based on the following assumptions:
 - Importance factor, $I_w = 1.0$, Topographic factor, $C_t = 1.0$, Gust effect factor, $C_g = 2.0$, Internal pressure coefficient, $C_{pi} = 0.0$ (windward) and -0.15 (leeward)

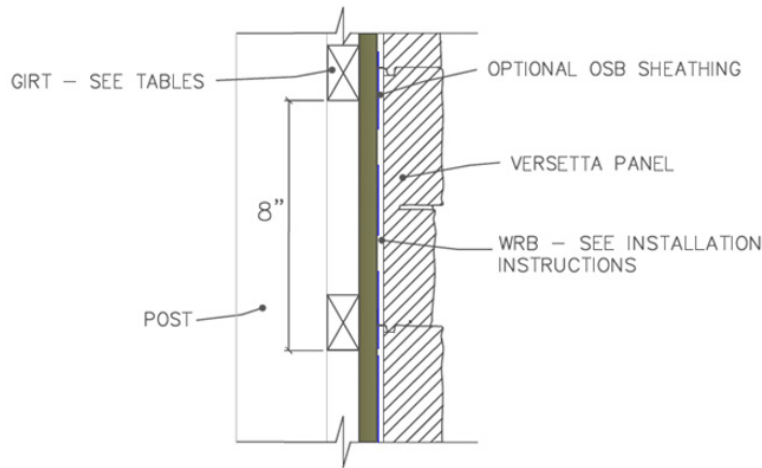


Figure 2. General Construction for Post-Frame Applications

4.3 Weather Protection

4.3.1 Versetta Stone wall assemblies were evaluated for water drainage in accordance with ASTM E2273.

4.3.1.1 Resulting drainage efficiency is > 90% when installed in accordance with **Section 6** and the applicable codes listed in **Section 3**.

4.4 Fire Performance

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

4.4.2 Flame Spread and Smoke Development:

4.4.2.1 Versetta Stone panels are composed of a proprietary blend of Portland cement and glass fibers, with a flame spread rating of 0 and the smoke developed classification of the product is 0 per NBC Table D-3.1.1-A.

4.4.2.1.1 Regarding the painted nail hem of the product, the flame spread rating of the fastening component is 25 and the smoke developed classification of the fastening is 50 per NBC Table D-3.1.1-A.

4.4.3 Noncombustible Classification:

4.4.3.1 Versetta Stone panels are composed of a proprietary blend of Portland cement and glass fibers, and the nail hem is comprised of 26-gauge steel. Versetta Stone panels are noncombustible per NBC Section D-4.3.1.

4.5 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.



5 Regulatory Evaluation and Accepted Engineering Practice

- 5.1 Versetta Stone complies with the following adopted codes and/or accepted engineering practice for the following reasons:
- 5.1.1 Versetta Stone was evaluated for the following:
- 5.1.1.1 Use as an exterior/interior wall cladding in accordance with the NBC Sentence 9.27.1.1(6).
- 5.1.1.2 Structural and environmental loads in accordance with NBC Article 5.1.4.1.
- 5.1.1.2.1 Resistance wind loads in accordance with the NBC Subsection 4.1.7.
- 5.1.1.2.1.1 Versetta Stone was evaluated for installation over the following substrates for wind resistance:
- 5.1.1.2.1.1.1 Wood framing with WSP sheathing
- 5.1.1.2.1.1.2 Steel framing with gypsum or WSP sheathing
- 5.1.1.2.1.1.3 Concrete and masonry walls (new or existing)
- 5.1.1.2.1.1.4 Post-frame construction with horizontal wood girts
- 5.1.1.2.1.2 Versetta Stone was evaluated for installation over the substrates listed above with the addition of an intervening layer of continuous insulation.
- 5.1.1.2.2 Minimize/prevent ingress of precipitation as specified in NBC Sentence 5.6.1.1(1).
- 5.1.1.2.3 Resistance to deterioration due to be exposed to the exterior in accordance with NBC Article 5.1.4.2.
- 5.1.1.3 Flame spread, smoke development, and noncombustible classification in accordance with the prescriptive provisions in NBC Appendix D.
- 5.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this report were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified⁴ to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,⁵ respectively.
- 5.3 Testing and related engineering evaluations are defined as intellectual property and/or trade secrets.⁶
- 5.4 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise that is also its areas of professional engineering competence.⁷

6 Installation

- 6.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 6.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.
- 6.3 *General*
- 6.3.1 Versetta Stone shall be installed in accordance with the manufacturer published installation instructions and this report.
- 6.3.2 A sheathing membrane is required behind Versetta Stone in accordance with the NBC.
- 6.3.3 All Versetta Stone vertical joints shall be staggered between courses.



6.4 *Flashing and Terminations*

- 6.4.1 Flashing shall be installed at all terminations, penetrations, and material transitions in accordance with the manufacturer details and the applicable building code, following the “*weatherboard*” principle as required by NBC Division B, Part 9, Section 9.27.
- 6.4.2 At the foundation wall base, a Starter Strip with weep holes (Starter Strip Weep Screed) shall be installed. The Starter Strip shall be installed over the WRB so that the WRB is lapped behind the starter strip's nailing flange in a proper weatherboard manner.
- 6.4.3 A minimum clearance of 203 mm (8") to grade/soil or 51 mm (2") to paving/concrete must be maintained in accordance with the NBC.
- 6.4.4 At all inside and outside corners, the sheathing membrane shall be double-wrapped, extending a minimum of 406 mm (16") in both directions.
- 6.4.5 Penetrations such as windows and doors must be flashed using Self-Adhered Flashing (SAF) at jambs and sills, integrated with the WRB in a weatherboard manner.
- 6.4.6 Window and door heads must be flashed with approved flashing.
- 6.4.7 The vertical leg of the head flashing must be installed over the sheathing membrane. Any sheathing membrane above the flashing must be lapped over the flashing in a weatherboard manner.
- 6.4.8 A 6 mm (1/4") gap with no sealant shall be maintained above the window head trim or J-channel to allow for drainage.
- 6.4.9 At horizontal terminations, such as the transition to a different cladding, flashing shall be installed. A gap for weeping shall be left at the base of the siding above the flashing. At the top of a wall, such as at a soffit, J-channel, or other, appropriate trim shall be used. Adhesive and lath may be required for partial panel terminations at soffits.
- 6.4.10 At vertical terminations against other materials (e.g., wood trim), J-channel is optional. The joint must be sealed with a backer rod and sealant.
- 6.4.11 Accessories such as light boxes, electrical boxes, or trim stones require the use of adhesive. Flashing or lath may also be required as specified in the manufacturer details.

6.5 *Wood-Framed Walls*

- 6.5.1 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 3** and **Table 4**.

6.6 *Steel-framed Walls*

- 6.6.1 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 3** and **Table 4**.

6.7 *Concrete and Masonry Walls*

- 6.7.1 Install over walls capable of resisting 100% of the design wind loads.
- 6.7.2 Install a minimum of three (3) fasteners per panel: two at the ends and one at the center, with penetration depths per **Table 6**.

6.8 *Post-Frame Walls*

- 6.8.1 Versetta Stone may be installed on post-frame buildings utilizing horizontal girts spaced to accommodate the nailing flange of the panels.
- 6.8.2 As an option, Versetta Stone may be installed over Oriented Strand Board (OSB) sheathing attached directly to the posts.
- 6.8.3 Maximum post spacing shall not exceed the values in **Table 7**.



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 property assessment in accordance with ASTM C1185
 - 7.1.2 Flexural strength testing and weathering/exposure assessment in accordance with ASTM C1185
 - 7.1.3 Freeze-thaw durability in accordance with ASTM C67 and ASTM C1185
 - 7.1.4 Efflorescence in accordance with ASTM C67
 - 7.1.5 Nail hem bond strength testing in accordance with ASTM C1185
 - 7.1.6 Water drainage testing in accordance with ASTM E2273
 - 7.1.7 Transverse wind load testing in accordance with ASTM D5206, Procedure B
 - 7.1.8 Fastener withdrawal and pull-through resistance calculations in accordance with CSA O86 and AISI S100
 - 7.1.9 Lateral shear resistance due to gravity loads calculations in accordance with accepted engineering principles
 - 7.1.10 Engineering analysis of fastener requirements for cladding attachment over continuous insulation
- 7.2 Information contained herein is the result of testing and/or data analysis by sources that conform to the evaluation requirements of NBC Volume 1 Relationship of the NBC to Standards Development and Conformity Assessment 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 provincial, territorial, or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published 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.
- 7.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this report, may be dependent upon published design properties by others.
- 7.5 *Testing and Engineering Analysis*
- 7.5.1 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.
- 7.6 Where additional condition of use and/or code compliance information is required, please search for Versetta Stone on the [DrJ Certification website](#).



8 Findings

- 8.1 As outlined in **Section 4**, Versetta Stone has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 8.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Versetta Stone shall be approved for the following applications:
 - 8.2.1 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.
- 8.3 Intervening layer, or layers, of continuous insulation may be installed between Versetta Stone and the sheathing in accordance with **Table 3** and **Table 5**.
- 8.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Westlake Royal Stone, LLC.
- 8.5 This innovative product has been evaluated in the context of the codes listed in **Section 3** and is compliant with all known provincial, territorial, and local building codes. Where there are known variations in provincial, territorial, or local codes applicable to this report, they are listed here:
 - 8.5.1 No known variations
- 8.6 NBC Volume 1 Relationship of the NBC to Standards Development and Conformity Assessment:

Certification

Certification is the confirmation by an independent organization that a product, service, or system meets a requirement...Certification bodies publish lists of certified products and companies...Several organizations, including the Canadian Construction Materials Centre (CCMC), offer such evaluation services.

Evaluation

An evaluation is a written opinion by an independent professional organization that a product will perform its intended function. An evaluation is very often done to determine the ability of an innovative product, for which no standards exist, to satisfy the intent of the Code requirement...

- 8.7 ISO/IEC 17065 accredited third-party certification bodies,⁸ including but not limited to, Standards Council of Canada (SCC)⁹ and ANSI National Accreditation Board (ANAB),¹⁰ confirm that product certification bodies have the expertise to provide technical evaluation services within their scope of accreditation. All SCC and ANAB product certification bodies meet NBC requirements to offer evaluation services for alternative solutions.¹¹
 - 8.7.1 DrJ is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131¹² and employs professional engineers.¹³
- 8.8 Through ANAB accreditation and the IAF Multilateral Agreements, this report 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.*”¹⁴



8.9 Product certification organizations, accredited by the SCC and ANAB, are defined as equivalent evaluation services:

8.9.1 Canada-United States-Mexico Agreement (CUSMA), Article 11.6 Conformity Assessment confirms mutual recognition by stating, “...each Party shall accord to conformity assessment bodies located in the territory of another Party treatment no less favorable than that it accords to conformity assessment bodies located in its own territory or in the territory of the other Party.”

8.9.2 The SCC National Conformity Assessment Principles states, “SCC is a member of a number of international organizations developing voluntary conformity assessment agreements that help ensure the international acceptance of Canadian conformity assessment results. Signatories to these agreements (like SCC) recognize each other’s accreditations as being equivalent to their own.”¹⁵

8.10 Building official approval of a licensed professional engineer is performed by verifying the professional engineer and/or their business entity are listed by the engineering regulators of the relevant jurisdiction.

9 Conditions of Use

9.1 As defined in **Section 4**, 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.

9.2 As listed herein, Versetta Stone shall be used subject to the following conditions:

9.2.1 Wall framing shall be designed to limit out-of-plane deflection to a maximum of L/240.

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

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

9.2.4 Fasteners used to secure Versetta Stone panels shall be corrosion-resistant as specified in the NBC Article 9.27.5.5.

9.2.5 Use of Versetta Stone panels in applications exceeding 14.0 m (45.9 ft) in height is outside the scope of this report.

9.2.6 The use of this product is limited to the areas where the wind pressure does not exceed the listed values in **Table 4** or **Table 6**.

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

9.2.8 Versetta Stone shall be installed with a suitable flashing that will drain water to the exterior and protect the exposed top edge of the cladding. Installed flashing shall be in accordance with NBC Article 9.27.3.7.

9.2.9 At least one layer of sheathing membrane conforming to NBC Article 9.27.3.2 shall be applied beneath the cladding. The sheathing membrane shall be applied in accordance with NBC Article 9.27.3.3.

9.2.9.1 Alternatively, a sheathing membrane is not required when installed over non-wood based rigid exterior insulating sheathing, or exterior insulating sheathing with an integral sheathing membrane per NBC Article 9.27.3.4.

9.2.9.2 Where no structural sheathing is used, at least two layers of sheathing membrane (e.g., house wrap) shall be applied beneath the cladding per NBC Article 9.27.3.5.



- 9.3 When required by regulation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
- 9.3.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
 - 9.3.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 9.3.3 This innovative product has an internal quality control program and a third-party quality assurance program.
 - 9.3.4 At a minimum, this innovative product shall be installed per **Section 6** of this report.
 - 9.3.5 This report shall be reviewed for code compliance by the AHJ in concert with the duties and powers granted to the building official by the provincial regulations governing such duties and powers.
 - 9.3.6 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspections, and any other regulatory requirements that may apply.
- 9.4 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 (i.e., owner).
- 9.5 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

10 Identification

- 10.1 Versetta Stone Panelized Stone Veneer, as listed in **Section 1.1**, is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at <https://www.westlakeroyalbuildingproducts.com/siding-and-accessories/versetta-stone>.

11 Review Schedule

- 11.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.
- 11.2 For information on the status of this report, please contact [DrJ Certification](#).



Notes

- 1 For more information, visit drjcertification.org or call us at 608-310-6748.
- 2 Unless otherwise noted, all references in this report are from the 2020 version of the NBC. This alternative solution is also approved for use with the 2010 and 2015 NBC and the standards referenced therein.
- 3 References in this report to the National Building Code of Canada (NBC) apply to the Ontario Building Code (OBC), unless noted otherwise.
- 4 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.
- 5 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prqID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH>
- 6 18 U.S. Code § 1831 - Economic espionage - Whoever, intending or knowing that the offense will benefit any foreign government, foreign instrumentality, or foreign agent, knowingly steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains a trade secret shall be fined not more than \$5,000,000 or imprisoned not more than 15 years, or both. Any organization that commits any offense described shall be fined not more than the greater of \$10,000,000 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. <https://www.law.cornell.edu/uscode/text/18/part-I/chapter-90>.
- 7 ANAB is part of the USMCA and IAF MLA, where the purpose of these agreements are to ensure mutual recognition of accredited certification and validation/verification statements between agreement signatories, and subsequent acceptance of ANAB accredited certification and validation/verification statements by professional engineers based upon having one universal approval process for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction.
- 8 <https://anabpd.ansi.org/Accreditation/product-certification/DirectoryListingAccredited?menuID=1&prqID=1>
- 9 https://iaf.nu/en/member-details/?member_id=91
- 10 https://iaf.nu/en/member-details/?member_id=14
- 11 NBC Division A Clause A-1.2.1.1.(1)(b) provides information on code compliance via alternative solutions and defines alternative solutions as "...achiev[ing] at least the minimum level of performance required by Division B." NBC Division C Section 2.3 includes additional guidance for documentation of alternative solutions.
- 12 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?&prqID=1&OrgID=2125&statusID=4>
- 13 Through ANAB accreditation and the IAF MLA, DrJ certification can be used to obtain material, product, design, or method of construction approval in any jurisdiction or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – "certified once, accepted everywhere".
- 14 <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>
- 15 The National Conformity Assessment Principles states, "Product regulations and standards may vary from country to country. If these are set arbitrarily, they could be deemed as protectionist. The World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT Agreement) is intended to ensure that technical regulations, standards and conformity assessment procedures of member countries do not create unnecessary obstacles to trade. Under the TBT Agreement, members of the WTO agree to use international standards, including conformity assessment standards and guides, as a basis for their technical requirements."