

ICC-ES Evaluation Report

ESR-2119

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This report also contains:

- CBC Supplement

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<p>DIVISION: 07 00 00— THERMAL AND MOISTURE PROTECTION</p> <p>Section: 07 32 26— Plastic Roof Tiles</p>	<p>REPORT HOLDER:</p> <p>WESTLAKE DaVINCI ROOFSCAPES, LLC</p>	<p>EVALUATION SUBJECT:</p> <p>DaVINCI SLATE, DaVINCI SHAKE, DaVINCI SELECT SHAKE, BELLAFORTÉ SHAKE, BELLAFORTÉ SLATE AND PROVINCE SLATE ROOF SHINGLES</p>	
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1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2021, 2018 and 2015 [International Building Code® \(IBC\)](#)
- 2021, 2018 and 2015 [International Residential Code® \(IRC\)](#)
- 2013 *Abu Dhabi International Building Code (ADIBC)*[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Weather resistance
- Fire classification
- Wind resistance

1.2 Evaluation to the following green code:

- 2022 [California Green Building Standards Code \(CALGreen\)](#), Title 24, Part 11

Attributes verified:

- See Section 3.1

2.0 USES

The DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate roof shingles are used as roof covering materials and are classified as a Class A or B roof covering when installed in accordance with [Table 1](#) of this report.

3.0 DESCRIPTION

3.1 General:

The DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate roof shingles are engineered polymeric-based roof shingles designed to provide the look of natural slate or shake, respectively. The shingles are manufactured with a proprietary formulation using both high-density and low-density polyethylene polymers and other additives.

The attributes of the roof tiles have been verified as conforming to the provisions of CALGreen Section A5.406.1.2 for reduced maintenance. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.2 DaVinci Slate Roof Shingle:

The DaVinci Slate roof shingle is available in various colors and in widths of 6, 7, 9, 10 and 12 inches (152, 178, 229, 254 and 305 mm) with a length of 18 inches (457 mm). Exposure is 6 to 8 inches (152 to 203 mm), resulting in an installed weight of 351 to 264 pounds, respectively, per 100 square feet (17.1 to 12.9 kg/m²). See [Figure 1](#).

3.3 DaVinci Shake and DaVinci Select Shake Roof Shingle:

The DaVinci Shake roof shingle is available in various colors and in widths of 4, 6, 7, 8, 9 and 10 inches (102, 152, 178, 203, 229 and 254 mm) with a length of 22 inches (559 mm). Exposure is 9 to 10 inches (229 to 254 mm), resulting in an installed weight of 377 to 300 pounds, respectively, per 100 square feet (18.4 to 14.6 kg/m²). See [Figure 1](#).

3.4 Bellaforté Shake:

The Bellaforté Shake roof shingle is available in various colors and in a width of 12³/₄ inches (324 mm) and a length of 16¹/₄ inches (413 mm). Exposure is 12 inches (305 mm), resulting in an installed weight of 194 pounds per 100 square feet (9.5 kg/m²). See [Figure 2](#).

3.5 Bellaforté Slate:

The Bellaforté Slate roof shingle is available in various colors and in a width of 12³/₄ inches (324mm) and a length of 15¹/₂ inches (394 mm). Exposure is 12 inches (305 mm), resulting in an installed weight of 162 pounds per 100 square feet (8.0 kg/m²). See [Figure 3](#).

3.6 Province Slate:

The Province Slate roof shingle is available in various colors and in a width of 12¹/₂ inches (318 mm) and a length of 11¹/₂ inches (292 mm). Exposure is 8 inches (203 mm), resulting in an installed weight of 194 pounds per 100 square feet (9.5 kg/m²). See [Figure 4](#).

3.7 Underlayment:

Underlayment must be a minimum of two layers of ASTM D226 Type I (No. 15) asphalt-saturated organic felt, one layer of ASTM D226 Type II (No. 30) asphalt-saturated organic felt or one layer of ASTM D1970 self-adhered roof underlayment, unless otherwise noted in [Table 1](#) of this report. Where an ice barrier is required, the membrane must be as noted in the second paragraph of Section 4.2 of this report.

3.8 Flashing:

Flashing must be minimum 16-oz/ft² (No. 23 gage) copper or other corrosion-resistant metal with a thickness of not less than 0.019 inch (0.483 mm). See Section 4.5 for valley flashing.

3.9 Fasteners:

Fasteners used to secure DaVinci roof shingles to the sheathing must be 1/8-inch-diameter-shank (3.18 mm) hot-dipped galvanized roofing nails complying with ASTM F1667, with 3/8-inch-diameter (9.5 mm) heads, unless otherwise noted in [Table 2](#). Fasteners must be of sufficient length to penetrate through the sheathing a minimum of 3/16 inch (12.7 mm).

4.0 DESIGN AND INSTALLATION

4.1 General:

The roof shingles must be installed in accordance with this report, the applicable code and the manufacturer's published installation instructions. The manufacturer's installation instructions must be available at the jobsite at all times during installation.

The shingles must be installed on roofs with solid sheathing and a minimum slope of 3:12 (25 percent slope). Solid sheathing must be minimum 15/32-inch-thick (11.9 mm) exterior-grade plywood, 7/16-inch-thick (11.1 mm) oriented strand board (OSB), or nominally 1-inch-thick (25.4 mm) lumber. The sheathing must be structurally adequate and fastened to resist the wind loads as specified by IBC Section 1609, or IRC Section R301.2, for components and cladding.

4.2 Underlayment:

Underlayment as described in Section 3.6 and [Table 1](#), must be installed in accordance with IBC Section 1507.7.3 or IRC Section R905.6.3, as applicable. The underlayment must be installed parallel to the roof eave with a 6-inch (152 mm) lap on the ends, a 6-inch (152.4 mm) side lap and a minimum 6-inch (152 mm) lap over eaves. The underlayment is fastened, only as necessary to hold in place.

In areas where the average daily temperature in January is 25°F (-4°C) or less, or where there is a possibility of ice forming along the eaves and causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together, or a self-adhering underlayment complying with ASTM D1970 or currently recognized in an ICC-ES evaluation report as complying with the ICC-ES Acceptance Criteria for Self-adhered Underlayments for Use as Ice Barriers (AC48), must extend from the eave's edge to a point 24 inches (610 mm) inside the exterior wall line of the building.

4.3 Roof Shingles:

4.3.1 DaVinci Slate, DaVinci Shake and DaVinci Select Shake Roof Shingles: Starting with a row of 12-inch-wide (305 mm) DaVinci Starter Slates or Shakes, the shingles must extend approximately 1 inch (25.4 mm) over the eaves and $\frac{3}{4}$ inch (19 mm) over the rakes. The shingles are secured to the sheathing using two or four fasteners, driven through the premolded nail markers. Fasteners are as described in Section 3.8. See [Table 2](#) for additional fastening details.

The field shingles must be installed flush with the starter slate or shake shingles on the outer and lower edges. A maximum gap of $\frac{3}{8}$ inch (9.5 mm) is recommended between shingles, with a minimum $\frac{1}{4}$ -inch (6.4 mm) gap required. The gaps between shakes at adjacent courses must be offset a minimum of $1\frac{1}{2}$ inches (38 mm). The maximum allowable exposure is 8 inches (203 mm) for DaVinci Slate roof shingles, and 10 inches (254 mm) for DaVinci Shake and DaVinci Select Shake roof shingles.

4.3.2 Bellaforté Shake and Bellaforté Slate Roof Shingles: Bellaforté Shake or Bellaforté Slate ($12\frac{3}{4}$ inches wide [324 mm]) must be installed on top of starter tiles and must extend approximately 1 inch (25.4 mm) over the eaves. The shingles are secured to the sheathing using three fasteners, two through the premolded nail markers and one through the tab; or five fasteners, four through the premolded nail markers and one through the tab. Fasteners are as described in Section 3.8. See [Table 2](#) for additional fastening details.

The field shingles must be installed flush with the starter slate or shake shingles on the lower edges.

4.3.3 Province Slate Roof Shingles: Province Slate ($12\frac{1}{2}$ inches wide [318 mm]) must be installed on top of starter tiles and must extend approximately 1 inch (25.4 mm) over the eaves. The shingles are secured to the sheathing using two or four fasteners driven through the premolded nail makers. Fasteners are as described in Section 3.9. See [Table 2](#) for additional fastening details.

The field shingles must be installed flush with the starter slate or shake shingles on the lower edges.

4.4 Hips and Ridges:

4.4.1 General: The top of hips and ridges must be covered with a minimum 6-inch-wide (152 mm) flashing as noted in Section 3.7. Flashing must be attached to the sheathing using No. 12 gage, ring-shank, corrosion-resistant nails. Nails must be compatible with the flashing material, and have sufficient length to penetrate the sheathing $\frac{3}{4}$ inch (19 mm) or through the sheathing, whichever is less.

4.4.2 DaVinci Slate Roof Shingles: On top of the flashing, 6-inch-wide (152 mm) or 7-inch-wide (178 mm) DaVinci Slate roof shingles are installed on each side of hips and ridges, with the shingles butting at the top. Both hip and ridge shingles must be installed with a 6-inch (152 mm) exposure. Shingles must be secured with the fasteners described in Section 3.8.

4.4.3 DaVinci Shake and DaVinci Select Shake Roof Shingles: On top of the flashing, 6-inch-wide (152 mm) DaVinci Shake and DaVinci Select Shake roof shingles are installed on each side of hips and ridges, with the shingles butting at the top. Both hip and ridge shingles must be installed with a 10-inch (254 mm) exposure. Shingles must be secured with the fasteners described in Section 3.8.

4.4.4 Bellaforté Shake, Bellaforté Slate and Province Slate: Bellaforté Shake, Bellaforté Slate or Province Slate one-piece hip and ridge tiles are installed at a 12-inch (305 mm) exposure. The tiles are nailed once on each side approximately $\frac{3}{4}$ inch (19 mm) from the outside edge and $12\frac{1}{2}$ inches (305 mm) from the butt of the tile. Shingles must be secured with the fasteners described in Section 3.8.

4.5 Valleys:

Valleys must be flashed in accordance with 2015 IBC Section 1507.7.7 or IRC Section R905.6.6, as applicable, and the manufacturer's published installation instructions, using the flashing described in Section 3.7.

4.6 Fire Classification:

The DaVinci roof shingles, when installed as a system described in [Table 1](#), comply with IBC Section 1505.2 and IRC Section R902.1 as a classified Class A or B roof covering.

4.7 Wind Resistance:

The allowable wind uplift pressures for the DaVinci roof shingles described in this report are as noted in [Table 2](#). The allowable design wind uplift pressures must be determined in accordance with the requirements of Chapter 16 of the IBC or Section R301.2.1, as applicable, by a registered design professional and must not exceed the allowable wind uplift pressures in [Table 2](#).

[Tables 3](#) and [4](#) provide maximum design wind speeds on low-rise buildings with a mean roof height of 60 feet or less based on ASCE 7. If the building does not meet the criteria in [Tables 3](#) and [4](#), or is constructed on an isolated hill, ridge, or escarpment constituting an abrupt change in the general topography ($K_{zt} > 1.0$), the maximum design wind speeds and mean roof height must be determined in accordance with the Chapter 16 of the IBC or Section R301.2.1, as applicable.

4.8 Reroofing:

Prior to application of the shingles, the existing roof covering and underlayment must be completely removed. Any damaged sheathing must be replaced. The installation of the shingles must then proceed as described in Sections 4.1 through 4.5. An existing self-adhered ice barrier membrane may remain in place if covered with a new ice barrier membrane in accordance with the applicable code. The roof classification is as noted in Section 4.6 and [Table 1](#).

5.0 CONDITIONS OF USE:

The DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate roof shingles described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with the applicable code, the manufacturer's published installation instructions and this report. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.
- 5.2 The roof shingles are manufactured in Lenexa, Kansas, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Special Roofing Systems \(AC07\)](#), dated February 2014 (editorially revised January 2021).

7.0 IDENTIFICATION

- 7.1 Each roof shingle is labeled with the report holder's name (Westlake DaVinci Roofscapes, LLC) and address, the product name, the shingle width, a production date code, and the ICC-ES evaluation report number (ESR-2119).
- 7.2 The report holder's contact information is the following:

WESTLAKE DaVINCI ROOFSCAPES, LLC
13890 WEST 101ST STREET
LENEXA, KANSAS 66215
(800) 328-4264
www.davinciroofscapes.com

TABLE 1—FIRE CLASSIFICATIONS

SYSTEM NO.	ROOF CLASS	ROOF DECK	MIN. SLOPE	UNDERLAYMENT ¹	DaVINCI ROOF SHINGLE	
					Roof Shingle	Exposure (in.)
1	A	Min. ¹⁵ / ₃₂ -inch plywood	3:12	One layer ASTM D226 Type II (No. 30) or two layers of ASTM D226 Type I (No. 15) asphalt-saturated organic felt ²	DaVinci Slate	6
2	A	Min. ¹⁵ / ₃₂ -inch plywood	3:12	One layer GAF VersaShield [®] Fire-Resistant Roof Deck Protection (ESR-2053) ²	DaVinci Slate DaVinci Shake DaVinci Select Shake	6 to 7 1/2 9 to 10 9 to 10
3	A	Min. ¹⁵ / ₃₂ -inch plywood	3:12	One layer ASTM D226 Type II (No. 30) asphalt-saturated organic felt plus one layer of ASTM D3909 mineral-surfaced cap sheet ²	DaVinci Slate DaVinci Shake DaVinci Select Shake Bellaforté Shake Province Slate	6 to 8 9 to 10 9 to 10 12 8
4	B	Min. ¹⁵ / ₃₂ -inch plywood	3:12	Two layers ASTM D226 Type II (No. 30) asphalt-coated glass-fiber-mat ²	DaVinci Slate DaVinci Shake DaVinci Select Shake Bellaforté Shake Bellaforté Slate Province Slate	6 to 8 9 to 10 9 to 10 12 12 8
5	A	Min. ¹⁵ / ₃₂ -inch plywood	3:12	One layer Eco Chief Products SolarHide™-SRW (ESR-4035)	DaVinci Slate DaVinci Shake DaVinci Select Shake Bellaforté Shake Bellaforté Slate Province Slate	6 to 8 9 to 10 9 to 10 12 12 8
6	A	Min. ⁷ / ₁₆ -inch OSB	3:12	One layer Eco Chief Products SolarHide™-SRW (ESR-4035)	DaVinci Slate	6 to 8
7	B	Min. ⁷ / ₁₆ -inch OSB	3:12	One layer Eco Chief Products SolarHide™-SRW (ESR-4035)	DaVinci Slate DaVinci Shake DaVinci Select Shake Bellaforté Shake Bellaforté Slate Province Slate	6 to 8 9 to 10 9 to 10 12 12 8
8	A	Min. ¹⁵ / ₃₂ -inch plywood	3:12	Two layers of MB Technology Layfast TU35 (ESR-2799)	DaVinci Slate DaVinci Shake DaVinci Select Shake	6 to 7 9 to 10 9 to 10
9	A	Min. ⁷ / ₁₆ -inch OSB	3:12	Two layers of Polyglass XFR (ESR-1697)	DaVinci Slate DaVinci Shake DaVinci Select Shake	6 to 8 9 to 10 9 to 10

For SI: 1-inch = 25.4 mm; 1ft = 0.305m

¹ASTM D226 Type I (No. 15), ASTM D226 Type II (No. 30) underlayment and ASTM D3909 cap sheet must be installed in accordance with the applicable building code. GAF VersaShield[®] Fire-Resistant Roof Deck Protection underlayment must be installed in accordance with [ESR-2053](#). Eco Chief Products SolarHide™-SRW underlayment must be installed in accordance with [ESR-4035](#). Layfast TU35 must be installed in accordance with [ESR-2799](#). Polystick XFR must be installed in accordance with [ESR-1697](#).

²One layer of self-adhered roofing underlayment, specified in an ICC-ES evaluation report as complying with AC48 and AC188, may be installed directly over the plywood and beneath the ASTM D226 complying underlayment in System Nos. 1, 3 and 4 or over the plywood and beneath the GAF VersaShield[®] Fire-Resistance Roof Deck Protection ([ESR-2053](#)) in System No. 2.

TABLE 2—ALLOWABLE WIND UPLIFT PRESSURE VALUES

SYSTEM NO.	ROOF DECK ³	DaVINICI ROOF SHINGLE			ALLOWABLE UPLIFT PRESSURE (ASD) ^{1,2} (psf)
		Roofing Shingle	Exposure (inches)	Shingle Fastening ⁴	
1	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Shake	10	Four per shingle, Fastener Type 1, into premolded nail markers	169
2	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Shake	9	Two per shingle, Fastener Type 1, into premolded nail markers	93.5
3	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Shake	10	Two per shingle, Fastener Type 1, into premolded nail markers	86
4	Min. ⁷ / ₁₆ -inch OSB	DaVinci Shake	9	Two per shingle, Fastener Type 1, into premolded nail markers	70
5	Min. ⁷ / ₁₆ -inch OSB	DaVinci Shake	10	Two per shingle, Fastener Type 1, into premolded nail markers	64.5
6	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Select Shake	10	Four per shingle, Fastener Type 1, into premolded nail markers	150
7	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Select Shake	10	Two per shingle, Fastener Type 1, into premolded nail markers	80
8	Min. ⁷ / ₁₆ -inch OSB	DaVinci Select Shake	10	Two per shingle, Fastener Type 1, premolded nail markers	60
9	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Slate	8	Four per shingle, Fastener Type 1, into premolded nail markers	146
10	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Slate	6	Two per shingle, Fastener Type 1, into premolded nail markers	118.5
11	Min. ¹⁵ / ₃₂ -inch plywood	DaVinci Slate	8	Two per shingle, Fastener Type 1, into premolded nail markers	71
12	Min. ⁷ / ₁₆ -inch OSB	DaVinci Slate	8	Two per shingle, Fastener Type 1, into premolded nail markers	53
13	Min. ¹⁵ / ₃₂ -inch plywood	Bellaforte Slate Bellaforte Shake	12	Three per shingle, Fastener Type 3 two through premolded nail markers and one through the tab	121
14	Min. ¹⁵ / ₃₂ -inch plywood	Bellaforte Slate Bellaforte Shake	12	Three per shingle, Fastener Type 2, two through premolded nail markers and one through the tab	73
15	Min. ⁷ / ₁₆ -inch OSB	Bellaforte Slate Bellaforte Shake	12	Three per shingle, Fastener Type 2, two through premolded nail markers and one through the tab	55
16	Min. ¹⁵ / ₃₂ -inch plywood	Province Slate	8	Four per shingle, Fastener Type 2, into premolded nail markers	155
17	Min. ¹⁵ / ₃₂ -inch plywood	Province Slate	8	Two per shingle, Fastener Type 3, into premolded nail markers	126
18	Min. ⁷ / ₁₆ -inch OSB	Province Slate	8	Four per shingle, Fastener Type 2, into premolded nail markers	116
19	Min. ⁷ / ₁₆ -inch OSB	Province Slate	8	Two per shingle, Fastener Type 3, into premolded nail markers	94.5
20	Min. ¹⁵ / ₃₂ -inch plywood	Province Slate	8	Two per shingle, Fastener Type 2, into premolded nail markers	83
21	Min. ⁷ / ₁₆ -inch OSB	Province Slate	8	Two per shingle, Fastener Type 2, into premolded nail markers	62

For SI: 1-inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa

¹To convert to Factored Design Resistance Pressure (psf) (LRFD), multiply Allowable Pressure (psf) (ASD) by 1.67.

²Allowable pressure (psf) (ASD) represents tested assembly ultimate pressure divided by safety factor of 2.

³Solid plywood structural sheathing complying with DOC PS-1 or Exposure 1 oriented strand board (OSB) sheathing complying with DOC PS-2 having a minimum specific gravity of 0.42. In lieu of wood sheathing, may be substituted with thicker profile of up to the roof deck may be nominal 1-inch-thick lumber.

⁴**Fastener Type 1:** 1³/₄-inch-long by 1/₈-inch diameter ring-shank hot-dipped galvanized roofing nails with 3/₈-inch nominal diameter heads.

Fastener Type 2: 1¹/₂-inch long by 1/₈-inch diameter ring-shank hot-dipped galvanized roofing nails with 3/₈-inch nominal diameter heads.

Fastener Type 3: No. 10 by 2-inch-long wafer-head galvanized screws.

TABLE 3—2021 and 2018 IBC and IRC WIND SPEED & MAXIMUM MEAN ROOF HEIGHT¹

Gable Roofs (Slope 3:12 – 4.4:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	203	195	189	183	176	170	166
	C	166	162	158	155	150	147	145
	D	151	148	145	142	139	136	134
2 & 19	B	182	175	169	165	158	153	149
	C	149	145	142	139	135	132	130
	D	136	132	130	128	125	122	120
3, 7 & 20	B	169	162	157	152	146	141	138
	C	138	134	131	129	125	122	120
	D	125	123	120	118	115	113	111
4, 11 & 14	B	158	151	147	142	137	132	129
	C	129	126	123	120	117	114	113
	D	117	115	113	111	108	106	104
5	B	151	145	141	137	131	127	124
	C	124	121	118	115	112	110	108
	D	113	110	108	106	NA	NA	NA
8 & 21	B	146	140	136	132	126	123	120
	C	120	116	114	111	108	106	104
	D	109	106	104	NA	NA	NA	NA
12 & 15	B	137	132	128	124	119	115	112
	C	112	109	107	105	NA	NA	NA
	D	NA	NA	NA	NA	NA	NA	NA

Hip Roofs (Slope 3:12 – 4.5:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	205	199	194
	C	194	188	184	181	175	171	169
	D	176	172	169	166	162	159	156
2 & 19	B	210	204	198	192	184	178	174
	C	174	169	166	162	157	154	152
	D	158	154	152	149	145	142	140
3, 7 & 20	B	197	189	183	177	170	165	161
	C	161	156	153	150	146	142	140
	D	146	143	140	138	134	132	130
4, 11 & 14	B	184	176	171	166	159	154	151
	C	151	146	143	140	136	133	131
	D	137	134	131	129	126	123	121
5	B	177	169	164	159	153	148	145
	C	145	141	137	135	131	128	126
	D	131	128	126	124	121	118	116
8 & 21	B	170	163	158	154	147	143	139
	C	139	136	133	130	126	123	121
	D	127	124	121	119	116	114	112
12 & 15	B	160	153	149	144	139	134	131
	C	131	127	125	122	118	116	114
	D	119	116	114	112	109	107	106

Gable Roofs (Slope 4.5:12 – 6.1:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	209	201	194	190
	C	190	184	180	177	171	168	165
	D	172	168	165	162	158	155	153
2 & 19	B	208	199	193	188	180	174	170
	C	170	166	162	159	154	150	148
	D	155	151	148	146	142	139	137
3, 7 & 20	B	192	184	179	174	167	161	158
	C	158	153	150	147	142	139	137
	D	143	140	137	135	131	129	127
4, 11 & 14	B	180	173	167	162	156	151	147
	C	147	143	140	137	133	130	128
	D	134	131	128	126	123	121	119
5	B	173	166	161	156	150	145	141
	C	141	137	135	132	128	125	123
	D	128	125	123	121	118	116	114
8 & 21	B	167	160	155	150	144	140	136
	C	136	133	130	127	123	120	119
	D	124	121	119	117	114	112	110
12 & 15	B	157	150	146	141	136	131	128
	C	128	125	122	119	116	113	112
	D	116	114	112	110	107	105	NA

Hip Roofs (Slope 4.5:12 – 6.1:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	210	210	210
	C	210	210	208	204	198	193	191
	D	199	194	191	187	183	179	176
2 & 19	B	210	210	210	210	208	201	197
	C	197	191	187	183	178	174	171
	D	179	174	171	168	164	161	158
3, 7 & 20	B	210	210	206	200	192	186	182
	C	182	177	173	169	164	161	158
	D	165	161	158	156	152	149	146
4, 11 & 14	B	208	199	193	187	180	174	170
	C	170	165	162	158	154	150	148
	D	155	151	148	146	142	139	137
5	B	199	191	185	180	173	167	163
	C	163	159	155	152	148	144	142
	D	148	145	142	140	136	134	132
8 & 21	B	192	184	179	174	167	161	157
	C	157	153	150	147	142	139	137
	D	143	140	137	135	131	129	127
12 & 15	B	181	173	168	163	157	152	148
	C	148	144	141	138	134	131	129
	D	134	131	129	127	124	121	119

For SI: 1ft = 25.4 m, 1mph = 0.44m/s NA – Not Applicable

¹Table limiting heights and wind velocity values are for low-rise buildings of maximum 60 ft height, developed in accordance with ASCE 7-16, Table 30.3-1.Design input values: GC_p = ASCE7-16 Figs 30.3-2A-I, GC_{pi} = 0.18, K_{zt} = 1, K_d = 0.85, K_e = 1, I_w = 1.0.²System numbers as specified in Table 2. See Table 2 for Davinci product, installation parameters and assembly component details.³Wind speed conversion corresponds to the maximum Zone 2/3 pressure with effective area of 10 ft². Table 3 wind speeds are only valid under the design conditions stated. For other site conditions and/or building dimensions, designers can use the published Allowable Uplift Pressure (psf) (ASD) in Table 2 to determine allowable wind speeds with IRC Table R301.2(2) or calculations in accordance with IBC Chapter 16.⁴Wind exposure categories as defined in ASCE 7-16, Section 26.7.⁵Interpolation not permitted. For heights in between those specified, use next highest height column.⁶NA indicates that the installation condition is not acceptable within the design limits of the table.

TABLE 3—2021 and 2018 IBC and IRC WIND SPEED & MAXIMUM MEAN ROOF HEIGHT¹ (Continued)

Gable Roofs (Slope 6.2:12 – 12:12)									Hip Roofs (Slope 6.2:12 – 12:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}							System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵									Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60			15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	209	202	197	1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	210	204	199
	C	197	192	188	184	179	174	172		C	199	194	190	186	180	176	174
	D	179	175	172	169	165	162	159		D	181	177	174	171	166	163	161
2 & 19	B	210	208	201	195	188	182	177	2 & 19	B	210	210	203	197	189	183	179
	C	177	172	169	165	160	157	154		C	179	174	170	167	162	158	156
	D	161	157	154	152	148	145	143		D	163	159	156	153	149	146	144
3, 7 & 20	B	200	192	186	181	173	168	164	3, 7 & 20	B	202	194	188	182	175	170	166
	C	164	159	156	153	148	145	143		C	166	161	157	154	150	146	144
	D	149	145	143	140	137	134	132		D	150	147	144	142	138	135	133
4, 11 & 14	B	187	180	174	169	162	157	153	4, 11 & 14	B	189	181	176	171	164	159	155
	C	153	149	146	143	139	135	134		C	155	151	147	144	140	137	135
	D	139	136	134	131	128	126	124		D	141	137	135	133	129	127	125
5	B	180	172	167	162	156	151	147	5	B	182	174	169	164	157	152	149
	C	147	143	140	137	133	130	128		C	149	144	141	138	134	131	130
	D	134	131	128	126	123	120	119		D	135	132	130	127	124	122	120
8 & 21	B	173	166	161	157	150	145	142	8 & 21	B	175	168	163	158	152	147	143
	C	142	138	135	132	128	125	124		C	143	139	136	134	130	127	125
	D	129	126	124	122	119	116	114		D	130	127	125	123	120	117	115
12 & 15	B	163	156	151	147	141	137	133	12 & 15	B	165	158	153	148	143	138	135
	C	133	130	127	124	121	118	116		C	135	131	128	125	122	119	117
	D	121	118	116	114	111	109	108		D	122	120	117	115	112	110	109

For SI: 1ft = 25.4 m, 1mph = 0.44m/s NA – Not Applicable

¹Table limiting heights and wind velocity values are for low-rise buildings of maximum 60 ft height, developed in accordance with ASCE 7-16,Table 30.3-1. Design input values: GC_p = ASCE 7-16 Figures 30.3-2A-I, GC_{pi} = 0.18, K_{zt} = 1, K_d = 0.85, K_e = 1, I_w = 1.0.²System numbers as specified in Table 2. See Table 2 for Davinci product, installation parameters and assembly component details.³Wind speed conversion corresponds to the maximum Zone 2/3 pressure with effective area of 10 ft². Table 3 wind speeds are only valid under the design conditions stated. For other site conditions and/or building dimensions, designers can use the published Allowable Uplift Pressure (psf) (ASD) in Table 2 to determine allowable wind speeds with IRC Table R301.2(2) or calculations in accordance with IBC Chapter 16.⁴Wind exposure categories as defined in ASCE 7-16, Section 26.7.⁵Interpolation not permitted. For heights in between those specified, use next highest height column.⁶NA indicates that the installation condition is not acceptable within the design limits of the table.

TABLE 4—2015 IBC and IRC WIND SPEED & MAXIMUM MEAN ROOF HEIGHT¹

Gable Roofs (Slope 3:12 – 6.1:12)									Hip Roofs (Slope 3:12 – 5.5:5:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}							System No. ²	Exposure Category	Maximum Basic Wind Speed, V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵									Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60			15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	205	199	194	1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	210	210	210
	C	194	188	184	181	175	171	168		C	210	210	210	210	210	208	205
	D	176	172	169	166	162	159	156		D	210	209	205	202	197	193	190
2 & 19	B	192	192	192	192	184	178	174	2 & 19	B	210	210	210	210	210	210	210
	C	174	169	166	162	157	154	151		C	210	206	201	197	191	187	184
	D	158	154	152	149	145	142	140		D	192	188	184	181	177	173	171
3, 7 & 20	B	177	177	177	177	170	165	161	3, 7 & 20	B	210	210	210	210	207	201	196
	C	161	156	153	150	146	142	140		C	196	190	186	182	177	173	170
	D	146	143	140	138	134	132	130		D	178	174	171	168	163	160	158
4, 11 & 14	B	166	166	166	166	159	154	151	4, 11 & 14	B	202	202	202	202	194	188	183
	C	151	146	143	140	136	133	131		C	183	178	174	171	166	162	159
	D	137	134	131	129	126	123	121		D	166	162	160	157	153	150	148
5	B	159	159	159	159	153	148	145	5	B	194	194	194	194	186	180	176
	C	145	141	137	135	131	128	125		C	176	171	167	164	159	155	152
	D	131	128	126	124	121	118	116		D	160	156	153	151	147	144	142
8 & 21	B	154	154	154	154	147	143	139	8 & 21	B	187	187	187	187	179	174	170
	C	139	136	133	130	126	123	121		C	170	165	161	158	153	150	147
	D	127	124	121	119	116	114	112		D	154	150	148	145	142	139	137
12 & 15	B	144	144	144	144	139	134	131	12 & 15	B	176	176	176	176	169	163	159
	C	131	127	125	122	118	116	114		C	159	155	152	148	144	141	138
	D	119	116	114	112	109	107	106		D	145	141	139	136	133	130	128

Gable Roofs (Slope 6.2:12 - 12:12)									Hip Roofs (Slope 5.6:12 – 6.1:12)								
System No. ²	Exposure Category	Maximum Basic Wind Speed V _{ult} (mph) ^{3,6}							System No. ²	Exposure Category	Maximum Basic Wind Speed V _{ult} (mph) ^{3,6}						
		Mean Roof Height (ft) ⁵									Mean Roof Height (ft) ⁵						
		15	20	25	30	40	50	60			15	20	25	30	40	50	60
1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	210	210	210	1, 6, 9, 10, 13, 16, 17 & 18	B	210	210	210	210	205	199	194
	C	210	210	210	210	210	210	210		C	194	188	184	181	175	171	168
	D	210	210	210	210	210	210	210		D	176	172	169	166	162	159	156
2 & 19	B	210	210	210	210	210	210	210	2 & 19	B	192	192	192	192	184	178	174
	C	210	210	210	210	210	210	210		C	174	169	166	162	157	154	151
	D	210	210	210	210	206	202	199		D	158	154	152	149	145	142	140
3, 7 & 20	B	210	210	210	210	210	210	210	3, 7 & 20	B	177	177	177	177	170	165	161
	C	210	210	210	210	207	202	198		C	161	156	153	150	146	142	140
	D	208	203	199	196	191	187	184		D	146	143	140	138	134	132	130
4, 11 & 14	B	210	210	210	210	210	210	210	4, 11 & 14	B	166	166	166	166	159	154	151
	C	210	208	203	199	193	189	185		C	151	146	143	140	136	133	131
	D	194	190	186	183	178	175	172		D	137	134	131	129	126	123	121
5	B	210	210	210	210	210	210	205	5	B	159	159	159	159	153	148	145
	C	205	199	195	191	186	181	178		C	145	141	137	135	131	128	125
	D	186	182	179	176	171	168	165		D	131	128	126	124	121	118	116
8 & 21	B	210	210	210	210	209	203	198	8 & 21	B	154	154	154	154	147	143	139
	C	198	192	188	184	179	175	172		C	139	136	133	130	126	123	121
	D	180	176	172	169	165	162	159		D	127	124	121	119	116	114	112
12 & 15	B	205	205	205	205	197	191	186	12 & 15	B	144	144	144	144	139	134	131
	C	186	181	177	173	168	164	161		C	131	127	125	122	118	116	114
	D	169	165	162	159	155	152	150		D	119	116	114	112	109	107	106

For SI: 1ft = 25.4 m, 1mph = 0.44m/s NA – Not Applicable

¹Table limiting heights and wind velocity values are for low-rise buildings of maximum 60 ft height, developed in accordance with ASCE 7-10, Table 30.4-1. Design input values: GC_p = ASCE 7-10 Figures 30.4-2B-2C, GC_{pi} = 0.18, K_{zt} = 1.0, K_d = 0.85, K_e = 1, I_w = 1.0.²System numbers as specified in Table 2. See Table 2 for Davinci product, installation parameters and assembly component details.³Wind speed conversion corresponds to the maximum Zone 2/3 pressure with effective area of 10 ft². Table 4 wind speeds are only valid under the design conditions stated. For other site conditions and/or building dimensions, designers can use the published Allowable Uplift Pressure (psf) (ASD) in

Table 2 to determine allowable wind speeds with IRC Table R301.2(2) or calculations in accordance with IBC Chapter 16.

⁴Wind exposure categories as defined in ASCE 7-10, Section 26.7.⁵Interpolation not permitted. For heights in between those specified, use next highest height column.⁶NA indicates that the installation condition is not acceptable within the design limits of the table.

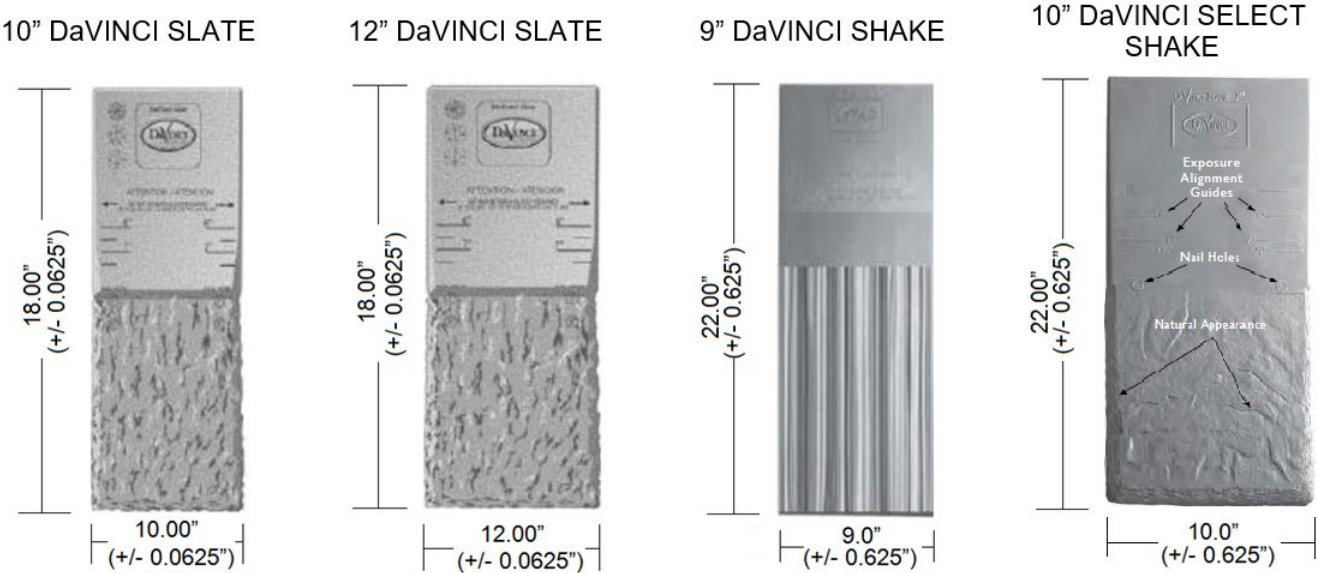


FIGURE 1—DaVINCI SLATE, DaVINCI SHAKE AND DaVINCI SELECT SHAKE SHAKE ROOF SHINGLES

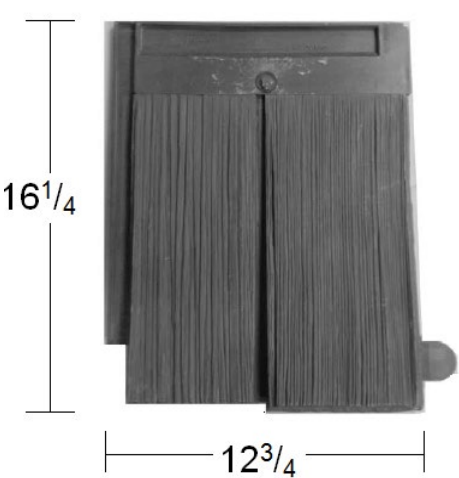


FIGURE 2—BELLAFORTÉ SHAKE



FIGURE 3—BELLAFORTÉ SLATE

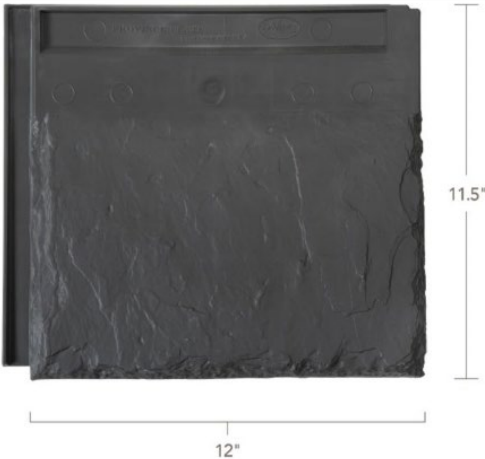


FIGURE 4 – PROVINCE SLATE

ICC-ES Evaluation Report

ESR-2119 CBC and CRC Supplement

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 32 26—Plastic Roof Tiles

REPORT HOLDER:

DaVINCI ROOFSCAPES, LLC

EVALUATION SUBJECT:

DaVINCI SLATE, DaVINCI SHAKE, DaVINCI SELECT SHAKE, BELLAFORTÉ SHAKE, BELLAFORTÉ SLATE AND PROVINCE SLATE ROOF SHINGLES

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate Roof Shingles, described in ICC-ES evaluation report ESR-2119, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate Roof Shingles, described in Sections 2.0 through 7.0 of the evaluation report ESR-2119, comply with CBC Chapter 15, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation and the additional requirements of CBC Section 1505.1.1 for a Class A roof covering, Section 1505.1.2 for a Class B roof covering or Section 1505.1.3 for a Class C roof covering, as applicable.

The products have not been evaluated under Chapter 7A for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The DaVinci Slate, DaVinci Shake, DaVinci Select Shake, Bellaforté Shake, Bellaforté Slate and Province Slate Roof Shingles, described in Sections 2.0 through 7.0 of the evaluation report ESR-2119, complies with CRC Chapter 9, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Section R902.1.1 for a Class A roof covering, Section R902.1.2 for a Class B roof covering or Section R902.1.3 for a Class C roof covering and Section R905.10.

The products have not been evaluated under CRC Section R337 for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area.

This supplement expires concurrently with the evaluation report, reissued August 2024.