



Listing and Technical Evaluation Report™

Report No: 1312-01



Issue Date: February 5, 2014

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Westlake Royal Stone Adhered Masonry Veneer Applications Over Continuous Insulation

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CSI Designations:

DIVISION: 04 00 00 - MASONRY

Section: 04 70 00 - Manufactured Masonry

Section: 04 73 00 - Manufactured Stone Masonry

1 Innovative Product Evaluatedⁱ

1.1 Westlake Royal Stone Adhered Masonry Veneer

2 Product Description and Materials

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



Figure 1. Examples of Westlake Royal Stone Product Finishes

2.2 Westlake Royal Stone products are manufactured, precast, concrete veneer products made from Portland cement, aggregate, water, admixtures, and coloring used as adhered, non-bearing exterior veneer or as an interior finish.

2.3 Westlake Royal Stone products have the following characteristics:

- 2.3.1 Color and texture similar to various stone or brick surfaces. (Examples are shown in **Figure 1**.)
- 2.3.2 Patterns have a maximum per unit area of 720 square inches (0.465 m²).
- 2.3.3 Patterns have a maximum per unit dimension of 36" (914 mm).
- 2.3.4 Patterns have a maximum average thickness of 1.65" (42 mm).
- 2.3.5 Patterns have a nominal oven dry density less than 105 lb/ft³ (1,682 kg/m³) and a maximum saturated weight not to exceed 15 lb/ft² (73.2 kg/m²).
- 2.3.6 The total cladding system weight, including the mortar setting bed, lath and scratch coat, is a maximum of 25 lb/ft² (122 kg/m²) when fully saturated.
- 2.3.7 Product profiles and information is available in the appendices:
 - 2.3.7.1 **Appendix B. Eldorado Stone**
 - 2.3.7.2 **Appendix C. Dutch Quality Stone**
 - 2.3.7.3 **Appendix D. Cultured Stone**
 - 2.3.7.4 **Appendix E. StoneCraft**

2.4 As needed, review material properties for design in Section 6 and to regulatory evaluation in Section 8.

3 Definitions

- 3.1 New Materialsⁱⁱ are defined as building materials, equipment, appliances, systems, or methods of construction not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.ⁱⁱⁱ The design strengths and permissible stresses shall be established by tests^{iv} and/or engineering analysis.^v
- 3.2 Duly Authenticated Reports^{vi} and Research Reports^{vii} are test reports and related engineering evaluations, which are written by an approved agency^{viii} and/or an approved source.^{ix}
 - 3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).^x



- 3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory.
- 3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.^{xi}
- 3.5 Testing and/or inspections conducted for this Duly Authenticated Report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed Registered Design Professional (RDP).
- 3.5.1 The Center for Building Innovation (CBI) is ANAB^{xii} ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce^{xiii} the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing^{xiv} stating the nonconformance and the path to its cure.
- 3.7 The regulatory authority shall accept Duly Authenticated Reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.^{xv}
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope, shall be approved.^{xvi} Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.^{xvii}
- 3.9 Approval equity is a fundamental commercial and legal principle.^{xviii}

4 **Applicable Standards for the Listing; Regulations for the Regulatory Evaluation^{xix}**

4.1 *Standards*

- 4.1.1 *ACI 318: Building Code Requirements for Structural Concrete*
- 4.1.2 *AISI S100: North American Specification for the Design of Cold-formed Steel Structural Members*
- 4.1.3 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 4.1.4 *ANSI/AWC SDPWS: Special Design Provisions for Wind and Seismic*
- 4.1.5 *ANSI/AWC WFCM: Wood Frame Construction Manual for One- and Two-Family Dwellings*
- 4.1.6 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*
- 4.1.7 *ASTM C90: Standard Specification for Loadbearing Concrete Masonry Units*
- 4.1.8 *ASTM C150: Standard Specification for Portland Cement*
- 4.1.9 *ASTM C578: Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*
- 4.1.10 *ASTM C1063: Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster*
- 4.1.11 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*
- 4.1.12 *ASTM D5206: Standard Test Method for Windload Resistance of Rigid Plastic Siding*
- 4.1.13 *ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference*
- 4.1.14 *ASTM F1667: Standard Specification for Driven Fasteners: Nails, Spikes, and Staples*



4.2 Regulations

- 4.2.1 IBC – 15, 18, 21: International Building Code®
- 4.2.2 IRC – 15, 18, 21: International Residential Code®
- 4.2.3 FBC-B—20, 23: Florida Building Code – Building^{xx} (FL 41520)
- 4.2.4 FBC-R—20, 23: Florida Building Code – Residential^{xx} (FL 41520)

5 Listed^{xxi}

- 5.1 A nationally recognized testing laboratory such as CBI, states that the materials, designs, methods of construction, and/or equipment have met nationally recognized standards and/or have been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

- 6.1 Westlake Royal Stone products are used as an exterior wall covering in accordance with the applicable sections of IBC Chapter 14, IBC Chapter 25 and IRC Section R703. They are installed over wood or steel-framed walls and Wood Structural Panels (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.
- 6.2 Westlake Royal Stone products are used as an exterior wall covering installed over wood or steel-framed walls: (1) where the WSP is over sheathed with continuous insulation, or (2) onto masonry or concrete walls that are sheathed with continuous insulation. The maximum foam thicknesses for various framing and fastener types are as shown in **Table 1**, **Table 2** and **Table 3**.

Table 1. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Wood^{8,11,12}

Fastener Penetration Into	Fastener Type ⁴	Substrate	Minimum Fastener Length ⁷ (in)	Max. Dist from Face of Framing to Underside of Fastener Head ^{5,6} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners Along Each Stud ¹³					
					Maximum Cladding Weight (psf)					
					5	10	15	18	22	25
Wood ^{2,3}	8d nail (0.131 in. dia.)	Lath ¹ /Mortar	See table footnote 4	≤ 1 ¹ / ₈	7	7	7	7	7	7
			2 ¹ / ₂	1 ⁵ / ₈	7	7	7	7	6	5
	12d nail (0.148 in. dia.)		3 ¹ / ₄	≤ 1 ⁵ / ₈	7	7	7	7	7	7
	TRUFAST® SIP TP ¹⁰		See table footnote 4	≤ 3 ⁵ / ₈	7	7	7	7	7	7
			6	4 ¹ / ₈	7	7	7	7	7	6
			6 ¹ / ₂	4 ⁵ / ₈	7	7	7	7	7	6
	TRUFAST® SIP LD ¹⁰		See table footnote 4	≤ 3 ⁵ / ₈	7	7	7	7	7	7
	HeadLOK® ⁹		See table footnote 4	≤ 3 ¹ / ₈	7	7	7	7	7	7
	TRUFAST®		2 ¹ / ₂	≤ 7 ⁷ / ₈	8	8	8	8	8	8

Table 1. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products Installation Over Continuous Insulation – Wood^{8,11,12}

Fastener Penetration Into	Fastener Type ⁴	Substrate	Minimum Fastener Length ⁷ (in)	Max. Dist from Face of Framing to Underside of Fastener Head ^{5,6} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners Along Each Stud ¹³						
					Maximum Cladding Weight (psf)						
					5	10	15	18	22	25	
	SIP TP ¹⁰	Permabase or Durarock	3	1⅞	8	8	8	8	8	7	
			3½	1⅝	8	8	8	8	7	6	
			4	2⅞	8	8	8	7	6	5	
			4½	2⅝	8	8	7	6	5	4	
			5	3⅞	8	8	7	5	4	4	
			5½	3⅝	8	8	6	5	4	-	
Wood ^{2,3}	TRUFAST® SIP TP ¹⁰	Permabase or Durarock	6	4⅞	8	8	5	4	-	-	
			6½	4⅝	8	7	5	4	-	-	
	TRUFAST® SIP LD ¹⁰		See table footnote 4	≤ ⅞	8	8	8	8	8	8	8
			4	1⅞	8	8	8	8	8	7	7
			4½	1⅝	8	8	8	8	7	6	6
			5	2⅞	8	8	8	7	6	5	5
			5½	2⅝	8	8	8	6	5	4	4
			6	3⅞	8	8	7	5	4	4	4
			6½	3⅝	8	8	6	5	4	-	-
	HeadLOK® ⁹		See table footnote 4	≤ 2⅞	8	8	8	8	8	8	8
			6	2⅝	8	8	8	8	8	7	7
			6½	3⅞	8	8	8	8	7	6	6

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

1. Lath shall be minimum 2.5-lb. metal lath having a minimum 0.020" thickness and shall be attached in accordance with Section 9.3.9. Tensile strength of the lath steel shall be minimum 43,900 psi.
2. Maximum stud spacing is 16" o.c. Expanded metal lath shall be attached with fasteners, vertically along each stud, at a maximum of 7" o.c.
3. Wood studs shall have a minimum specific gravity of 0.42.
4. Screws shall be corrosion-resistant, self-drilling, self-tapping and have a wafer or pancake head or a washer with a diameter sufficient to prevent the head from pulling through the openings in the lath and shall be in accordance with ASTM C954 or ASTM C1002. Screws shall penetrate the studs a minimum of 1¹/₄" in addition to the tapered point.
5. For thicker continuous insulation applications, design is required in accordance with accepted engineering practice.
6. The total distance from the face of the stud to the underside of the fastener head shall not be more than that listed above. This includes any additional sheathing materials such as OSB, Gypsum, DensGlass®, plywood, lath, rain screen, or airspace incorporated in the design of the wall assembly. Where OSB or plywood is separately attached directly to the stud, the distance from framing to the underside of fastener head may be calculated from the face of the OSB or plywood.



**Table 1. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Wood^{8,11,12}**

Fastener Penetration Into	Fastener Type ⁴	Substrate	Minimum Fastener Length ⁷ (in)	Max. Dist from Face of Framing to Underside of Fastener Head ^{5,6} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners Along Each Stud ¹³					
					Maximum Cladding Weight (psf)					
					5	10	15	18	22	25
7. Not all fasteners are commonly available in the lengths specified. Proprietary fasteners of equal strength and size are permitted.										
8. This table provides some options evaluated by DrJ for the attachment of Westlake Royal Stone products over foam plastic insulating sheathing. Other methods, such as Cascadia clips or Knight Wall Systems, may be considered, but have not been evaluated by DrJ.										
9. HeadLOK® screws are proprietary fasteners manufactured by OMG®, Inc. (dba FastenMaster®). For HeadLOK® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.										
10. TRUFAST® fasteners are proprietary fasteners manufactured by TRUFAST®, LLC. For TRUFAST® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.										
11. Framing is defined as wood studs.										
12. Continuous insulation shall be foam plastic sheathing with a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.										
13. Values were calculated considering only eccentric gravity loads. Where transverse load resistance is required, withdrawal resistance of the fastener shall also be considered.										

**Table 2. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Steel^{7,8,9}**

Fastener Penetration Into	Fastener Type ³	Substrate	Minimum Fastener Length ⁶ (in)	Max Dist from Face of Framing to Underside of Fastener Head ^{4,5} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners along Each Stud ¹⁰					
					Maximum Cladding Weight (psf)					
					5	10	15	18	22	25
Steel Framing ² (33 mil, 20-gauge, 33 ksi)	#6 screw	Lath ¹ /Mortar	1	5/8	7	7	7	7	7	6
			1	7/8	7	7	7	7	6	6
			1½	1⅛	7	7	7	7	6	6
			2	1⅝	7	7	7	6	4	4
			2½	2⅛	7	7	6	4	4	-
			3	2⅝	7	4	-	-	-	-
	3½		3⅛	4	-	-	-	-	-	
	#8 screw		1	5/8	7	7	7	7	7	7
			1	7/8	7	7	7	7	7	6
			1½	1⅛	7	7	7	7	7	6
			2	1⅝	7	7	7	7	6	4
			2½	2⅛	7	7	7	6	4	4
			3	2⅝	7	7	6	4	4	-

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Fastener Penetration Into	Fastener Type ³	Substrate	Minimum Fastener Length ⁶ (in)	Max Dist from Face of Framing to Underside of Fastener Head ^{4,5} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners along Each Stud ¹⁰						
					Maximum Cladding Weight (psf)						
					5	10	15	18	22	25	
			3½	3⅛	7	6	4	-	-	-	
			4	3⅝	6	-	-	-	-	-	
	#10 screw		See table footnote 3	≤ 1⅛	7	7	7	7	7	7	7
			2	1⅝	7	7	7	7	6	6	
			2½	2⅛	7	7	7	7	6	4	
			3	2⅝	7	7	7	6	4	4	
			3½	3⅛	7	7	6	4	4	-	
			4	3⅝	7	6	4	-	-	-	
			4½	4⅛	7	4	-	-	-	-	
			#12 screw	See table footnote 3	≤ 1⅛	7	7	7	7	7	7
	2			1⅝	7	7	7	7	7	6	
	2½			2⅛	7	7	7	7	6	6	
	3			2⅝	7	7	7	7	6	4	
	Steel Framing ² (33 mil, 20-gauge, 33 ksi)		#12 screw	Lath ¹ /Mortar	3½	3⅛	7	7	7	6	4
4		3⅝			7	7	6	4	4	-	
4½		4⅛			7	6	4	-	-	-	
5		4⅝			7	4	-	-	-	-	
#14 screw		See table footnote 3	≤ 1⅝		7	7	7	7	7	7	
		2½	2⅛		7	7	7	7	7	6	
		3	2⅝		7	7	7	7	6	6	
		3½	3⅛		7	7	7	7	6	4	
#14 screw		4	3⅝		7	7	7	6	4	4	
		4½	4⅛		7	7	6	4	4	-	
		5	4.625		7	6	4	4	-	-	



Table 2. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Steel^{7,8,9}

Fastener Penetration Into	Fastener Type ³	Substrate	Minimum Fastener Length ⁶ (in)	Max Dist from Face of Framing to Underside of Fastener Head ^{4,5} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners along Each Stud ¹⁰					
					Maximum Cladding Weight (psf)					
					5	10	15	18	22	25
	TRUFAST® SIP LD		3	≤ 7/8	7	7	7	7	7	7
			3	1 1/8	7	7	7	7	7	6
			3	1 5/8	7	7	7	7	6	4
			3	2 1/8	7	7	6	6	4	4
			3	2 5/8	7	7	4	4	4	-
			3 1/2	3 1/8	7	6	4	-	-	-
			4	3 5/8	6	-	-	-	-	-
Steel Framing ² (43 mil, 18-gauge, 33 ksi)	#6 screw		See table footnote 3	≤ 1 1/8	7	7	7	7	7	7
			2	1 5/8	7	7	7	7	7	6
			2 1/2	2 1/8	7	7	7	6	6	4
			3	2 5/8	7	7	4	4	4	-
			3 1/2	3 1/8	7	4	-	-	-	-
	#8 screw		See table footnote 3	≤ 1 5/8	7	7	7	7	7	7
			2 1/2	2 1/8	7	7	7	7	7	6
			3	2 5/8	7	7	7	6	6	4
			3 1/2	3 1/8	7	7	6	4	4	-
Steel Framing ² (43 mil, 18-gauge, 33 ksi)	#8 screw		3 1/2	3 1/8	7	7	6	4	4	-
			4	3 5/8	7	4	-	-	-	-
	#10 screw		See table footnote 3	≤ 2 1/8	7	7	7	7	7	7
			3	2 5/8	7	7	7	7	7	6
			3 1/2	3 1/8	7	7	7	6	6	4
			4	3 5/8	7	7	6	4	4	-
			4 1/2	4 1/8	7	4	-	-	-	-
		See table footnote 3	≤ 2 5/8	7	7	7	7	7	7	



Table 2. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Steel^{7,8,9}

Fastener Penetration Into	Fastener Type ³	Substrate	Minimum Fastener Length ⁶ (in)	Max Dist from Face of Framing to Underside of Fastener Head ^{4,5} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners along Each Stud ¹⁰					
					Maximum Cladding Weight (psf)					
					5	10	15	18	22	25
			3½	3⅛	7	7	7	7	7	6
			4	3⅝	7	7	7	6	6	4
			4½	4⅛	7	7	6	4	4	4
			5	4⅝	7	6	4	-	-	-
	#14 screw		See table footnote 3	≤ 3⅛	7	7	7	7	7	7
			4	3⅝	7	7	7	7	7	6
			4½	4⅛	7	7	7	7	6	4
			5	4⅝	7	7	6	6	4	4
	TRUFAST® SIP LD		3	≤ 1⅝	7	7	7	7	7	7
			3	2⅛	7	7	7	7	7	6
			3	2⅝	7	7	7	6	6	4
			3½	3⅛	7	7	6	4	4	-
			4	3⅝	7	4	-	-	-	-
Steel Framing ² (54 mil, 16-gauge, 50 ksi)	#6 screw	See table footnote 3	≤ 1⅝	7	7	7	7	7	7	
		2½	2⅛	7	7	7	7	7	6	
		3	2⅝	7	7	7	6	4	4	
		3½	3⅛	7	4	-	-	-	-	
	#8 screw	See table footnote 3	≤ 2⅛	7	7	7	7	7	7	
	#8 screw	Lath ¹ /Mortar	3	2⅝	7	7	7	7	7	6
			3½	3⅛	7	7	7	6	6	4
			4	3⅝	7	6	4	4	-	-
	#10 screw		See table footnote 3	≤ 2⅝	7	7	7	7	7	7
			3½	3⅛	7	7	7	7	7	6



**Table 2. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Steel^{7,8,9}**

Fastener Penetration Into	Fastener Type ³	Substrate	Minimum Fastener Length ⁶ (in)	Max Dist from Face of Framing to Underside of Fastener Head ^{4,5} (in) (GAP)	Maximum Vertical Spacing (in) of Fasteners along Each Stud ¹⁰						
					Maximum Cladding Weight (psf)						
					5	10	15	18	22	25	
	#12 screw		4	3 ⁵ / ₈	7	7	7	6	6	4	
			4 ¹ / ₂	4 ¹ / ₈	7	7	4	4	-	-	
			See table footnote 3	≤ 3 ⁵ / ₈	7	7	7	7	7	7	
			4 ¹ / ₂	4 ¹ / ₈	7	7	7	7	6	4	
			5	4 ⁵ / ₈	7	7	6	4	4	-	
	#14 screw		See table footnote 3	≤ 4 ¹ / ₈	7	7	7	7	7	7	7
			5	4 ⁵ / ₈	7	7	7	7	6	6	
	TRUFAST® SIP LD		3	≤ 2 ¹ / ₈	7	7	7	7	7	7	7
			3	2 ⁵ / ₈	7	7	7	7	7	6	
			3 ¹ / ₂	3 ¹ / ₈	7	7	7	6	4	4	
			4	3 ⁵ / ₈	7	6	4	-	-	-	

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

- Lath shall be minimum 2.5-lb. metal lath having a minimum 0.020" thickness and shall be attached in accordance with Section 9.3.9. Tensile strength of the lath steel shall be minimum 43,900 psi.
- Maximum stud spacing is 16" o.c. Expanded metal lath shall be attached with fasteners, vertically along each stud, a maximum of 7" o.c.
- Screws shall be corrosion-resistant, self-drilling, self-tapping and penetrate a minimum of ³/₈" and have a wafer or pancake head or a washer with a diameter sufficient to prevent the head from pulling through the openings in the lath and shall be in accordance with ASTM C954 or ASTM C1002.
- For thicker continuous insulation applications, design is required in accordance with accepted engineering practice.
- The total distance from the face of the stud to the underside of the fastener head shall not be more than that listed above. This includes any additional sheathing materials such as OSB, plywood, Gypsum, DensGlass®, lath, rain screen or airspace incorporated in the design of the wall assembly.
- Not all fasteners are commonly available in the lengths specified. Proprietary fasteners of equal strength and size are permitted.
- This table provides some options evaluated by DrJ for the attachment of Westlake Royal Stone products over foam plastic insulating sheathing. Other methods, such as Cascadia Clip® or Knight Wall Systems, may be considered, but have not been evaluated by DrJ.
- Framing is defined as steel studs.
- Continuous insulation shall be foam plastic sheathing with a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.
- Values were calculated considering only eccentric gravity loads. Where transverse load resistance is required, withdrawal resistance of the fastener shall also be considered.



**Table 3. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Masonry & Concrete^{8,11}**

Lath ¹ Fastener Substrate ²	Lath Fastener Type	Max. Veneer Weight (includes lath, scratch coat and mortar setting bed) (psf)	Maximum Distance from Face of Framing to Underside of Fastener Head ^{5,6} (in)	Lath Fastener – Minimum Size ⁷ (dia. x length)
Concrete ⁴ (minimum 2,500 psi)	TRUFAST® ¹⁰ TRUGRIP, TRUFAST® SIP LD, or Tapcon® ⁹ Hex Screw	15	1 ³ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 3" or Tapcon® Hex Screw 3/16" x 3 1/4"
			1 ⁷ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 3 1/2" or Tapcon® Hex Screw 1/4" x 3 3/4"
			2 ³ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 4" or Tapcon® Hex Screw 1/4" x 4"
			3 ³ / ₈	TRUFAST® TRUGRIP 4 1/2" or Tapcon® Hex Screw 1/4" x 5"
		18	1 ³ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 3" or Tapcon® Hex Screw 3/16" x 3 1/4"
			1 ⁷ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 3 1/2" or Tapcon® Hex Screw 1/4" x 3 3/4"
			2 ³ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 4" or Tapcon® Hex Screw 1/4" x 4"
			3 ³ / ₈	Tapcon® Hex Screw 1/4" x 5"
		22	1 ³ / ₈	TRUFAST® SIP LD or TRUFAST® TRUGRIP 3" or Tapcon® Hex Screw 1/4" x 3 1/4"
			1 ⁷ / ₈	TRUFAST® TRUGRIP 3.5" or Tapcon® Hex Screw 1/4" x 3 3/4"
			2 ³ / ₈	TRUFAST® TRUGRIP 4" or Tapcon® Hex Screw 1/4" x 4"
			3 ³ / ₈	Tapcon® Hex Screw 1/4" x 5"
		25	1 ³ / ₈	TRUFAST® TRUGRIP 3" or Tapcon® Hex Screw 1/4" x 3 1/4"
			1 ⁷ / ₈	TRUFAST® TRUGRIP 3 1/2" or Tapcon® Hex Screw 1/4" x 3 3/4"
			2 ³ / ₈	Tapcon® Hex Screw 1/4" x 4"
			3 ³ / ₈	Tapcon® Hex Screw 5/16" x 5"



**Table 3. Fastener Requirements to Support Cladding Weight for Westlake Royal Stone Products
Installation Over Continuous Insulation – Masonry & Concrete^{8,11}**

Lath ¹ Fastener Substrate ²	Lath Fastener Type	Max. Veneer Weight (includes lath, scratch coat and mortar setting bed) (psf)	Maximum Distance from Face of Framing to Underside of Fastener Head ^{5,6} (in)	Lath Fastener – Minimum Size ⁷ (dia. x length)
Masonry ³ (medium/normal Hollow CMU per ASTM C90)	TRUFAST® SIP LD, or Tapcon® Hex Screw	15	1 ³ / ₈	TRUFAST® SIP LD 3" or Tapcon® Hex Screw ³ / ₁₆ " x 2 ³ / ₄ "
			1 ⁷ / ₈	TRUFAST® SIP LD 3 ¹ / ₂ " or Tapcon® Hex Screw ³ / ₁₆ " x 3 ¹ / ₄ "
			2 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ³ / ₄ "
			3 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 5"
		18	1 ³ / ₈	TRUFAST® SIP LD 2 ¹ / ₂ " or Tapcon® Hex Screw ³ / ₁₆ " x 2 ³ / ₄ "
			1 ⁷ / ₈	Tapcon® Hex Screw ³ / ₁₆ " x 3 ¹ / ₄ "
			2 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ³ / ₄ "
			3 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 5"
		22	1 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 2 ³ / ₄ "
			1 ⁷ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ¹ / ₄ "
			2 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ³ / ₄ "
			3 ³ / ₈	Tapcon® Hex Screw ⁵ / ₁₆ " x 5"
		25	1 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 2 ³ / ₄ "
			1 ⁷ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ¹ / ₄ "
			2 ³ / ₈	Tapcon® Hex Screw ¹ / ₄ " x 3 ³ / ₄ "

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

- Lath shall be minimum 2.5 lb. metal lath having a minimum 0.020" thickness and shall be attached in accordance with Section 9.3.9. Tensile strength of the lath steel shall be minimum 43,900 psi.
- Maximum fastener spacing in masonry and concrete is 16" o.c. horizontally and 7" o.c. vertically.
- Masonry Construction: Tapcon® fasteners shall penetrate a minimum of 1". TRUFAST® SIP LD and TRUGRIP fasteners shall penetrate a minimum of 1¹/₂".
- Concrete Construction: Tapcon® fasteners shall have a minimum penetration depth of 1¹/₂". TRUFAST® SIP LD and TRUGRIP fasteners shall penetrate a minimum of 1¹/₂".
- For thicker continuous insulation applications, design is required in accordance with accepted engineering practice.
- The total distance from concrete or masonry to the underside of the fastener head shall not be more than that listed above. This includes any additional sheathing materials such as OSB, plywood, Gypsum, DensGlass®, rain screen or airspace incorporated in the design of the wall assembly.
- Not all fasteners are commonly available in the lengths specified. Proprietary fasteners of equal strength and size are permitted.
- This table provides some options evaluated by DrJ for the attachment of Westlake Royal Stone products over foam plastic insulating sheathing. Other methods, such as Cascadia Clip® or Knight Wall Systems, may be considered, but have not been evaluated by DrJ.
- Tapcon® fasteners are proprietary fasteners manufactured by ITW Buildex. For Tapcon® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.
- TRUFAST® fasteners are proprietary fasteners manufactured by TRUFAST®, LLC. For TRUFAST® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.
- Continuous insulation shall be foam plastic sheathing with a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.



- 6.3 Westlake Royal Stone products are used as an exterior wall covering installed over furring. The furring is placed over the continuous insulation and fastened to the wood or steel studs or concrete or masonry substrate. The maximum foam thickness for various fastener sizes and types is listed in **Table 4**.

Table 4. Maximum Foam Thickness for Fastener Type and Size^{1,13,15}

Furring Material ^{2,3,4,5}	Framing Member ²⁰	Min Fastener Penetration into Wall Framing	Cladding Weight ¹⁶ (psf)	Max Distance from the Face of Framing to the Underside of the Furring Material ¹⁴ (in)	Fastener Type and Minimum Size ^{10,11,12,17,18,19} (dia. x length)
Minimum 1x3 Wood Furring	Minimum 2x Wood Stud ⁶	See table footnote 6	15	1	0.148" x 3 1/4" Nail or HeadLOK® 4 1/2", or TRUFAST® SIP (LD or TP) 4"
				1 1/2	HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4 1/2"
				2	HeadLOK® 5" or TRUFAST® SIP (LD or TP) 5"
				3	HeadLOK® 6" or TRUFAST® SIP (LD or TP) 7"
			18	1	0.148" x 3 1/4" Nail or HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4"
				1 1/2	HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4 1/2"
				2	HeadLOK® 5" or TRUFAST® SIP (LD or TP) 5"
				3	HeadLOK® 6" or TRUFAST® SIP (LD or TP) 7"
			22	1	0.148" x 3 1/4" Nail or HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4"
				1 1/2	HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4 1/2"
				2	HeadLOK® 5" or TRUFAST® SIP (LD or TP) 6"
				3	HeadLOK® 6" or TRUFAST® SIP (LD or TP) 7"
			25	1	0.148" x 3 1/4" Nail or HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 4"
				1 1/2	HeadLOK® 4 1/2" or TRUFAST® SIP (LD or TP) 5 1/2"
				2	HeadLOK® 5" or TRUFAST® SIP (LD or TP) 6"
				3	NONE



Table 4. Maximum Foam Thickness for Fastener Type and Size^{1,13,15}

Furring Material ^{2,3,4,5}	Framing Member ²⁰	Min Fastener Penetration into Wall Framing	Cladding Weight ¹⁶ (psf)	Max Distance from the Face of Framing to the Underside of the Furring Material ¹⁴ (in)	Fastener Type and Minimum Size ^{10,11,12,17,18,19} (dia. x length)
Steel Hat Channel (minimum 33 mil, 33 ksi)	Steel Stud ⁷ (33 mil or thicker, 33 ksi)	Steel Thickness + 3 Threads	15	1	#4 (0.112" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#6 (0.138" x 2") or TRUFAST® SIP LD 2"
				2	#6 (0.138" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#10 (0.186" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			18	1	#4 (0.112" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#6 (0.138" x 2") or TRUFAST® SIP LD 2"
				2	#8 (0.164" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#12 (0.216" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			22	1	#6 (0.138" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#8 (0.164" x 2") or TRUFAST® SIP LD 2"
				2	#10 (0.186" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#14 (0.242" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			25	1	#8 (0.164" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#10 (0.186" x 2") or TRUFAST® SIP LD 2"
				2	#12 (0.216" x 3 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#16 (0.268" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
Steel Hat Channel (minimum 33 mil, 33 ksi)	Steel Stud (43 mil or thicker, 33 ksi)	Steel Thickness + 3 Threads	15	1	#4 (0.112" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#6 (0.138" x 2") or TRUFAST® SIP LD 2"
				2	#6 (0.138" x 2 1/2") or TRUFAST® SIP LD 2 1/2"



Table 4. Maximum Foam Thickness for Fastener Type and Size^{1,13,15}

Furring Material ^{2,3,4,5}	Framing Member ²⁰	Min Fastener Penetration into Wall Framing	Cladding Weight ¹⁶ (psf)	Max Distance from the Face of Framing to the Underside of the Furring Material ¹⁴ (in)	Fastener Type and Minimum Size ^{10,11,12,17,18,19} (dia. x length)
Steel Hat Channel (minimum 33 mil, 33 ksi)	Steel Stud (43 mil or thicker, 33 ksi)	Steel Thickness + 3 Threads	15	3	#8 (0.164" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			18	1	#4 (0.112" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
			18	1 1/2	#6 (0.138" x 2") or TRUFAST® SIP LD 2"
				2	#6 (0.138" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#10 (0.186" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			22	1	#6 (0.138" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#6 (0.138" x 2") or TRUFAST® SIP LD 2"
				2	#8 (0.164" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#10 (0.186" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
			25	1	#6 (0.138" x 1 1/2") or TRUFAST® SIP LD 1 1/2"
				1 1/2	#8 (0.164" x 2") or TRUFAST® SIP LD 2"
				2	#8 (0.164" x 2 1/2") or TRUFAST® SIP LD 2 1/2"
				3	#12 (0.216" x 3 1/2") or TRUFAST® SIP LD 3 1/2"
Steel Hat Channel (minimum 33 mil, 33 ksi)	Masonry ⁸ (medium/normal hollow CMU per ASTM C90)	See table footnote 8	15	1	3/16" x 2 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 2 1/2"
				1 1/2	3/16" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3"
				2	3/16" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3 1/2"
				3	1/4" x 5" Tapcon® Hex Screw or TRUFAST® SIP LD 4"
			18	1	3/16" x 2 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 2 1/2"
				1 1/2	3/16" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3"



Table 4. Maximum Foam Thickness for Fastener Type and Size^{1,13,15}

Furring Material ^{2,3,4,5}	Framing Member ²⁰	Min Fastener Penetration into Wall Framing	Cladding Weight ¹⁶ (psf)	Max Distance from the Face of Framing to the Underside of the Furring Material ¹⁴ (in)	Fastener Type and Minimum Size ^{10,11,12,17,18,19} (dia. x length)
Steel Hat Channel (minimum 33 mil, 33 ksi)	Masonry ⁸ (medium/normal hollow CMU per ASTM C90)	See table footnote 8	18	2	1/4" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3 1/2"
				3	1/4" x 5" Tapcon® Hex Screw
			22	1	3/16" x 2 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 2 1/2"
				1 1/2	1/4" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3"
				2	1/4" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3 1/2"
				3	1/4" x 5" Tapcon® Hex Screw
			25	1	1/4" x 2 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 2 1/2"
				1 1/2	1/4" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3"
				2	1/4" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD 3 1/2"
				3	5/16" x 5" Tapcon® Hex Screw
Steel Hat Channel (minimum 33 mil, 33 ksi)	Concrete ⁹ (minimum 2,500 psi)	See table footnote 9	22	1	3/16" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 3"
				1 1/2	3/16" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 3 1/2"
				2	3/16" x 3 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 4"
				3	3/16" x 5" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 5"
			25	1	3/16" x 2 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 3"
				1 1/2	3/16" x 3 1/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 3 1/2"
				2	3/16" x 3 3/4" Tapcon® Hex Screw or TRUFAST® SIP LD or TRUFAST® TRUGRIP 4"



Table 4. Maximum Foam Thickness for Fastener Type and Size^{1,13,15}

Furring Material ^{2,3,4,5}	Framing Member ²⁰	Min Fastener Penetration into Wall Framing	Cladding Weight ¹⁶ (psf)	Max Distance from the Face of Framing to the Underside of the Furring Material ¹⁴ (in)	Fastener Type and Minimum Size ^{10,11,12,17,18,19} (dia. x length)
Steel Hat Channel (minimum 33 mil, 33 ksi)	Concrete ⁹ (minimum 2,500 psi)	See table footnote 9	25	3	1/4" x 5" Tapcon® Hex Screw or TRUFast® SIP LD or TRUFast® TRUGRIP 5"

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

- Lath shall be minimum 2.5 lb. metal lath having a minimum 0.020" thickness and shall be attached in accordance with Section 9.3.9. Tensile strength of the lath steel shall be minimum 43,900 psi.
- Where furring is installed vertically over wall studs, maximum stud spacing shall be 16" o.c., and furring shall be attached to each stud at a maximum of 7" o.c. along the length of the stud. Where furring is attached vertically to concrete or masonry walls, it shall be spaced a maximum of 16" o.c. and fastened a maximum of 7" o.c. vertically.
- Where furring is installed horizontally over wall studs, maximum stud spacing shall be 16" o.c., and furring shall be installed at a maximum 7" o.c. along the length of the stud and attached to each wall stud. Where furring is attached horizontally to concrete or masonry, it shall be spaced a maximum of 7" o.c. and shall be fastened to the concrete or masonry with fasteners spaced a maximum of 16" o.c.
- Wood furring shall be a minimum 3/4" thick. Wood furring and wood studs shall have a minimum specific gravity of 0.42.
- Steel hat-channel furring shall be a minimum 33 mil thick steel (33 ksi) with a depth of 7/8".
- Wood Construction:* Nails shall penetrate wood framing a minimum of 1 1/2" and have a head size or a washer with a diameter sufficient to prevent the head from pulling through the openings in the lath. Screws shall penetrate the studs a minimum of 1 1/4". Nails supporting the furring strips shall penetrate the studs a minimum of 1 1/2".
- Steel Framing:* Screws shall be corrosion-resistant, self-drilling, self-tapping and penetrate a minimum of 3/8" and have a wafer or pancake head or a washer with a diameter sufficient to prevent the head from pulling through the openings in the lath.
- Masonry Construction:* Tapcon® fasteners shall penetrate a minimum of 1". TRUFast® SIP LD and TRUGRIP fasteners shall penetrate a minimum of 1 1/2".
- Concrete Construction:* Tapcon® fasteners shall have a minimum penetration depth of 1 1/2". TRUFast® SIP LD and TRUGRIP fasteners shall penetrate a minimum of 1 1/2".
- Corrosion-resistant, self-drilling, self-tapping screw fasteners for connection of siding to steel framing shall comply with the requirements of AISI S200. Other approved fasteners of equivalent or greater diameter and bending strength shall be permitted.
- Nail fasteners shall be common or box nails and shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths. Minimum bending yield strength for nails with a diameter up to 0.148", 0.162", and 0.225" shall be 90,000 psi, 90,000 psi and 80,000 psi, respectively.
- A minimum 2x wood furring shall be used where the required wall covering fastener penetration into wood material exceeds 3/4" (19 mm) and is not more than 1 1/2" (38 mm), unless approved deformed shank siding nails or siding screws are used to provide equivalent withdrawal strength, allowing the wall covering connection to be placed into 1x wood furring.
- Continuous insulation shall be foam plastic sheathing with a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.
- The total distance from the face of the stud, concrete or masonry to the underside of the furring shall not be more than the maximum thickness listed above. This includes any additional sheathing materials such as OSB, plywood, Gypsum, DensGlass®, rain screen or airspace incorporated in the design of the wall assembly. Cladding shall be attached to the furring in accordance with the manufacturer installation instructions. Not all fasteners are commonly available in the lengths specified. Proprietary fasteners of equal strength and size are permitted.
- This table provides some options evaluated by DrJ for the attachment of Westlake Royal Stone products over foam plastic insulating sheathing. Other methods, such as Cascadia Clip® or Knight Wall Systems, may be considered, but have not been evaluated by DrJ.
- Materials in the assembly, other than the veneer, lath and mortar setting bed and furring, are assumed to be separately attached and are not included in the fastener size calculations. Furring weight shall be included as part of the listed cladding weight.
- HeadLOK® Screws are proprietary fasteners manufactured by OMG®, Inc. (dba FastenMaster®). For HeadLOK® fastener code compliance issues, see the manufacturer product literature and code compliance reports.
- Tapcon® fasteners are proprietary fasteners manufactured by ITW Buildex. For Tapcon® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.
- TRUFast® fasteners are proprietary fasteners manufactured by TRUFast®, LLC. For TRUFast® fastener code-compliance issues, see the manufacturer product literature and code-compliance reports.
- Framing is defined as wood studs, steel studs, concrete, or masonry substrates.



6.4 Transverse Wind Loads

- 6.4.1 Westlake Royal Stone products 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 5**.
- 6.4.2 **Table 5** provides the maximum design wind pressure allowed for the installation of this product. The maximum wind speed that corresponds with this wind pressure is provided to aid the user in determining where the product can be used. See the applicable building code for the maximum design wind speed allowed for the location of the building. The wind speed listed in **Table 5** shall exceed the required design wind speed from the applicable code.

Table 5. Maximum Allowable Wind Pressure and Wind Speeds for Westlake Royal Stone Product Lath Fasteners

Exposure Category	Maximum Allowable Wind Pressure ^{2,5} (psf)	Maximum Wind Speed, ^{1,3,4} V_{ult}/V_{asd} (mph)
B	70	≤ 200/155
C		≤ 185/145
D		≤ 170/130

SI: 1 psf = 0.0479 kN/m²; 1 mph = 1.61 km/h

- The first wind speed listed is V_{ult} , per ASCE 7-16 and 7-22, and is the maximum allowed wind speed for the Exposure Category shown with a maximum Mean Roof Height (MRH) of 30'. The second wind speed capacity shown for each exposure category is the ASCE 7-16 and 7-22 ultimate wind speed converted to V_{asd} for allowable stress design and rounded to the nearest 5 mph.
- Design wind pressure is per ASCE 7-16 and 7-22 for components and cladding ($K_d = 0.85$), Method 1 for the condition shown.
- Maximum allowable wind speeds are based on the average ultimate loads tested for each condition divided by an allowable stress design reduction factor of 1.6, in accordance with SDPWS Section 3.2.1.
- Pressure Equalization factor in accordance with ASTM D5206, Procedure B equals 1.0. Additional assumptions include:
 - Enclosed Building ($GC_{pi} = \pm 0.18$)
 - Topographic Factor, $K_{zt} = 1.0$
 - Ground Elevation Factor, $K_e = 1.0$
 - Zone 5 with an effective area of 10 ft² ($GC_p = -1.4$)
- Wind pressure resistance is based on the lowest published withdraw capacity for the fasteners shown. Fasteners of equal or greater withdrawal resistance and equal or greater head size are permitted.

- 6.4.3 For additional information or use in other applications, consult the manufacturer installation instructions:

- 6.4.3.1 Eldorado Stone®: www.eldoradostone.com/resources
- 6.4.3.2 Dutch Quality Stone®: www.dutchqualitystone.com/resources
- 6.4.3.3 Cultured Stone®: www.culturedstone.com/resources
- 6.4.3.4 StoneCraft: www.stonecraft.com/resources

- 6.5 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.



7 Certified Performance^{xxii}

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.^{xxiii}
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.^{xxiv}

8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 Westlake Royal Stone Adhered Masonry Veneer complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
 - 8.1.1 The Westlake Royal Stone products were evaluated to determine:
 - 8.1.1.1 The ability of various fasteners to support the gravity and transverse loads induced by the products when installed over wood or steel light-frame construction with the addition of continuous insulation installed between the framing and the Westlake Royal Stone products.
 - 8.1.1.2 The ability of various fasteners to support the gravity and transverse loads induced by the products when installed over concrete and masonry construction with the addition of continuous insulation installed between the framing and the Westlake Royal Stone products.
- 8.2 Use in applications requiring a fire-resistance rating are outside the scope of this evaluation.
- 8.3 Any building code, regulation, and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an [ISO/IEC 17065 accredited certification body](#) and a professional engineering company operated by [RDP/approved sources](#). DrJ is qualified^{xxv} to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.
- 8.4 Engineering evaluations are conducted with DrJ's ANAB [accredited ICS code scope](#) of expertise, which are also its areas of professional engineering competence.
- 8.5 Any regulation specific issues not addressed in this section are outside the scope of this report.

9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 9.3 *Installation Procedure*
 - 9.3.1 Westlake Royal Stone products shall be installed in accordance with the manufacturer published installation instructions, the [Masonry Veneer Manufacturer Association's Installation Guide](#) and this report. In the event of a conflict between the manufacturer installation instructions, the Masonry Veneer Manufacturer Association's Installation Guide and this report, the more restrictive shall govern.
 - 9.3.2 Installation is subject to the conditions of use set forth in Section **12**.
 - 9.3.3 Veneer must be applied to a wall framing system in which the studs are spaced a maximum of 16" o.c. (406 mm).



- 9.3.4 Westlake Royal Stone products may be installed over continuous insulation on masonry or concrete walls and attached in accordance with **Table 3**.
- 9.3.5 Westlake Royal Stone products may be installed over continuous insulation on wood or steel-framed walls, with or without WSP sheathing, and attached in accordance with **Table 1**, **Table 2** or **Table 4**.
- 9.3.5.1 Where WSP sheathing is used, it shall be installed in accordance with the applicable building code or other standards as permitted by the building code (such as SDPWS or WFCM) and shall comply with one of the following minimum requirements:
- 9.3.5.1.1 Minimum $7/16$ " Structural 1, Exposure 1 OSB complying with PS 2
- 9.3.5.1.2 Minimum $1/2$ " Structural 1 rated, exterior grade plywood complying with PS 1
- 9.3.6 Westlake Royal Stone products must be installed over two (2) layers of a Water-Resistant Barrier (WRB) in accordance with IBC Section 1403.2,^{xxvi} IBC Section 2510.6 and IRC Section R703.2. The base layer WRB may be liquid-applied, a sheet material or a rigid continuous insulation with taped joints where the continuous insulation is approved for use as a WRB.
- 9.3.6.1 *Exception:* Where installed over concrete or masonry substrate, the WRB is not required.
- 9.3.7 Weep screeds and code compliant flashing must be installed at the bottom of walls, the top of windows, doors and fenestrations and at all horizontal terminations of the veneer.
- 9.3.7.1 The weep screed must comply with and be installed in accordance with IBC Section 1404.10.1.2.1,^{xxvii} IBC Section 2512.1.2 or IRC Section R703.7.2.1.
- 9.3.7.1.1 *Exception:* Where installed over concrete or masonry substrate, the weep screed is not required.
- 9.3.8 Veneer must be installed over 2.5 lb/yd² (1.4 kg/m²) galvanized diamond mesh metal lath, 3.4 lb/yd² (1.8 kg/m²) $3/8$ " thick (9 mm) galvanized expanded metal lath, 18-gauge, 0.051" thick (1.30 mm), galvanized woven wire mesh or other code-approved lath of equal or better performance.
- 9.3.9 Lath shall be:
- 9.3.9.1 Installed per the manufacturer installation instructions or ASTM C1063.
- 9.3.9.2 Installed over the two (2) WRB layers, unless one of the following conditions are met:
- 9.3.9.2.1 Lath is paper-backed, in which case only one (1) additional WRB is required, except as noted in Section **9.3.3**.
- 9.3.9.2.2 If foam sheathing is used and has been qualified by the manufacturer to perform as a WRB, then only one (1) additional WRB is required.
- 9.3.9.2.3 If a rain screen is used, only one WRB is required, in accordance with IBC Section 2510.6.
- 9.3.9.3 Fastened through continuous insulation to each stud at 7" o.c. (178 mm) vertically along the stud or as shown in **Table 2** and **Table 4**.
- 9.3.9.4 When the lath is installed over furring, the furring shall be fastened to the wood, steel or concrete substrate in accordance with **Table 4**.
- 9.3.10 Westlake Royal Stone products shall be adhered to the supporting walls with a $1/2$ " thick to $3/4$ " thick (13 to 19 mm) mortar setting bed.
- 9.3.10.1 The mortar shall comply with IBC Section 2103.2 or IRC Table R606.2.8^{xxviii} for the application.
- 9.3.10.2 Other mortars of equal or greater performance shall be permitted when installed in accordance with the manufacturer installation instructions.
- 9.3.10.3 All other installation and flashing details germane to the project shall be in accordance with the applicable building code and the manufacturer installation instructions



10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 10.1.1 Wind-load resistance testing in accordance with ASTM E330
 - 10.1.2 Calculations in accordance with AWC NDS, AISI S100 and ACI 318 performed by DrJ Engineering
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or RDPs. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where pertinent, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 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, or Duly Authenticated Reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this Duly Authenticated Report, may be dependent upon published design properties by others.
- 10.5 Testing and engineering analysis: The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.^{xxix}
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Westlake Royal Stone on the DrJ Certification website.

11 Findings

- 11.1 As outlined in Section 6, Westlake Royal Stone Adhered Masonry Veneer has performance characteristics that were tested and/or meet applicable regulations and is suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Westlake Royal Stone shall be approved for the following applications:
- 11.2.1 For use as an exterior wall covering in accordance with the applicable sections of IBC Chapter 14, IBC Chapter 25 and IRC Section R703.
- 11.3 Fasteners used in accordance with **Table 1**, **Table 2**, **Table 3** and **Table 4** are adequate for the support of Westlake Royal Stone products in applications where there is a layer of continuous insulation installed between the products and the underlying substrate (i.e., light-frame wood or steel-framed walls, or concrete or masonry walls).
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Westlake Royal Stone LLC.
- 11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10^{xxx} are similar) in pertinent part states:

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



- 11.6 **Approved:**^{xxxii} Building regulations require that the building official shall accept Duly Authenticated Reports.^{xxxii}
- 11.6.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited.
- 11.6.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce.
- 11.6.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB-Accredited Product Certification Body – Accreditation #1131.
- 11.8 Through the IAF Multilateral Agreements (MLA), this Duly Authenticated Report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 Duly Authenticated Reports are equivalent.^{xxxiii}

12 Conditions of Use

- 12.1 Material properties shall not fall outside the boundaries defined in Section 6.
- 12.2 As defined in Section 6, 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.
- 12.3 As listed herein, Westlake Royal Stone Adhered Masonry Veneer shall be subject to the following conditions:
- 12.3.1 Installation shall be on exterior walls consisting of wood framing, steel framing, masonry or concrete capable of supporting the imposed loads, including transverse wind loads.
- 12.3.2 Where the seismic provisions of IRC Section R301.2.2 apply, the wall assembly shall not exceed the weight limits of IRC Section R301.2.2.2, unless an engineered design is provided in accordance with IRC Section R301.1.3.
- 12.3.3 Walls shall be braced to resist in-plane shear (racking) load by other means and in accordance with the applicable code.
- 12.3.4 Exterior wall framing shall be limited to a maximum out-of-plane deflection of H/360 (H equals the height of the wall)
- 12.4 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:
- 12.4.1 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.
- 12.4.2 This report and the installation instructions shall be submitted at the time of permit application.
- 12.4.3 This innovative product has an internal quality control program and a third-party quality assurance program.
- 12.4.4 At a minimum, this innovative product shall be installed per Section 9 of this report.
- 12.4.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.
- 12.4.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.
- 12.4.7 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, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.



- 12.5 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, “the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11,” all of IBC Section 104, and IBC Section 105.4.
- 12.6 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.7 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.

13 Identification

- 13.1 The innovative product 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.
- 13.2 Additional technical information can be found at:
- 13.2.1 Westlake Royal Building Products: www.westlakeroyalbuildingproducts.com
 - 13.2.2 Eldorado Stone®: www.eldoradostone.com
 - 13.2.3 Dutch Quality Stone®: www.dutchqualitystone.com
 - 13.2.4 Cultured Stone®: www.culturedstone.com
 - 13.2.5 StoneCraft: www.stonecraft.com

14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit drjcertification.org.
- 14.2 For information on the status of this report, please contact DrJ Certification.

15 Approved for Use Pursuant to U.S. and International Legislation Defined in Appendix A

- 15.1 Westlake Royal Stone Adhered Masonry Veneer is included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.



Appendix A

1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies, and/or methods of construction that:
 - 1.1.1 Advance innovation,
 - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
 - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize this innovative product to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
 - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to “*protect economic freedom and opportunity by promoting free and fair competition in the marketplace.*”
 - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies, and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
 - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),^{xxxiv} where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years^{xxxv} and/or a \$5,000,000 fine or 3 times the value of^{xxxvi} the Intellectual Property (IP) and Trade Secrets (TS).
 - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, duly authenticated reports, and/or research reports prepared by approved agencies and/or approved sources.
 - 1.2.4 For new materials^{xxxvii} that are not specifically provided for in any regulation, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
 - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.^{xxxviii}
 - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence provided in writing, that specific legislation have been violated by an individual registered PE.
 - 1.2.7 The AHJ shall accept Duly Authenticated Reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.^{xxxix}



- 1.3 **Approved^{xi} by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards that apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.^{xii} The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building shall accept Duly Authenticated Reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.^{xiii}
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly, and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed^{xiii} an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement^{xiv} (i.e., ANAB, International Accreditation Forum [IAF], etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation by:
- 1.6.1 A certification mark or listing of an approved certification agency,
 - 1.6.2 A test report from an approved testing laboratory,
 - 1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or
 - 1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed and sealed by a professional engineer or architect, licensed in Florida.
 - 1.6.5 For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods:
 - 1.6.5.1 A certification mark, listing or label from a commission-approved certification agency indicating that the product complies with the code,
 - 1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code,
 - 1.6.5.3 A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code,



- 1.6.5.4 A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code, or
- 1.6.5.5 A statewide product approval issued by the Florida Building Commission.
- 1.6.6 The [Florida Department of Business and Professional Regulation](#) (DBPR) website provides a listing of companies certified as a [Product Evaluation Agency](#) (i.e., EVLMiami 13692), a [Product Certification Agency](#) (i.e., CER10642), and as a [Florida Registered Engineer](#) (i.e., ANE13741).
- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to the 2018 Building Code of New Jersey in [IBC Section 1707.1 General](#),^{xiv} it states: *"In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)"*.^{xvi} Furthermore N.J.A.C 5:23-3.7 states: *"Municipal approvals of alternative materials, equipment, or methods of construction."*
 - 1.8.1 **Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability, and safety of those conforming with the requirements of the regulations.
 - 1.8.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.
 - 1.8.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.
 - 1.8.2 The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide *"reports of engineering findings."*
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#)^{xlvii} and [Part 3280](#),^{xlviii} the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:
 - 1.9.1 *"All construction methods shall be in conformance with accepted engineering practices."*
 - 1.9.2 *"The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur."*
 - 1.9.3 *"The design stresses of all materials shall conform to accepted engineering practice."*



- 1.10 Approval by US, Local and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.^{xlix}
 - 1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept Duly Authenticated Reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.ⁱ
 - 1.10.2.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is in the ANAB directory.
 - 1.10.2.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.^{li}
 - 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.^{lii}
- 1.11 Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
 - 1.11.2 **Approved:** The purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA and subsequently, acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, designs, services, and/or methods of construction.
 - 1.11.3 ANAB is an IAF-MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.^{liii}
 - 1.11.4 Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.^{liv}
- 1.12** Approval equity is a fundamental commercial and legal principle.^{lv}



Appendix B. Eldorado Stone

Profile Name	Weight of Total Façade Includes Lath, Scratch, Bond Mortar and Stone, Saturated (psf)	Weight of Total Façade Includes 1/2" Cement Board, Bond Mortar & Stone, Saturated (psf)
Ashlar	20.4	17.1
Bluff Stone	19.3	16.1
Brick, Adobe	21.1	17.8
Brick, Arabian	18.5	15.3
Brick, Modena	17.0	13.7
Brick, Roma	19.6	16.3
Brick, Tundra	16.8	13.6
Brick, Via	18.4	15.1
Broken Top	22.4	19.2
Castlestone, English	20.0	16.7
Cliffstone	20.7	17.4
Coarsed Stone	21.3	18.0
Coastal Reef	20.6	17.3
Cobblestone	22.8	19.6
Country Rubble	21.0	17.7
Country Rubble, Oversized	24.9	21.7
Cut Coarsed Stone	22.2	19.0
Cypress Ridge	19.6	16.3
European Ledge Cut	22.2	18.9
Field Ledge	19.2	15.9
Top Rock	20.4	17.1
Hillstone	22.0	18.8
Latitude30	21.6	18.3
Ledgecut33	22.3	19.0
Limestone	21.2	18.0
Longitude24	21.6	18.3



Appendix B. Eldorado Stone

Profile Name	Weight of Total Façade Includes Lath, Scratch, Bond Mortar and Stone, Saturated (psf)	Weight of Total Façade Includes 1/2" Cement Board, Bond Mortar & Stone, Saturated (psf)
Mountain Ledge Panel	22.0	18.8
Mountain Ledge	22.1	18.9
Ridgetop 18	21.6	18.3
River Rock, Northwest	21.7	18.5
River Rock, Creek Cobble	16.7	13.5
River Rock, Streamstone	22.5	19.3
River Rock, White Water	20.2	16.9
Rough Cut	22.2	18.9
Rustic Ledge	20.1	16.9
Shadow Rock	23.3	20.1
Sierra Cut24	27.3	24
Stack Stone	19.4	16.1
Vantage30	21.6	18.3
Vintage Ranch	20.5	17.2
Weathered Edge	22.0	18.8
Zen24	21.6	18.3
Sl: 1 psf = 0.0479 kN/m ² 1. This table is provided by the manufacturer to aid in selecting fasteners. DrJ Engineering has not independently verified the values in these tables.		



Appendix C. Dutch Quality Stone

Profile Name	Weight of Total Façade Includes Lath, Scratch, Bond Mortar & Stone, Saturated (psf)	Weight of Total Façade Includes 1/2" Cement Board, Bond Mortar & Stone, Saturated (psf)
CastleStone	20.0	16.8
Drystack	20.5	17.3
FieldStone	19.6	16.3
Ledgestone	20.1	16.8
Limestone	20.7	17.5
Michigan Split Granite	22.0	18.8
River Rock	20.5	17.3
Stack Ledge	21.3	18.1
Tuscan Ridge	21.4	18.1
Tuscany Veneer	20.2	16.9
Weather Ledge	20.5	17.3
SI: 1 psf = 0.0479 kN/m ² 1. This table is provided by the manufacturer to aid in selecting fasteners. DrJ Engineering has not independently verified the values in these tables.		



Appendix D. Cultured Stone

Product Style	Stone Saturated Weight (psf)	Saturated Density Stone and Scratch and Lath and Bonding Mortar (psf)	Saturated Density Stone and Cement Board and Bonding Mortar (psf)
Ancient Villa Ledgerstone	11.4	21.4	18.1
Cast-Fit 12x24	12.0	22.0	18.7
Cast-Fit 8x16	13.8	23.8	20.5
Cobblefield	13.9	23.9	20.6
Coral Stone	10.1	20.1	16.8
Country Ledgerstone	12.6	22.6	19.3
Cultured Brick Veneer-Handmade Brick	10.2	20.2	16.9
Cultured Brick Veneer-Used Brick	11.2	21.2	17.9
Del Mare Ledgerstone	12.3	22.3	19.0
Dressed Fieldstone	14.3	24.3	21.0
Drystack Ledgerstone	14.7	24.7	21.4
European Castle Stone	10.0	20.0	16.7
Hewn Stone 308	14.2	24.2	20.9
Hewn Stone 314	14.7	24.7	21.4
Hewn Stone 514	14.5	24.5	21.2
Hewn Stone 522	13.9	23.9	20.6
Hewn Stone 822	13.0	23.0	19.7
Limestone	13.6	23.6	20.3
Old Country Fieldstone	13.5	23.5	20.2
Pro-Fit Alpine Ledgerstone	13.3	23.3	20.0
Pro-Fit Ledgerstone	10.3	20.3	17.0
Pro-Fit Modera Ledgerstone	12.0	22.0	18.7
Pro-Fit Terrain Ledgerstone	12.2	22.2	18.9
River Rock	13.4	23.4	20.1
Rock Face	12.5	22.5	19.2



Appendix D. Cultured Stone

Product Style	Stone Saturated Weight (psf)	Saturated Density Stone and Scratch and Lath and Bonding Mortar (psf)	Saturated Density Stone and Cement Board and Bonding Mortar (psf)
Southern Ledgerstone	12.6	22.6	19.3
Split Face	13.3	23.3	20.0
Stream Stone	9.6	19.6	16.3

SI: 1 psf = 0.0479 kN/m²

1. This table is provided by the manufacturer to aid in selecting fasteners. DrJ Engineering has not independently verified the values in these tables.



Appendix E. StoneCraft

Profile ID	Weight of Total Façade Includes Lath, Scratch, Bond Mortar & Stone, Saturated (psf)	Weight of Total Façade Includes 1/2" Cement Board, Bond Mortar & Stone, Saturated (psf)
Cobble	24.4	21.2
Dutchcraft	24.5	21.3
Farmledge	21.6	18.4
Fieldstone	20.7	17.5
Heritage	24.2	20.9
Laurel Cavern	22.3	19.0
Ledgestone	23.7	20.5
Monarch	20.9	17.7
River Rock	23.2	19.9
Top Rock	21.6	18.4
SI: 1 psf = 0.0479 kN/m ² 1. This table is provided by the manufacturer to aid in selecting fasteners. DrJ Engineering has not independently verified the values in these tables.		



Issue Date: December 6, 2023
Subject to Renewal: April 1, 2025

FBC Supplement to Report Number 1312-01

REPORT HOLDER: Westlake Royal Stone LLC

1 Evaluation Subject

- 1.1 Westlake Royal Stone Adhered Masonry Veneer

2 Purpose and Scope

- 2.1 Purpose
 - 2.1.1 The purpose of this Report Supplement is to show Westlake Royal Stone Adhered Masonry Veneer, recognized in Report Number 1312-01, has also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.
- 2.2 *Applicable Code Editions*
 - 2.2.1 *FBC-B—20, 23: Florida Building Code – Building (FL 41520)*
 - 2.2.2 *FBC-R—20, 23: Florida Building Code – Residential (FL 41520)*

3 Conclusions

- 3.1 Westlake Royal Stone Adhered Masonry Veneer, described in Report Number 1312-01, complies with the FBC-B and FBC-R and is subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:
 - 3.2.1 FBC-B Section 104.4 and Section 110.4 are reserved.
 - 3.2.2 FBC-R Section R104, Section R109, Section R301.2.2 and Section R301.2.2.2 are reserved.
 - 3.2.3 FBC-B Section 1404.2 replaces IBC Section 1403.2.
 - 3.2.4 FBC-B Section 1405.10.1.2.1 replaces IBC Section 1404.10.1.2.1.
 - 3.2.5 FBC-B Section 2510.6 replaces IBC Section 2510.6.
 - 3.2.6 FBC-B Section 2512.1.2 replaces IBC Section 2512.1.2.
 - 3.2.7 FBC-R Section R301.1.3 replaces IRC Section R301.1.3.
 - 3.2.8 FBC-R Section R301.2.1 replaces IRC Section R301.2.1.
 - 3.2.9 FBC-R Section R606.2.8 replaces IRC Section R606.2.8.
 - 3.2.10 FBC-R Section R703 replaces IRC Section R703.
 - 3.2.11 FBC-R Section R703.2 replaces IRC Section R703.2.
 - 3.2.12 FBC-R Section R703.7.2.1 replaces IRC Section R703.7.2.1.



4 Conditions of Use

- 4.1 Westlake Royal Stone Adhered Masonry Veneer, described in Report Number 1312-01, must comply with all of the following conditions:
 - 4.1.1 All applicable sections in Report Number 1312-01.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.



- For more information, visit [drjcertification.org](#) or call us at 608-310-6748.
- ii <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702>
- iii Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review <https://www.justice.gov/atr/mission> and <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>
- iv <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.1~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as>
- v The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.1~:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice>
- vi <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies>
- vii <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>
- viii https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency
- ix https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source
- x <https://www.law.cornell.edu/uscode/text/18/1832> (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a [public records act](#). To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or [approved sources](#). For more information, please review this website: [Intellectual Property and Trade Secrets](#).
- xi <https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>
- xii <https://www.cbitec.com/accreditation/>
- xiii <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11~:text=to%20enforce%20the%20provisions%20of%20this%20code>
- xiv <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11~:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved> AND <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1~:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore>
- xv <https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%201014.11>
- xvi <https://iaf.nu/en/about-iaf-mia/#~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope>
- xvii True for all ANAB accredited product evaluation agencies and all International Trade Agreements.
- xviii <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>
- xix Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.
- xx All references to the FBC-B and FBC-R are the same as the 2021 IBC and 2021 IRC unless otherwise noted in the Florida Supplement at the end of this report.
- xxi [https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2\(Listed%20or%20certified\)](https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified)); <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed> AND <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled>
- xxii <https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4>
- xxiii <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades>
- xxiv <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur>
- xxv Qualification is performed by a legislatively defined Accred



xxx [2018 IFC Section 104.9](#)

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

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

xxxi Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

xxxi <http://www.drjengineering.org/AppendixC> AND <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>

xxxi <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>

xxxi <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>

xxxi <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>

xxxi IBC 2021, [Section 1706.1 Conformance to Standards](#)

xxxi IBC 2021, [Section 1707 Alternative Test Procedure, 1707.1 General](#)

xi See [Section 11](#) for the distilled building code definition of **Approved**

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

xiii <https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>

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

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

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

xvi <https://www.nj.gov/dca/divisions/codes/codreg/ucc.html>

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

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

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

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

ii <https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>

iii IBC 2021, [Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards](#) Adopted law pursuant to IBC model code language 1706.1.

iii <https://iaf.nu/en/about-iaf-mla/#:~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope>

liv True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

lv <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>