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ESR-2119

Reissued 08/2017
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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 31 33—COMPOSITE RUBBER SHAKES

REPORT HOLDER:

DAVINCI ROOFSCAPES, LLC

13890 WEST 101ST STREET
LENEXA, KANSAS 66215

EVALUATION SUBJECT:

DAVINCI SLATE, DAVINCI SHAKE, BELLAFORTÉ SHAKE AND BELLAFORTÉ SLATE ROOF SHINGLES

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 31 33—Composite Rubber Shakes

REPORT HOLDER:

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EVALUATION SUBJECT:

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

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2015, 2012, 2009 and 2006 *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:

- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11

Attributes verified:

- See Section 3.1

2.0 USES

The DaVinci Slate, DaVinci Shake, Bellaforté Shake, and Bellaforté Slate roof shingles are used as roof covering materials and are recognized as a Class A roof covering when installed in accordance with this report.

3.0 DESCRIPTION

3.1 General:

The DaVinci Slate, DaVinci Shake, Bellaforté Shake, and Bellaforté 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/m^2). See Figure 1 [10-inch- and 12-inch-wide (254 and 305 mm) shingles shown] for further details.

3.3 DaVinci Shake Roof Shingle:

The DaVinci Shake roof shingle is available in various colors and in widths of 4, 6, 7, 8 and 9 inches (102, 152, 178, 203 and 229 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/m^2). See Figure 1 [9-inch-wide (229 mm) shingle shown] for further details.

3.4 Bellaforté Shake:

The Bellaforté Shake roof shingle is available in various colors and in a width of $12^3/_4$ inches (324 mm) and a length of $16^1/_4$ inches (413 mm). Exposure is 12 inches (305 mm), resulting in an installed weight of 194 pounds per 100 square feet (9.5 kg/m^2). See Figure 2 for further details.

3.5 Bellaforté Slate:

The Bellaforté Slate roof shingle is available in various colors and in a width of $12^3/_4$ inches (324mm) and a length of $15^1/_2$ inches (394 mm). Exposure is 12 inches (305 mm), resulting in an installed weight of 162 pounds per 100 square feet (8.0 kg/m^2). See Figure 2 for further details.

3.6 Underlayment:

3.7 Underlayment must be a minimum of two layers of ASTM D226 Type I (No. 15) asphalt-saturated organic felt,

or one layer of Type II (No. 30) asphalt-saturated organic felt, complying with ASTM D226, unless otherwise noted in Table 1 of this report.

3.8 Flashing:

Flashing must be minimum 16-oz/ft^2 (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. The DaVinci Shake roofing may be secured with $^1/_8$-inch-diameter-shank (3.18 mm) stainless steel nails complying with ASTM F1667, with $^3/_8$-inch-diameter (9.5 mm heads). Fasteners must be of sufficient length to penetrate through the sheathing a minimum of $^1/_2$ inch (12.7 mm).

INSTALLATION

3.10 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.

3.11 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.

3.12 Roof Shingles:

3.12.1 DaVinci Slate and DaVinci 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 $^3/_4$ inch (19 mm) over the rakes. The shingles are secured to the sheathing using two fasteners, driven through the premolded nail markers. 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 outer and lower edges. A maximum gap of $^3/_8$ inch (9.5 mm) is recommended between shingles, with a minimum $^1/_4$-inch (6.4 mm) gap required. The gaps between shakes at adjacent courses must be offset a minimum of $1^1/_2$ 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 roof shingles.

3.12.2 Bellaforté Shake and Bellaforté Slate Roof Shingles: Bellaforté Shake or Bellaforté Slate ($12^3/_4$ 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 3.9. 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.

3.13 Hips and Ridges:

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 $^3/_4$ inch (19 mm) or through the sheathing, whichever is less.

3.13.1 DaVinci Slate Roof Shingles: On top of the flashing, 76-inch-wide (1930 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 3.9.

3.13.2 DaVinci Shake Roof Shingles: On top of the flashing, 6-inch-wide (152 mm) DaVinci 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 3.9.

3.13.3 Bellaforté Shake: Bellaforté Shake one-piece hip and ridge tiles are installed at a 12-inch (305 mm) exposure. The tiles are nailed once on each side approximately $^3/_4$ inch (19 mm) from the outside edge and $12^1/_2$ inches (305 mm) from the butt of the tile. Shingles must be secured with the fasteners described in Section 3.9.

3.13.4 Bellaforté Slate: Bellaforté 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 $^3/_4$ inches (19 mm) from the outside edge and $12^1/_2$ inches (318 mm) from the butt of the tile. Shingles must be secured with the fasteners described in Section 3.9.

3.14 Valleys:

Valleys must be flashed in accordance with 2015, 2012 and 2009 IBC Section 1507.7.7 [2006 IBC Section 1507.7.6] or IRC Section R905.6.6 , as applicable, and the manufacturer's published installation instructions, using the flashing described in Section 3.8.

3.15 Fire Classification:

The DaVinci roof shingles comply with IBC Section 1505.2 and IRC Section R902.1 as a Class A roof covering, when installed as described in Table 1.

3.16 Wind Resistance:

The allowable wind uplift pressures for the DaVinci roof shingles described in this report are as noted in Table 2. The roof shingles have maximum design wind speeds at corresponding maximum roof heights as shown in Tables 3 and 4.

3.17 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.

4.0 CONDITIONS OF USE

The DaVinci Slate, DaVinci Shake, Bellaforté Shake, and Bellaforté 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:

4.1 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.

4.2 The roof shingles are manufactured in Lenexa, Kansas, under a quality-control program with inspections by ICC-ES.

5.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Special Roofing Systems (AC07), dated February 2014 (editorially revised May 2016).

6.0 IDENTIFICATION

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

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 D Type I (No. 15) asphalt-saturated organic felt may be used; or One layer GAF Versashield® Fire-Resistant Roof Deck Protection (ESR-2053)	DaVinci Slate	6
2	A	Min. $^{15}/_{32}$-inch plywood	3:12	One layer GAF Versashield® Fire-Resistant Roof Deck Protection (ESR-2053)	DaVinci Slate DaVinci Shake	6 to $7^{1}/_{2}$ 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	DaVinci Slate DaVinci Shake Bellaforté Shake	6 to 8 9 to 10 12
4	A	Min. $^{15}/_{32}$-inch plywood	3:12	Two layers ASTM D226 Type II (No. 30) asphalt-coated glass-fiber-mat	DaVinci Slate DaVinci Shake Bellaforté Shake Bellaforté Slate	6 to 8 9 to 10 12 12
5	A	Min. $^{15}/_{32}$-inch plywood	3:12	One layer Eco Chief Products SolarHide™-SRW (ESR-4035)	DaVinci Slate DaVinci Shake Bellaforté Shake Bellaforté Slate	6 to 8 9 to 10 12 12

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

[1] ASTM D226 Type I (No. 15) and Type II (No. 30) underlayment 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.

TABLE 2—ALLOWABLE WIND UPLIFT PRESSURE VALUES

SYSTEM NO.	ROOF DECK	DaVINCI ROOF SHINGLE			ALLOWABLE UPLIFT PRESSURE (psf)
		Roofing Shingle	Exposure (inches)	Shingle Fastening	
1	Min. $^{15}/_{32}$-inch plywood	DaVinci Slate	6	Min. two $1^{3}/_{4}$-inch long by $^{1}/_{8}$-inch diameter shank hot-dipped roofing nails with $^{3}/_{8}$-inch nominal diameter heads into premolded nail markers, per shingle	75
2	Min. $^{15}/_{32}$-inch plywood	DaVinci Slate	8	Min. two $1^{1}/_{2}$-inch long by $^{1}/_{8}$-inch- diameter shank hot-dipped galvanized roofing nails with $^{3}/_{8}$- inch-nominal-diameter heads into premolded nail markers, per shingle	60
3	Min. $^{15}/_{32}$-inch plywood	DaVinci Shake	10	Min. two $1^{3}/_{4}$-inch long by $^{1}/_{8}$-inch diameter shank hot-dipped or stainless steel roofing nails with $^{3}/_{8}$-inch nominal diameter heads into premolded nail markers, per shingle	75
4	Min. $^{15}/_{32}$-inch plywood	Bellaforté Slate Bellaforté Shake	12	Min. three $1^{3}/_{4}$-inch long by $^{1}/_{8}$-inch diameter shank hot-dipped roofing nails with $^{3}/_{8}$-inch nominal diameter heads, two through premolded nail markers and one through the tab, per shingle	45
5	Min. $^{15}/_{32}$-inch plywood	Bellaforté Shake	12	Min. five $1^{3}/_{4}$-inch long by $^{1}/_{8}$-inch diameter shank hot-dipped roofing nails with $^{3}/_{8}$-inch nominal diameter heads into premolded nail markers per, shingle	75

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

TABLE 3—2015 and 2012 IBC and 2015 IRC WIND SPEED & MAXIMUM MEAN ROOF HEIGHT[1,2]

Maximum Allowable Mean Roof Heights (ft.) for Gable Roofs (Slope 3:12 – 6:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Ultimate Design Wind Speed V_{ult} (mph)								
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		≤110	115	120	130	140	150	160	170	180
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	49	33	NA
			C	60	60	60	60	45	22	NA	NA	NA
			D	60	60	60	40	19	NA	NA	NA	NA
DaVinci Slate	8	2	B	60	60	60	60	60	35	NA	NA	NA
			C	60	60	60	30	16	NA	NA	NA	NA
			D	60	51	31	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	60	NA	NA	NA	NA	NA	NA
			C	33	26	17	NA	NA	NA	NA	NA	NA
			D	17	NA	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12	5	B	60	60	60	60	60	60	49	33	NA
			C	60	60	60	60	45	22	NA	NA	NA
			D	60	60	60	40	19	NA	NA	NA	NA

Maximum Allowable Mean Roof Heights (ft.) for Gable Roofs (Slope 6.1:12 – 12:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Ultimate Design Wind Speed V_{ult} (mph)								
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		≤110	115	120	130	140	150	160	170	180
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	60	60
			D	60	60	60	60	60	60	60	60	54
DaVinci Slate	8	2	B	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	60	37
			D	60	60	60	60	60	60	60	31	15
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	60	NA	NA	NA	NA	NA	NA
			C	60	60	60	NA	NA	NA	NA	NA	NA
			D	60	60	60	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	5	B	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	60	60
			D	60	60	60	60	60	60	60	60	NA

Maximum Allowable Mean Roof Heights (ft.) for Hip Roofs (Slope 3:12 – 5.6:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Ultimate Design Wind Speed V_{ult} (mph)								
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		<110	115	120	130	140	150	160	170	180
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	45	24
			D	60	60	60	60	60	60	30	19	NA
DaVinci Slate	8	2	B	60	60	60	60	60	60	60	60	38
			C	60	60	60	60	60	52	26	16	NA
			D	60	60	60	60	50	22	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	60	NA	NA	NA	NA	NA	NA
			C	60	60	60	NA	NA	NA	NA	NA	NA
			D	60	60	60	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	5	B	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	45	24
			D	60	60	60	60	60	60	30	19	NA

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

[1]Mean roof heights were determined from maximum allowable wind uplift pressures (see Table 2) and wind loads calculated in accordance with ASCE 7-10 Section 30.5 for enclosed buildings with a topographic factor, K_{zt} =1.0.

[2]Pressure area defined per ASCE 7-10, Figure 30.5 in Zone 3, tributary area 10ft^2 or less results in maximum pressure.

TABLE 4—2009 and 2006 IBC and 2012, 2009 and 2006 IRC WIND SPEED & MAXIMUM MEAN ROOF HEIGHT[1,2]

Maximum Allowable Mean Roof Heights (ft.) for Gable (Slope 3:12 – 6.1:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Basic Wind Speed (mph- 3-second gust)											
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		85	90	100	105	110	120	125	130	140	145	150	170
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	46	35	NA	NA	NA	NA
			C	60	60	60	57	36	16	NA	NA	NA	NA	NA	NA
			D	60	60	43	25	NA	NA	NA	NA	NA	NA	NA	NA
DaVinci Slate	8	2	B	60	60	60	60	52	NA	NA	NA	NA	NA	NA	NA
			C	60	60	31	19	NA	NA	NA	NA	NA	NA	NA	NA
			D	60	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	36	NA	NA	NA	NA	NA	NA	NA	NA	NA
			C	38	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			D	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12	5	B	60	60	60	60	60	60	46	35	NA	NA	NA	NA
			C	60	60	60	57	36	16	NA	NA	NA	NA	NA	NA
			D	60	60	43	25	NA	NA	NA	NA	NA	NA	NA	NA

Maximum Allowable Mean Roof Heights (ft.) for Gable (Slope 6.1:12 – 12:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Basic Wind Speed (mph- 3-second gust)											
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		85	90	100	105	110	120	125	130	140	145	150	170
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	60	60	60	45	16
			D	60	60	60	60	60	60	60	60	52	35	23	NA
DaVinci Slate	8	2	B	60	60	60	60	60	60	60	60	60	60	60	NA
			C	60	60	60	60	60	60	60	60	36	26	19	NA
			D	60	60	60	60	60	60	52	33	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	60	60	60	NA	NA	NA	NA	NA	NA	NA
			C	60	60	60	60	60	NA	NA	NA	NA	NA	NA	NA
			D	60	60	60	60	43	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12	5	B	60	60	60	60	60	60	60	60	60	60	60	60
			C	60	60	60	60	60	60	60	60	60	60	45	16
			D	60	60	60	60	60	60	60	60	52	35	23	NA

Maximum Allowable Mean Roof Heights (ft.) for Hip Roofs (Slope 3:12 – 5.6:12)

DaVINCI SHINGLES			EXPOSURE CATEGORY	Basic Wind Speed (mph- 3-second gust)											
Roofing Shingle	Exposure (in.)	Min. No. Fasteners		85	90	100	105	110	120	125	130	140	145	150	170
DaVinci Slate DaVinci Shake	6 10	2	B	60	60	60	60	60	60	60	60	60	60	50	NA
			C	60	60	60	60	60	60	60	48	24	17	NA	NA
			D	60	60	60	60	60	51	32	20	NA	NA	NA	NA
DaVinci Slate	8	2	B	60	60	60	60	60	60	60	60	37	30	NA	NA
			C	60	60	60	60	60	30	24	17	NA	NA	NA	NA
			D	60	60	60	60	39	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12 12	3	B	60	60	60	60	60	NA	NA	NA	NA	NA	NA	NA
			C	60	60	37	32	21	NA	NA	NA	NA	NA	NA	NA
			D	60	60	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bellaforté Slate Bellaforté Shake	12	5	B	60	60	60	60	60	60	60	60	60	60	50	NA
			C	60	60	60	60	60	60	60	48	23	17	NA	NA
			D	60	60	60	60	60	51	32	20	NA	NA	NA	NA

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

[1]Mean roof heights were determined from maximum allowable wind uplift pressures (see Table 2) and wind loads calculated in accordance with ASCE 7-05 Section 6.4.2.2 for enclosed buildings with importance factor 1.0 and topographic factor, K_{zt}=1.0.

[2]Pressure area defined per ASCE 7-05, Figure 6-2 in Zone 3, tributary area 10ft^2 or less results in maximum pressure.

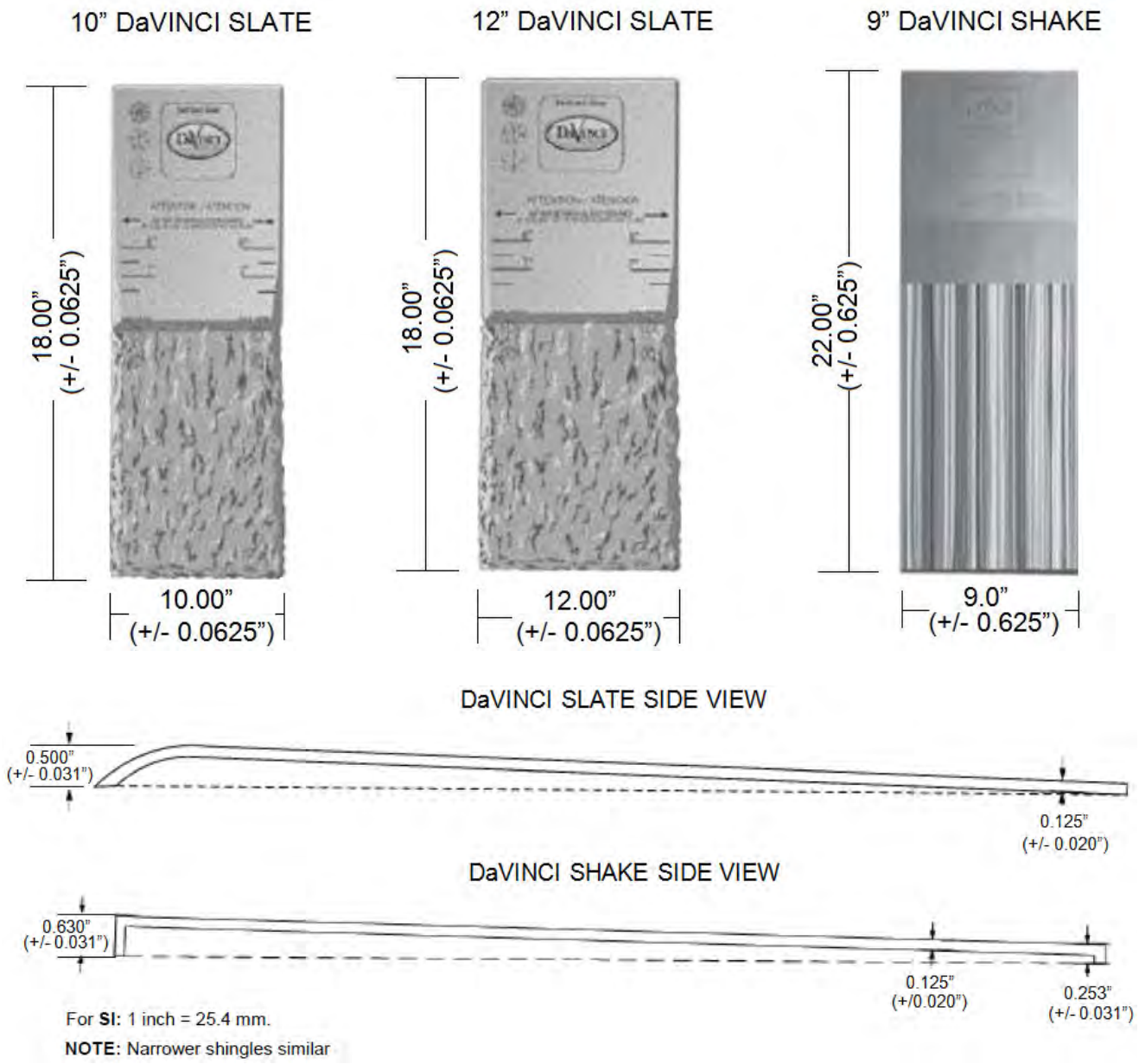

FIGURE 1—DaVINCI SLATE ROOF SHINGLES AND SHAKE ROOF SHINGLES

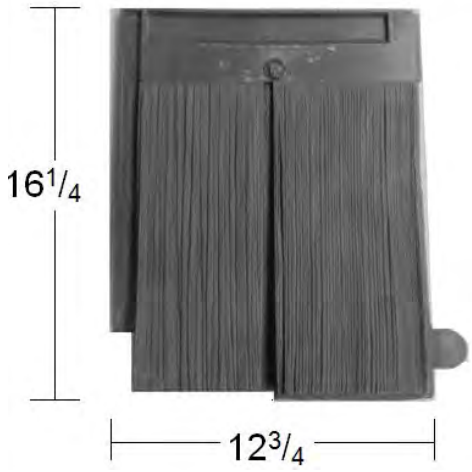

FIGURE 2—BELLAFORTÉ SHAKE

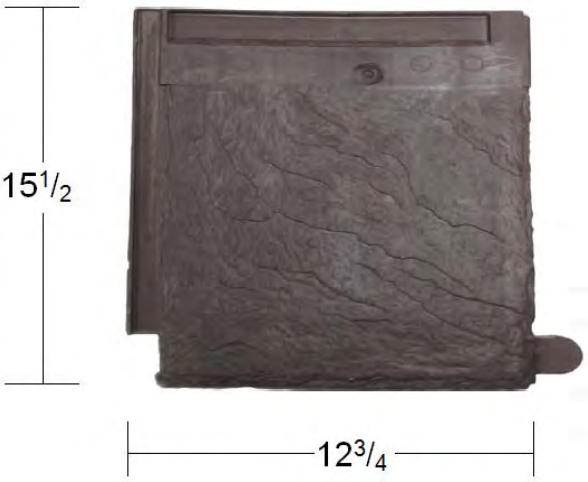

FIGURE 3—BELLAFORTÉ SLATE