



ICC-ES Evaluation Report ESR-4418

Reissued July 2023

This report is subject to renewal July 2024.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 46 33—Plastic Siding

REPORT HOLDER:

DAVINCI ROOFSCAPES, LLC

EVALUATION SUBJECT:

DAVINCI HAND-SPLIT SHAKE SIDING

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018 and 2015 *International Building Code*® (IBC)
- 2018 and 2015 *International Residential Code*® (IRC)

Properties evaluated:

- Exterior veneer
- Durability
- Weather protection
- Wind load resistance
- Flame spread
- Ignition resistance (2018 IBC only)

Evaluation to the following green code(s) and/or standards:

- 2022 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2020, 2015, 2012 and 2008 ICC 700 National Green Building Standards™ (ICC 700-2020, ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes Verified:

- See Section 3.1

2.0 USES

DaVinci Hand-Split Shake Siding is used as an exterior wall covering over a code-complying sheathing or substrate capable of supporting the imposed loads on buildings of all types of construction under the 2018 IBC and on structures constructed in accordance with the IRC.

Under the 2015 IBC, the siding is limited to Type VB construction (IBC) and on structures constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 Hand-Split Shake Siding:

DaVinci Hand-Split Shake Siding is a molded polymer product conforming to the requirements of ASTM D7254, 2018 IBC Section 1403.12.2 (2015 IBC Section 1404.12.2), and IRC Section R703.14.2. The siding is nominally 5/8-inch-thick (15.9 mm) and is finished to simulate hand-split shakes. The siding is available in widths of 8 and 10 inches (203 and 254 mm) with a length of 18 inches (457 mm). See Figure 1.

The attributes of the DaVinci Hand-Split Shake Siding have been verified as conforming to the requirements of (i) CALGreen Sections A4.405.1.3 and A5.406.1.2; (ii) ICC 700-2020 Sections 601.7 and 11.601.7; (iii) ICC 700-2015 and ICC 700-2012 Sections 601.7, 11.601.7 and 12.1(A).601.7; and ICC 700-2008 Section 601.7 for pre-finished materials. 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 Sheathing Substrates:

- Minimum 15/32-inch-thick (11.9 mm) solid plywood structural sheathing complying with DOC PS-1.
- Minimum 7/16-inch-thick (11.1 mm) Exposure 1 oriented strand board (OSB) sheathing complying with DOC PS-2.

3.3 Fasteners:

Fasteners used to secure the siding to sheathing or straps must be galvanized nails complying with ASTM F1667 and Table 1.

4.0 INSTALLATION

4.1 General:

DaVinci Hand-Split Shake Siding must be installed in accordance with the manufacturer's published installation instructions, the applicable code and this report. The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions must be available on the jobsite at all times during installation.

The siding must be installed over the sheathing substrate and an approved water-resistive barrier as required by the applicable code. Flashing in accordance with the applicable code shall be installed at all openings, penetrations, and abutments with dissimilar materials, and at terminations of the sidings and soffit, to maintain the weather tightness of the assembly.

The siding and accessories must be fastened to framing having a minimum specific gravity of 0.42, structural sheathing, or pressure treated wood straps with nails with a minimum embedment into framing of $\frac{3}{4}$ inch (19.1 mm). When fastening to structural sheathing, nail penetration must be at least $\frac{1}{4}$ inch (6.4 mm) beyond the backside of the sheathing. Pressure treated wood straps must be anchored to concrete or CMU walls with $\frac{3}{16}$ -inch concrete anchors spaced at 16 inches on center. The siding must be installed in overlapping courses with an exposed face of 6, 7 or 8 inches (152 mm, 178 mm or 203 mm), as shown in Figure 1 and the manufacturer's installation instructions.

Accessory materials such as corners, starter tiles and trim must be fastened in accordance with the manufacturer's installation instructions.

4.2 Weather protection:

The siding when installed in accordance with this report and the manufacturer's installation instructions comply with IBC Section 1403.2 and IRC Section R703.1.1.

4.3 Wind Resistance:

The allowable negative wind pressures for the siding shown in Table 1 must not exceed the design negative wind pressures determined in accordance with Chapter 16 of the IBC or Section R301.2.1.1 of the IRC. The siding has a maximum design wind speed at corresponding maximum building heights as shown in Table 1.

4.4 Use on Exterior Walls in Types I, II, III and IV Construction in accordance with 2018 IBC Section 1405.1 (Ignition Resistance):

When the exterior wall is sheathed with fire retardant treated wood sheathing the siding can be used on the exterior side of exterior walls on buildings of Types I, II, III or IV construction. The siding shows no sustained flaming at a maximum tolerable level of incident radiant heat flux of 12.5 kW/m², when tested in accordance with NFPA 268. The minimum fire separation distance required shall be determined from 2018 IBC Table 1405.1.1.1.2. The installation of the siding must comply with the applicable requirements in 2018 IBC Section 1405.1.

5.0 CONDITIONS OF USE

The DaVinci Hand-Split Shake Siding described in this report complies with, or is a suitable alternative 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 this report, the manufacturer's published instructions, and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.
- 5.2 Under the 2018 IBC, the siding can be used on buildings of all construction types and on structures constructed in accordance with the IRC.

- 5.3 Under Section 1403.12.2 of the 2018 IBC, the fire separation distance between the building with the siding and adjacent buildings must be no less than 10 feet (3048 mm). For Types I, II, III and IV construction, the fire separation distance must comply with 2018 IBC Section 1403.12.2 and Section 4.4 of this report.

- 5.4 Under the 2015 IBC, the siding is limited to use on Construction Type VB and to structures constructed in accordance with the IRC.

- 5.5 Under Section 1404.12.2 of the 2015 IBC, the fire separation distance between the building with the siding and adjacent buildings must be no less than 10 feet (3048 mm).

- 5.6 The siding is limited to use on buildings having a maximum height, and in areas with maximum wind speeds and exposure, as noted in Table 1.

- 5.7 The siding must be installed on exterior walls covered by wood structural panel sheathing or substrates capable of supporting the imposed loads, including but not limited to positive and negative transverse wind loads.

- 5.8 A water-resistive barrier complying with the IBC or IRC, as applicable, must be installed under the siding, except where not required by the IBC or IRC in masonry or concrete wall construction.

- 5.9 Exterior walls must be braced or sheathed to resist racking loads with approved materials in accordance with the requirements of the applicable code.

- 5.10 DaVinci Hand-Split Shake Siding is manufactured in Lenexa, Kansas, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Polypropylene Siding (AC366), dated October 2018.

- 6.2 Reports of test in accordance with ASTM D5206.

- 6.3 Data in accordance with ASTM E84.

- 6.4 Data in accordance with ASTM E331.

- 6.5 Data in accordance with NFPA 268.

7.0 IDENTIFICATION

- 7.1 The siding products described in this report are identified by a label on the packaging bearing the manufacturer's name (DaVinci Roofscapes) and address, the product name, manufacturer's lot number, and the evaluation report number (ESR-4418). Also included on the label is the following statement: "Conforms to ASTM Specification D7254."

- 7.2 The report holder's contact information is the following:

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TABLE 1—WIND SPEED & MAXIMUM BUILDING HEIGHT

FRAMING ^{4,5}	SHEATHING	FASTENER ¹⁰	ALLOWABLE PRESSURE ^{2,4} (psf) (ASD)	EXPOSURE CATEGORY	Ultimate Design Wind Speed ^{1,3} (V_{ult}) (mph)						
					Building Height						
					15 ft	20 ft	25 ft	30 ft	40 ft	50 ft	60 ft
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ¹⁵ / ₃₂ -inch Plywood ⁷	2 5d ^{1 3} / ₄ -inch galvanized common siding nail.	57.5	B	200	200	200	200	192	186	181
				C	181	176	172	169	164	160	157
				D	165	161	158	155	151	148	146
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ⁷ / ₁₆ -inch OSB ⁸	2x, 5d ^{1 3} / ₄ -inch galvanized common siding nail	43	B	173	173	173	173	166	160	157
				C	157	152	149	146	146	135	136
				D	142	139	136	134	131	128	126
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ¹⁵ / ₃₂ -inch Plywood ⁷	2x, 11 gauge ^{1 3} / ₄ -inch galvanized ring-shank roofing nail	104.5	B	210	210	210	210	210	210	210
				C	210	210	210	210	210	210	210
				D	210	210	210	209	204	200	197
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ⁷ / ₁₆ -inch OSB ⁸	2x, 11 gauge ^{1 3} / ₄ -inch galvanized ring-shank roofing nail	90	B	210	210	210	210	210	210	210
				C	210	210	210	210	205	200	196
				D	206	201	197	194	189	185	182
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ¹⁵ / ₃₂ -inch Plywood ⁷ with mesh rainscreen ¹²	2x, 6d 2-inch galvanized common siding nail	55	B	195	195	195	195	187	181	177
				C	177	172	168	165	160	156	154
				D	161	157	154	152	148	145	143
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ⁷ / ₁₆ -inch OSB ⁸ with mesh rainscreen ¹²	2x, 6d 2-inch galvanized common siding nail	41	B	169	169	169	169	162	157	153
				C	153	149	145	142	138	135	133
				D	139	136	133	131	128	125	123
Nominal 2 x 4 wood stud or steel stud at 16 inches o.c.	Minimum ⁷ / ₁₆ -inch OSB ⁸ with ⁵ / ₈ -inch exterior gypsum	2x, 6d 2-inch galvanized common siding nail	71	B	210	210	210	210	210	206	201
				C	201	196	191	187	182	178	175
				D	183	179	175	172	168	165	162
CMU Block or Solid Concrete Wall	Nominal 1 x 3 P.T. SPF No. 2 straps ¹¹	2x, 5d ^{1 3} / ₄ -inch galvanized common siding nail	69	B	210	210	210	210	210	203	198
				C	198	193	189	185	179	175	172
				D	180	176	173	170	166	162	160

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa, 1 mph = 0.44m/s

¹ASCE 7-16 and ASCE 7-10 design input values: GCp = -1.4, GCpi = 0.18, Kzt = 1, Kd = 0.85.

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

³Table wind speeds only valid under the design conditions stated. For other site conditions and/or building dimensions, designers can use the published Allowable Pressure (psf) (ASD) to determine allowable wind speeds with calculations in accordance with IBC Chapter 16 and ASCE 7 or IRC Table R301.2(2).

⁴To convert to Factored Design Resistance Pressure (psf) (LRFD), multiply Allowable Pressure (psf) (ASD) by 1.67.

⁵Wood framing species SPF No. 2 or better. Members may be substituted with the following; any larger section dimension of the same material or any species or grade of equal or greater 0.42 specific gravity.

⁶Steel framing dimensions ^{1 5}/₈ x ^{3 5}/₈, with minimum yield strength of 33 ksi and 18-gauge {43 mil [0.043 inch] (1.1 mm)} thickness. The framing members may be substituted with the following; any larger section dimension of the same material or any greater yield strength and/or gauge thickness.

⁷Plywood Sheathing: Minimum ¹⁵/₃₂-inch-thick (11.9 mm), 0.42 SG, 4-ply Exposure 1, complying with DOC PS 1. Wood sheathing may be substituted with thicker profile of up to nominal 1-inch (25.4 mm).

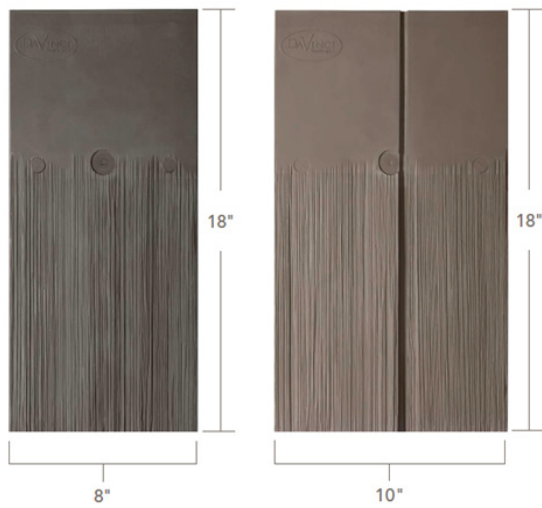
⁸OSB Sheathing: Minimum. ⁷/₁₆-inch-thick (11.1 mm), Exposure 1, complying with DOC PS 2. Wood sheathing may be substituted with thicker profile of up to nominal 1-inch (25.4 mm).

⁹Gypsum sheathing, where applicable, must comply with ASTM C1396 and be rated by the manufacturer for exterior use; gypsum thickness may not be increased

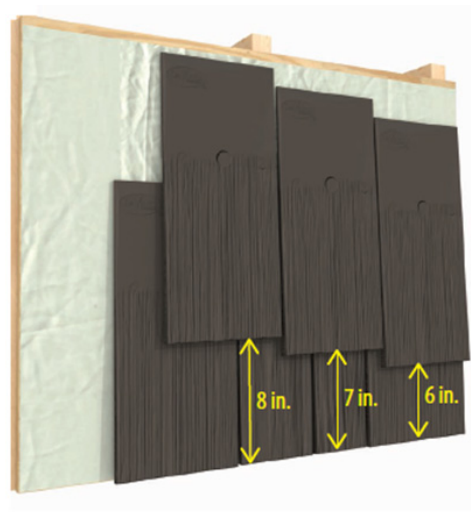
¹⁰All fasteners are to be corrosion resistant. Nails must comply with ASTM F1667 and are to be of common or box type. Siding nail with minimum head diameter of ¹/₄-inch (6.4 mm), roofing nail with minimum head diameter of ³/₈-inch (9.5 mm).

¹¹Straps are nominal 1 x 3 pressure-treated plywood or lumber, vertical straps at 16-inch (406 mm) o.c., horizontal straps at 8-inch (203 mm) o.c., anchored to concrete or CMU wall with ³/₁₆-inch (4.8 mm) anchors at 16-inch (406 mm) o.c. with minimum ¹/₄-inch (31.8 mm) embedment

¹²Rainscreen mesh is a woven polymeric strand material 0.4-inch thick (10.2 mm), approved for use by the authority having jurisdiction, fastened to sheathing by manufacturer's instructions.



DAVINCI HAND-SPLIT SHAKE SIDING



SIDING MAXIMUM EXPOSURE

FIGURE 1—DAVINCI HAND SPLIT SHAKE SIDING

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1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that DaVinci Hand-Split Shake Siding, described in ICC-ES evaluation report ESR-4418, has 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) AKA: California Department of Health Care Access and Information (HCAI) and the 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 Hand-Split Shake Siding, described in Sections 2.0 through 7.0 of the evaluation report ESR-4418, complies with CBC Chapter 14 provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

2.1.1 OSHPD:

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

2.1.2 DSA:

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

2.2 CRC:

The DaVinci Hand-Split Shake Siding, described in Sections 2.0 through 7.0 of the evaluation report ESR-4418, complies with CRC Chapter 7, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued July 2023.