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ICC-ES Evaluation Report

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 46 46—Fiber-Cement Siding

REPORT HOLDER:

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EVALUATION SUBJECT:

HARDIESHINGLE™ PANELS, HARDIEPLANK™ LAP SIDING, AND HARDIESHINGLE™ INDIVIDUAL SHINGLES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2009 *International Building Code®* (2009 IBC)
- 2009 *International Residential Code®* (2009 IRC)
- 2006 *International Building Code®* (2006 IBC)
- 2006 *International Residential Code®* (2006 IRC)

Properties evaluated:

- Weather protection
- Structural
- Types I, II, III, and IV (noncombustible) construction
- Fire-resistance-rated construction
- Thermal resistance

2.0 USES

James Hardie fiber-cement panels, plank lap siding, and cladding shingles are used as exterior wall covering. The products comply with IBC Sections 1404.10 and IRC Section R703.10. The products comply with IBC Sections 1404.10 and IRC Section R703.10. The products may be used on exterior walls required to be of Type I, II, III or IV construction (IBC).

3.0 DESCRIPTION

3.1 General:

The exterior sidings are single-faced, cellulose fiber–reinforced cement (fiber-cement) products. Exterior sidings are identified as HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual shingles.

The products comply with ASTM C 1186, as Grade II, Type A; have a flame-spread index of 0 and a smoke-developed index of 5 when tested in accordance with ASTM E 84; and are classified as noncombustible when tested in accordance with ASTM E 136. Thermal conductance (K) and resistance (R) values for the products are as shown in Table 2 of this report, based on testing in accordance with ASTM C 177.

3.2 Siding:

HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual shingles are supplied either unprimed or primed for subsequent application of a compatible primer and/or exterior-grade top coat. Nominal product dimensions are noted in Table 1.

The products are available in a variety of finish textures. HardieShingle™ panels are offered in three configurations: half-round, staggered-edge, and square-edge.

3.3 Fasteners:

Fastener type and spacing must be as shown in the tables of this report. Fasteners must be corrosion-resistant steel.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Walls: The maximum basic wind speeds for positive or negative transverse load resistance of HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual shingles are presented in Tables 3 through 13.

4.2 Installation:

4.2.1 General: Installation must comply with this report, and a copy of this report must be available at all times on the jobsite during installation. All products may be cut to shape on-site by the score-and-snap method using a score-and-snap knife, a hand guillotine or a handsaw utilizing a carbide blade. A clear distance of 6 inches (152 mm) must be maintained between the siding and the earth. Unless otherwise noted in this report, the products must be installed in accordance with 2009 IBC Sections 1405.16 and 1405.17; 2009 IRC Section R703.10; 2006 IBC Sections 1405.15, 1405.16 and 1405.17; or 2006 IRC Section R703.10, as applicable.

4.2.2 HardieShingle™ Panels: When installation is on wood or metal framing members, with or without solid wood sheathing, a water-resistive barrier must be applied over the wood or metal framing members or solid wood sheathing in accordance with the applicable code. The panels must be fastened in accordance with the provisions of Table 4 of this report.

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A $^1/_8$-inch (3.2 mm) gap must be left at locations where the siding butts against door and window trim and at internal or external corners; such gaps must be flashed in accordance with the applicable code, then caulked. Vertical joints must occur over framing members and must be sealed with caulking or covered with battens. Horizontal joints must be flashed with metal Z-flashing and occur over solid blocking or wood structural panel sheathing.

4.2.3 HardiePlank™ (Cemplank®, Sentry™ and RFC®) Lap Siding: When installation is on wood or metal framing members, with or without solid wood sheathing, the lap siding must be fastened either through the overlapping planks (face nailed) or through the top edge of single planks (blind nailed) in accordance with the provisions of Table 4 of this report. A water-resistive barrier must be applied over wood or metal framing members or solid wood sheathing in accordance with the applicable code. Lap siding installed over walls constructed of concrete masonry units complying with ASTM C 90 must be applied in accordance with Tables 5 through 10. The lap siding requires the use of a starter strip to set the first course on the proper angle and to create a drip edge.

Vertical joints must occur over studs, except where the "off-stud splice device" is installed or where the planks are installed to solid wood sheathing complying with the applicable code, and must be staggered on subsequent courses. Where the "off-stud splice device" is installed, the splice device's bottom lip must be placed over the adjacent solid course of planks. The plank must then be fastened to the framing with corrosion-resistant fasteners. The abutting plank must be positioned and fastened into place ensuring that the lower edges of the two planks align. The metal device must be located centrally over the vertical joint.

Vertical joints between planks must be lightly butted or gapped and must be protected by one of the following methods: (a) sealed with caulking in accordance with the caulk manufacturer's published gapping requirements and caulking application instructions; or (b) covered with an H-section joint cover; or (c) located over a strip of nonperforated flashing complying with ASTM D 226, Type I felt, or other approved flashing. Trim and corners must be installed and the siding must be finished in accordance with the manufacturer's application instructions. A $^1/_8$-inch (3.2 mm) gap must be left at locations where the siding butts against door and window trim and at internal or external corners; such gaps must be flashed in accordance with the applicable code, then caulked. Horizontal joints must be flashed with Z-flashing and occur over solid blocking or solid wood sheathing.

4.2.4 HardieShingle™ Individual Shingles: When installed on solid wood sheathing, the cladding shingles are fastened in accordance with the provisions of either Table 11, 12, or 13 of this report. A water-resistive barrier in accordance with the applicable code must be applied over the wood-based sheathing substrate to which the shingles are attached.

The individual shingles require the use of a starter strip to set the first course on the proper angle and to create a drip edge. The nominally $1^1/_4$-inch-wide-by-$^1/_4$-inch-thick (31.8 mm by 6.4 mm) starter strip and a minimum $8^1/_4$-inch-wide (210 mm) HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding starter course are installed over the water-resistive barrier with the bottom of the starter strip and starter course even with the bottom of the bottom plate. Shingles are spaced a maximum of $^1/_4$ inch (6.4 mm) apart, leaving a minimum side lap of $1^1/_2$ inches (38 mm) between the joints of successive courses. Fasteners must be spaced a minimum of $^3/_4$ inch (19 mm) and a maximum of 1 inch (25.4 mm) from shingle edges and must be positioned to be covered a nominal $1^1/_4$ inches (32 mm) by the succeeding shingle course; for 12-inch-wide (305 mm) shingles, the third nail (see Table 14) must be installed mid-span of the shingle. Nails must secure shingles but must not be over-driven. Trim and corners must be installed and the shingles must be finished in accordance with the manufacturer's application instructions. A $^1/_8$-inch (3.2 mm) gap must be left at the manufacturer's application instructions. A $^1/_8$-inch (3.2 mm) gap must be left at locations where the shingle butts against door and window trim and at internal or external corners; such gaps must be flashed in accordance with the applicable code, then caulked. Horizontal joints must be flashed with Z-flashing.

4.3 Fire-resistance-rated Wall Assembly (HardiePlank™ Lap Siding):

The asymmetrical, load-bearing, one-hour fire-resistance-rated wall assembly must consist of nominally 2-by-4 wood studs spaced a maximum of 24 inches (610 mm) on center, with two top plates and a single bottom plate. One layer of $^5/_8$-inch-thick (15.9), Type X, gypsum wallboard complying with ASTM C 36 or ASTM C 1396, 48 inches (1219 mm) wide, must be applied vertically to the interior face of the studs and secured with minimum $1^3/_4$-inch-long (44 mm) cup-head gypsum wallboard nails, spaced 7 inches (178 mm) on center at board edges and intermediate framing members. All board joints must be backed by framing. The $^5/_8$-inch-thick (15.9 mm), Type X, gypsum wallboard joints and nail heads must be finished in accordance with ASTM C 840 or GA216. The exterior face of the wall must be covered with one layer of $^1/_2$-inch-thick (12.7 mm), Type X, water-resistant core treated gypsum sheathing complying with ASTM C 36 or ASTM C 1396 and one layer of maximum 12-inch-wide (305 mm) HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding lapped a minimum of $1^1/_4$ inches (32 mm). The $^1/_2$-inch-thick (12.7 mm), Type X, water-resistant core-treated gypsum sheathing must be applied vertically to the exterior side of the framing members with vertical edges staggered 24 inches (610 mm) from the joints on the opposite side. All board joints must be backed by framing. The $^1/_2$-inch-thick (12.7 mm), Type X, water-resistant core-treated gypsum sheathing must be fastened to the framing members with $1^3/_4$-inch-long (44 mm) roofing nails spaced 7 inches (178 mm) on center in the field and 4 inches (102 mm) on center along the perimeter of each board. The outer layer of $^5/_{16}$-inch-thick (7.5 mm), minimum 12-inch-wide (305 mm) HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding must be applied over the $^1/_2$-inch-thick (12.7 mm), Type X, water-resistant core-treated gypsum sheathing by attaching $1^1/_2$-inch-wide (38 mm) HardiePlank™ (Cemplank®, Sentry™ and RFC®) starter strips through the gypsum sheathing into the bottom plate and 12-inch-wide (305 mm) HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding applied horizontally with a minimum nominally $1^1/_4$-inch (32 mm) head lap, and fastening with a single 6d corrosion-resistant common nail driven through the lapped planks into each stud.

The axial load must be the lesser of the following, provided structural consideration for axial, flexural and bearing perpendicular-to-grain stresses is in accordance with ANSI/AF&PA NDS-2005 (IBC or IRC):

1. Maximum 100 percent of full allowable axial compressive design load permitted for the wood species.
2. Maximum allowable wood axial stress of 0.78 F'_c, which must not exceed 0.78 F'_c at a slenderness ratio l_e/d of 33.

5.0 CONDITIONS OF USE

The HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual 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 James Hardie® Building Products, Inc, products listed in this report must be installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's instructions, this report governs.

5.2 HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual shingles must be installed on exterior walls braced in accordance the applicable code.

5.3 Design wind speeds applied to James Hardie® sidings described in this report must be determined in accordance with the applicable code and must be less than those shown in the wind speed tables in this report.

5.4 The sidings must be installed over a code-complying water-resistive barrier and as noted in this report.

5.5 For use in fire-resistance-rated construction, installation must be in accordance with Section 4.3.

5.6 Flashing must be installed at all penetrations and terminations in accordance with the applicable code.

5.7 The products are manufactured at the following locations, with quality control inspections by Intertek Testing Services, Inc. (AA-690):

- Cleburne, Texas
- Peru, Illinois
- Plant City, Florida
- Pulaski, Virginia
- Sparks, Nevada
- Tacoma, Washington
- Waxahachie, Texas

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Fiber Cement Siding Used as Exterior Wall Siding (AC90), dated November 2005 (editorially revised January 2011).

7.0 IDENTIFICATION

Pallets of the JamesHardie® Building Products, Inc., HardieShingle™ panels, HardiePlank™ (Cemplank®, Sentry™ and RFC®) lap siding, and HardieShingle™ individual shingles must carry a label bearing the manufacturer's name and telephone number, the product name, the name of the inspection agency (Intertek Testing Services NA Ltd)., and the evaluation report number (ESR-2290).

TABLE 1—STANDARD NOMINAL PANEL, PLANK AND SHINGLE DIMENSIONS

PRODUCT	WIDTH (INCHES)	LENGTH	THICKNESSES (INCHES)
HardiePlank® lap siding	4, 5 1/4, 6, 6 1/4, 7 1/4, 7 1/2, 8, 8 1/4, 9 1/4, 9 1/2 & 12	12, 14 feet	5/16
Cemplank® lap siding	5 1/4, 6, 6 1/4, 7 1/4, 7 1/2, 8, 8 1/4, 9 1/2 & 12	12, 14 feet	5/16
RFC® lap siding	6 1/4, 7 1/2, 8 1/4, 9 1/2 & 12	12, 14 feet	5/16
HardieShingle™ panel (square & staggered edge)	48	16 inches	1/4
HardieShingle™ panel (half round)	48	16, 19 inches	1/4
HardieShingle™ individual shingles	6, 8, & 12	18 inches	1/4

For **SI:** 1 inch = 25.4 mm, 1 ft = 305 mm.

TABLE 2—"K" and "R" VALUES FOR FIBER-CEMENT PRODUCTS

PRODUCT THICKNESS[3] (INCH)	THERMAL CONDUCTANCE[1] K_{EFF} = (BTU/HR-FT^2-°F)/INCH	THERMAL RESISTANCE[1] R = 1/K_{EFF}	ACTUAL THERMAL CONDUCTANCE[2] (K_{EFF})	ACTUAL THERMAL RESISTANCE[2] (R)
1/4	1.95	0.51	7.80	0.13
5/16	2.07	0.48	6.62	0.15

For **SI:** 1 inch = 25.4 mm, 1 Btu/h-ft^2-°F = 5.678 W/m^2-K.

[1]Based on 1 inch of panel thickness.
[2]Actual value for panel thickness shown.

TABLE 3—MAXIMUM BASIC WIND SPEED (3-second gust) (mph)

PRODUCT	THICK. (IN.)	FASTENER TYPE	FASTENER SPACING (IN.)	FRAME TYPE[1]	STUD SPACING (IN.)	BLDG. HEIGHT (FT.)	EXPOSURE CATEGORY		
							B	C	D
HardieShingle™ Panel straight or half round Installation	1/4	0.083" shank ×0.187" HD x 1 1/2" long ring shank nail	13.75	Attached to 7/16" OSB sheathing only	OSB attached to framing per code	0-15 20 40 60	126 121 105 95	85 85 85 -	- - - -
HardieShingle™ Panel Staggered Installation	1/4	0.083" shank ×0.187" HD x 1 1/2" long ring shank nail	13.75	Attached to 7/16" OSB sheathing only	OSB attached to framing per code	0-15 20 40 60	105 105 95 85	85 - - - -	- - - - -
HardieShingle™ Panel	1/4	0.083" shank ×0.187" HD x 1 1/2" long ring shank nail[2]	at each stud[3]	Nominal 2 × 4[1] or Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	137 137 126 116	116 116 105 105
HardieShingle™ Panel	1/4	0.083" shank ×0.187" HD x 1 1/2" long ring shank nail[2]	at each stud[3]	Nominal 2 × 4[1] or Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60 100	147 137 126 116 95	105 100 95 89 -	85 85 - - -

For **SI:** 1 foot = 305 mm, 1 inch = 25.4 mm, 1 mph – 0.44 m/s.

[1]Values are for species of wood having a specific gravity of 0.40 or greater.
[2]For application to metal framing members, fasteners must be ET & F Fastening Systems, Inc. ET&F Panelfast® nail, ET & F No. AGS-100-0150, head diameter = 0.313 in., shank diameter = 0.100 in., length = 1.5 in. Metal studs must be maximum Fy = 33 ksi.
[3]For application to ASTM C 90 concrete masonry wall, fasteners must be either ET & F Fastening Systems, Inc. ET&F block nail (ET & F No. ASM-144-0125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25 in.) or Max System block nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.) applied at the equivalent fastener or stud spacing.
[4]Wind speed design assumptions per Section 6.5, Method 2, of ASCE 7-05: I = 1.0, K_{zt} = 1, K_d = 0.85, G_{cpi} = 0.18. Pressure Coefficient of 1.58 for height ≤ 60 feet and 1.98 for height > 60 feet.
[5]For application to wood framing or wood-based sheathing, the minimum fastener penetration must be 1 inch into framing or the sheathing thickness as applicable.

TABLE 4—MAXIMUM WIND SPEED (mph)[3]

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 168 158 147	147 147 137 126
HardiePlank®	5/16	6	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 168 158 147	147 147 137 126
HardiePlank®	5/16	6 1/4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 168 158 147	147 137 137 126
HardiePlank®	5/16	7 1/4 or 7 1/2	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	158 147 137 126	126 126 121 116
HardiePlank®	5/16	8	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	147 147 137 126	126 126 116 105
HardiePlank®	5/16	8 1/4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	147 147 131 126	126 116 116 105
HardiePlank®	5/16	9 1/4 9 1/2	ET & F pin 0.100 × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 158 147	137 137 126 116	116 116 105 105
HardiePlank®	5/16	12	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60 100	145 145 139 131 109	131 127 119 114 96	119 116 110 106 90

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 154 145	137 137 121 116	116 116 105 100
HardiePlank®	5/16	6	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 154 145	137 137 121 116	116 116 105 100
HardiePlank®	5/16	6 1/4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 147 137	137 126 121 116	116 110 105 95
HardiePlank®	5/16	7 1/4 7 1/2	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 158 137 126	116 116 105 95	100 95 89 89
HardiePlank®	5/16	8	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 158 137 126	116 116 105 95	95 95 89 85
HardiePlank®	5/16	8 1/4	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	158 158 137 126	116 105 100 95	95 95 85 85
HardiePlank®	5/16	9 1/4 9 1/2	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	147 147 126 126	105 105 95 95	85 85 85 -
HardiePlank®	5/16	12	ET & F pin 0.100" × 1.5" × 0.25" HD	Face Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	106 106 102 96	96 93 87 -	87 85 - -
HardiePlank®	5/16	4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	158 158 147 137	126 121 110 105	105 100 95 95
HardiePlank®	5/16	6	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	158 158 147 137	126 121 110 105	105 100 95 95
HardiePlank®	5/16	6 1/4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 158 137 126	116 116 105 100	100 95 89 85
HardiePlank®	5/16	7 1/4 7 1/2	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	147 137 121 110	105 100 89 85	85 85 - -
HardiePlank®	5/16	8	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60 100	137 126 116 105 85	95 95 85 85 -	85 - - - -
HardiePlank®	5/16	8 1/4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	137 126 116 105	95 95 85 -	- - - -
HardiePlank®	5/16	4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	158 147 126 121	110 105 95 95	95 85 85 -
HardiePlank®	5/16	6	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	158 147 126 121	110 105 95 95	95 85 85 -
HardiePlank®	5/16	6 1/4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60 100	147 137 126 105 85	105 100 95 89 -	85 85 - - -

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	7 1/4 7 1/2	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	137 126 116 105	95 95 85 85	85 - - -
HardiePlank®	5/16	8	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	126 116 100 95	85 85 - -	- - - -
HardiePlank®	5/16	8 1/4	ET & F Panelfast 0.100" × 1.5" × 0.313" HD	Blind Nailed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	116 105 95 85	- - - -	- - - -
HardiePlank®	5/16	5.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	170 170 170 170 148	170 170 162 155 131	163 159 149 144 123
HardiePlank®	5/16	6.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	170 170 169 160 133	160 156 145 139 117	145 142 134 129 110
HardiePlank®	5/16	7.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	161 161 155 146 121	146 142 132 127 107	133 130 122 118 101
HardiePlank®	5/16	7.5	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	158 158 151 143 119	143 139 129 124 105	130 127 120 115 99
HardiePlank®	5/16	8	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	152 152 146 138 114	138 134 125 120 101	125 122 115 111 95
HardiePlank®	5/16	8.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	149 149 143 135 112	135 131 122 117 99	123 120 113 109 93
HardiePlank®	5/16	9.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	139 139 134 127 105	127 123 114 110 93	115 112 106 102 87
HardiePlank®	5/16	9.5	6d common[1]	Face Nailed Through plank overlap	2X4 wood	16	0-15 20 40 60 100	137 137 132 125 103	125 121 113 108 91	113 111 104 100 86
HardiePlank®	5/16	5.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	161 161 155 146 121	146 142 132 127 107	133 130 122 118 101
HardiePlank®	5/16	6.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	144 144 138 131 108	131 127 118 113 96	119 116 109 105 90
HardiePlank®	5/16	7.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	131 131 126 119 99	119 116 108 103 88	108 106 100 96 -

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	7.5	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15	129	117	106
							20	129	114	104
							40	124	106	98
							60	117	101	94
							100	97	86	-
HardiePlank®	5/16	8	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15	124	113	102
							20	124	109	100
							40	119	102	94
							60	113	98	91
							100	93	-	-
HardiePlank®	5/16	8.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15	122	111	100
							20	122	107	98
							40	117	100	2
							60	111	96	89
							100	91	-	-
HardiePlank®	5/16	9.25	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15	114	103	94
							20	114	100	92
							40	109	93	86
							60	103	90	-
							100	86	-	-
HardiePlank®	5/16	9.5	6d common[1]	Face Nailed Through plank overlap	2X4 wood	24	0-15	112	102	93
							20	112	99	90
							40	108	92	-
							60	102	88	-
HardiePlank®	5/16	5.25	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	170	170
							20	170	170	170
							40	170	170	170
							60	170	170	170
							100	170	159	149
HardiePlank®	5/16	6.25	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	170	170
							20	170	170	170
							40	170	170	161
							60	170	168	156
							100	160	142	133
HardiePlank®	5/16	7.25	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	170	160
							20	170	170	157
							40	170	160	147
							60	170	153	142
							100	146	130	122
HardiePlank®	5/16	7.5	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	170	157
							20	170	168	154
							40	170	157	145
							60	170	150	139
							100	143	127	119
HardiePlank®	5/16	8	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	167	151
							20	170	162	148
							40	170	151	139
							60	167	144	134
							100	138	122	115
HardiePlank®	5/16	8.25	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	170	164	149
							20	170	159	145
							40	170	148	137
							60	164	142	132
							100	135	120	113
HardiePlank®	5/16	9.25	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	169	153	139
							20	169	149	136
							40	162	138	128
							60	153	133	123
							100	127	112	105
HardiePlank®	5/16	9.5	8d common	Face Nailed Through plank overlap	2X4 wood	16	0-15	166	151	137
							20	166	146	134
							40	159	136	126
							60	151	131	121
							100	125	111	104
HardiePlank®	5/16	5.25	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15	160	145	132
							20	160	141	129
							40	154	131	121
							60	145	126	117
							100	135	119	112

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	6.25	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	160 160 154 145 131	145 141 131 126 116	132 129 121 117 109
HardiePlank®	5/16	7.25	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	159 159 153 144 119	144 140 130 125 106	131 128 120 116 99
HardiePlank®	5/16	7.5	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	156 156 150 141 117	141 137 128 123 104	128 125 118 114 97
HardiePlank®	5/16	8	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	150 150 144 136 113	136 132 123 118 100	123 121 113 109 94
HardiePlank®	5/16	8.25	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	147 147 141 134 111	134 130 121 116 98	121 118 111 108 92
HardiePlank®	5/16	9.25	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	138 138 132 125 103	125 121 113 108 92	113 111 104 101 86
HardiePlank®	5/16	9.5	8d common	Face Nailed Through plank overlap	2X4 wood	24	0-15 20 40 60 100	136 136 130 123 102	123 120 111 107 90	112 109 103 99 -
HardiePlank®	5/16	4	No. 8-18 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 158 147 137	137 137 131 126
HardiePlank®	5/16	6	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 158 147 137	137 137 131 126
HardiePlank®	5/16	6 1/4	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 158 147 137	137 137 126 121
HardiePlank®	5/16	7 1/4 7 1/2	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	147 147 131 126	126 121 116 105
HardiePlank®	5/16	8	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	147 147 131 126	126 121 116 105
HardiePlank®	5/16	8 1/4	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	147 137 131 121	126 121 116 105
HardiePlank®	5/16	9 1/4 9 1/2	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 158 147	137 131 121 116	116 110 105 100

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	12	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	16	0-15 20 40 60	168 168 137 137	126 121 110 105	105 95 95 89
HardiePlank®	5/16	4	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 155 145	137 137 126 116	116 116 110 105
HardiePlank®	5/16	6	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 154 145	137 137 126 116	116 116 110 105
HardiePlank®	5/16	6 1/4	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 154 145	145 141 131 126	116 110 105 100
HardiePlank®	5/16	7 1/4 7 1/2	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 147 137	126 121 110 105	105 105 95 95
HardiePlank®	5/16	8	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 147 137	126 121 110 105	105 100 95 89
HardiePlank®	5/16	8 1/4	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	160 160 137 131	121 121 105 100	105 100 95 89
HardiePlank®	5/16	9 1/4 9 1/2	No. 8 × 1 5/8" long × 0.323" HD ribbed bugle head screw	Face Screwed	Min. No. 20 ga. × 3.62" × 1.375" Metal C-stud	24	0-15 20 40 60	158 158 137 126	116 110 100 95	95 95 89 85
HardiePlank®	5/16	5.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	168 168 161 152 126	152 148 138 132 112	138 135 127 123 105
HardiePlank®	5/16	6.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	150 150 144 136 113	136 132 123 118 100	124 121 114 110 94
HardiePlank®	5/16	7.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	137 137 132 124 103	124 121 112 108 91	113 110 104 100 86
HardiePlank®	5/16	7.5	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	134 134 129 122 101	122 118 110 106 89	111 108 102 98 -
HardiePlank®	5/16	8	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	129 129 124 117 97	117 114 106 102 86	106 104 98 94 -
HardiePlank®	5/16	8.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	127 127 122 115 95	115 112 104 100 -	105 102 96 93 -

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	9.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	119 119 114 108 89	108 105 97 93 -	98 96 90 87 -
HardiePlank®	5/16	9.5	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	117 117 112 106 88	106 103 96 92 -	96 94 88 85 -
HardiePlank®	5/16	5.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	137 137 132 124 103	124 121 112 108 91	113 110 104 100 86
HardiePlank®	5/16	6.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	122 122 118 111 92	111 108 100 96 -	101 99 93 90 -
HardiePlank®	5/16	7.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	112 112 107 101	101 99 92 88	92 90 - -
HardiePlank®	5/16	7.5	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	110 110 105 99	99 97 90 86	90 88 - -
HardiePlank®	5/16	8	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	106 106 101 96	96 93 87 -	87 - - -
HardiePlank®	5/16	8.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	104 104 99 94	94 91 - -	85 - - -
HardiePlank®	5/16	9.25	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	97 97 93 88	88 85 - -	- - - -
HardiePlank®	5/16	9.5	No. 11 gauge 1.25 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	95 95 92 87	87 - - -	- - - -
HardiePlank®	5/16	5.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	170 170 170 170 154	170 170 168 161 136	169 165 155 150 128
HardiePlank®	5/16	6.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	170 170 170 166 137	166 161 150 144 122	151 147 139 134 114
HardiePlank®	5/16	7.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	167 167 160 152 126	152 147 137 132 111	138 135 127 122 104
HardiePlank®	5/16	7.5	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	164 164 157 149 123	149 144 134 129 109	135 132 124 120 102
HardiePlank®	5/16	8	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	157 157 151 143 118	143 139 129 124 105	130 127 119 115 98

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	8.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	155 155 148 140 116	140 136 127 122 103	128 125 117 113 97
HardiePlank®	5/16	9.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	145 145 139 131 109	131 128 119 114 96	119 117 110 106 90
HardiePlank®	5/16	9.5	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	143 143 137 129 107	129 126 117 112 95	118 115 108 104 89
HardiePlank®	5/16	5.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	160 160 154 145 126	145 141 131 126 111	132 129 121 117 104
HardiePlank®	5/16	6.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	150 150 143 136 112	136 132 123 118 100	123 120 113 109 93
HardiePlank®	5/16	7.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	136 136 131 124 102	124 120 112 107 91	112 110 103 100 85
HardiePlank®	5/16	7.5	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	134 134 128 121 100	121 118 110 105 89	110 108 101 98 -
HardiePlank®	5/16	8	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	129 129 123 117 97	117 113 106 101 86	106 104 97 94 -
HardiePlank®	5/16	8.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	126 126 121 115 95	115 111 104 99 -	104 102 96 92 -
HardiePlank®	5/16	9.25	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	118 118 113 107 89	107 104 97 93 -	97 95 90 86 -
HardiePlank®	5/16	9.5	No. 11 gauge 1.75 inch roofing Nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60 100	116 116 112 106 87	106 103 95 92 -	96 94 88 85 -
HardiePlank®	5/16	4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 158 147 137	137 137 126 121
HardiePlank®	5/16	6	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 168	168 158 147 137	137 137 126 121
HardiePlank®	5/16	6 1/4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	158 158 147 137	142 131 126 121

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	7 1/4 7 1/2	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 168 158	152 147 137 126	126 116 116 110
HardiePlank®	5/16	8	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 158 147	147 137 126 121	116 116 105 105
HardiePlank®	5/16	8 1/4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 158 147	142 137 126 116	121 116 110 105
HardiePlank®	5/16	9 1/4 9 1/2	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	16	0-15 20 40 60	168 168 158 137	137 126 116 110	116 105 105 100
HardiePlank®	5/16	4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 160 152 145	137 131 121 116	116 110 105 100
HardiePlank®	5/16	6	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 160 152 145	137 131 121 116	116 110 105 100
HardiePlank®	5/16	6 1/4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 160 154 145	137 131 121 116	116 105 105 100
HardiePlank®	5/16	7 1/4 7 1/2	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 160 147 137	126 116 105 89	105 100 89 89
HardiePlank®	5/16	8	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 158 142 131	121 116 105 100	100 100 89 89
HardiePlank®	5/16	8 1/4	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	160 158 142 126	121 116 105 100	100 100 89 89
HardiePlank®	5/16	9 1/4 9 1/2	No. 8 x 1 1/4 in. long x 0.375 in. HD ribbed waferhead screws	Blind Screwed	Min. No. 20 ga. X 3.62" x 1.375" Metal C-stud	24	0-15 20 40 60	158 147 131 121	116 105 95 89	95 89 85 85
HardiePlank®	5/16	5.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	141 141 135 128 106	128 124 116 111 94	116 114 107 103 88
HardiePlank®	5/16	6.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	126 126 121 114 95	114 111 103 99 -	104 102 96 92 -
HardiePlank®	5/16	7.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60 100	115 115 110 104 86	104 102 94 91 -	95 93 87 - -

TABLE 4—MAXIMUM WIND SPEED (mph)[3] (Continued)

PRODUCT	PRODUCT (IN.)		FASTENER TYPE[4]	FASTENING METHOD[2]	FRAME TYPE[1]	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
HardiePlank®	5/16	7.5	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60	113 113 108 102	102 99 93 89	93 91 85 -
HardiePlank®	5/16	8	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60	109 109 104 99	99 96 89 85	90 87 - -
HardiePlank®	5/16	8.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60	107 107 102 97	97 94 88 -	88 86 - -
HardiePlank®	5/16	9.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60	100 100 96 90	90 88 - -	- - - -
HardiePlank®	5/16	9.5	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	16	0-15 20 40 60	98 98 94 89	89 87 - -	- - - -
HardiePlank®	5/16	5.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	115 115 110 104	104 102 94 91	95 93 87 -
HardiePlank®	5/16	6.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	103 103 99 93	93 91 - -	- - - -
HardiePlank®	5/16	7.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40 60	94 94 90 85	85 - - -	- - - -
HardiePlank®	5/16	7.5	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40	92 92 88	- - -	- - -
HardiePlank®	5/16	8	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20 40	89 89 85	- - -	- - -
HardiePlank®	5/16	8.25	6d-2 inch long X 0.093 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 × 4 wood	24	0-15 20	87 87	- -	- -
HardiePlank®	5/16	≤ 9 1/2	0.091" shank, 0.221" HD, 1.5" long corrosion resistant Nail	Face Nailed through the overlap @ 12" o.c.	7/16" thick APA rated OSB sheathing	-	0-15 20 40 60	131 126 105 100	95 89 85 -	- - - -

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Values are for species of wood having a specific gravity of 0.42 or greater, unless otherwise noted.
[2]Face = Fastened through the overlapping plank. Blind = Fastened through the top edge of single plank.
[3]Wind speed design assumptions per Section 6.5, Method 2, of ASCE 7-05: I = 1.0, K_{zt} = 1, K_d = 0.85, G_{cpi} = 0.18. Pressure Coefficient of 1.58 for height ≤ 60 feet and 1.98 for height > 60 feet.
[4]ET&F pin fasteners have knurled shanks.

TABLE 5—(100 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	24	24	24	24	24	24	24	24	21	24	23	19
20	24	24	24	24	24	23	24	24	20	24	21	18
30	24	24	24	24	24	21	24	22	19	24	20	17
40	24	24	23	24	24	20	24	21	18	24	19	16
50	24	24	22	24	22	19	24	20	17	24	18	15
60	24	24	22	24	22	19	24	19	17	23	17	15

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 100 mph.
[3]Interpolation of spacing to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 6—(110 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	24	24	22	24	24	19	24	21	17	23	19	15
20	24	24	21	24	22	18	24	20	16	23	18	15
30	24	24	20	24	20	17	24	18	15	23	16	14
40	24	22	19	24	19	16	24	17	15	21	15	13
50	24	21	18	24	18	16	22	16	14	20	14	12
60	24	20	18	23	18	15	21	16	14	19	14	12

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 110 mph.
[3]Interpolation to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 7—(120 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	24	23	19	24	20	17	21	18	15	19	16	13
20	24	22	18	24	19	16	21	17	14	19	15	12
30	24	20	17	24	17	15	21	15	13	19	14	12
40	24	19	16	22	16	14	20	14	12	18	13	11
50	24	18	16	21	16	13	18	14	12	17	12	11
60	23	17	15	20	15	13	18	13	11	16	12	10

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 120 mph.
[3]Interpolation to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 8—(130 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	24	20	16	21	17	14	18	15	12	16	14	11
20	24	19	15	21	16	13	18	14	12	16	13	11
30	24	17	14	21	15	12	18	13	11	16	12	10
40	22	16	14	19	14	12	17	12	11	15	11	9
50	21	15	13	18	13	11	16	12	10	14	11	9
60	20	15	13	17	13	11	15	11	10	13	10	9

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 130 mph.
[3]Interpolation to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 9—(140 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	21	17	14	18	15	12	16	13	11	14	12	10
20	21	16	13	18	14	12	16	12	10	14	11	9
30	21	15	12	18	13	11	16	11	10	14	10	9
40	19	14	12	16	12	10	15	11	9	13	9	8
50	18	13	11	15	11	10	14	10	9	12	9	8
60	17	13	11	15	11	10	13	10	9	12	9	8

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 140 mph.
[3]Interpolation to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 10 (150 MPH)[2]
ALLOWABLE FASTENER SPACING (IN.)
HARDIEPLANK® LAP SIDING FASTENED TO ASTM C 90 CONCRETE BLOCK WALL[1,3,4]

Building Height (feet)	≤6 1/2-inch wide			7 1/4- & 7 1/2-inch wide			8- & 8 1/4-inch wide			9 1/4- & 9 1/2-inch wide		
	Exposure			Exposure			Exposure			Exposure		
	B	C	D	B	C	D	B	C	D	B	C	D
0-15	18	15	12	16	13	11	14	11	9	12	10	8
20	18	14	12	16	12	10	14	11	9	12	10	8
30	18	13	11	16	11	9	14	10	8	12	9	7
40	16	12	10	14	10	9	13	9	8	11	8	7
50	15	12	10	13	10	9	12	9	8	11	8	7
60	15	11	10	13	10	8	11	8	7	10	8	7

For **SI:** 1 inch = 25.4 mm, 1 foot = 305 mm, 1 mph = 0.44 m/s.

[1]Fasteners must be ET&F Fastening Systems, Inc. ET&F block Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long) or Max System block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.15 in., length = 1.3 in.).
[2]Maximum basic wind speed must be 150 mph.
[3]Interpolation to address building height and other plank widths is permitted.
[4]The lap conceals the fasteners of the previous course (Blind Nailed).

TABLE 11—ALLOWABLE BASIC WIND SPEEDS (mph) FOR HardieShingle™ INDIVIDUAL SHINGLE EXTERIOR WALL FINISH[1]

Sheathing Type	Siding Fastener Type	Weather Exposure and Fastener Location	Height of Building (feet)	Exposure Category	
				B	C
Minimum $^{15}/_{32}$ inch thick plywood complying with DOC PS 1-95	Min. 0.121 in. shank x 0.371 in. HD x $1^{1}/_{4}$ in. long corrosion resistant roofing Nail	8 inch exposure 2 roofing nails 9 inches from butt edge	0-15 20 40 60 100	126 126 126 126 95	110 105 95 89
		7 inch exposure 2 roofing nails 8 inches from butt edge	0-15 20 40 60 100	126 126 126 126 110	126 121 110 105 89
		6 inch exposure 2 roofing nails 7 inches from butt edge	0-15 20 40 60 100	126 126 126 126 121	126 126 126 121 116 100

For **SI:** 1 foot = 305 mm, 1 inch = 25.4 mm, 1 mph = 0.44 m/s.

[1]Table values are based on an importance factor of 1.0.

TABLE 12—ALLOWABLE BASIC WIND SPEEDS (MPH) FOR HARDIESHINGLE™ INDIVIDUAL SHINGLE EXTERIOR WALL FINISH[1]

Sheathing Type	Siding Fastener Type	Weather Exposure and Fastener Location	Height of Building (feet)	Exposure Category	
				B	C
Minimum $^{7}/_{16}$ inch thick OSB sheathing complying with DOC-PS 2-95	Min. 0.091 in. shank x 0.221 in. HD x $1^{1}/_{2}$ in. long corrosion resistant siding Nail	8 inch exposure 2 siding nails 9 inches from butt edge	0-15 20 40 60	126 126 105 100	89 89 85
		7 inch exposure 2 siding nails 8 inches from butt edge	0-15 20 40 60	126 126 121 116	105 100 95 89
		6 inch exposure 2 siding nails 7 inches from butt edge	0-15 20 40 60 100	126 126 126 126 100	116 110 105 95 85

For **SI:** 1 foot = 305 mm, 1 inch = 25.4 mm, 1 mph = 0.44 m/s.

[1]Table values are based on an importance factor of 1.0.

TABLE 13—ALLOWABLE BASIC WIND SPEEDS (MPH) FOR HARDIESHINGLE™ INDIVIDUAL SHINGLE EXTERIOR WALL FINISH[1]

Sheathing Type	Siding Fastener Type	Weather Exposure and Fastener Location	Height of Building (feet)	Exposure Category	
				B	C
Minimum $^{7}/_{16}$ inch thick OSB sheathing complying with DOC-PS 2-95	Min. 0.091 in. shank x 0.221 in. HD x $1^{1}/_{2}$ in. long corrosion resistant siding Nail	8 in. exposure 3 siding nails per 12 in. wide, 9 in. from butt edge, 2 siding nails per 6 & 8 in. wide	0-15 20 40 60	116 110 100 95	116 110 100 95
		7 in. exposure 3 siding nails per 12 in. wide, 8 inches from butt edge, 2 siding nails per 6 & 8 in. wide	0-15 20 40 60	126 121 110 105	126 121 110 105
		6 in. exposure 3 siding nails per 12 in. wide, 7 inches from butt edge, 2 siding nails per 6 & 8 in. wide	0-15 20 40 60 100	126 126 126 121 85	126 126 126 121 85

For **SI:** 1 foot = 305 mm, 1 inch = 25.4 mm, 1 mph = 0.44 m/s.

[1]Table values are based on an importance factor of 1.0.

ICC-ES Evaluation Report

ESR-2290 Supplement

Reissued March 1, 2012
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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 46 46—Fiber-Cement Siding

REPORT HOLDER:

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EVALUATION SUBJECT:

HARDIESHINGLE™ PANELS, HARDIEPLANK™ LAP SIDING, AND HARDIESHINGLE™ INDIVIDUAL SHINGLES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2007 *California Building Code* (2007 CBC)
- 2010 *California Building Code* (2010 CBC)

Properties evaluated:

- Weather protection
- Structural
- Types I, II, III, and IV (noncombustible) construction
- Fire-resistance-rated construction
- Thermal resistance

2.0 PURPOSE OF THIS SUPPLEMENT

This supplement is issued to indicate that the fiber-cement panels, lap siding and cladding shingles described in the master report ESR-2290 are noncombustible materials and may be used where ignition-resistant construction is required by Section 704A.3 of the 2007 *California Building Code* (CBC) or Section 707A.3 of the 2010 CBC, provided installation is in accordance with the master report and the applicable requirements of Sections 1405.15, 1405.16, and 1405.17 of the 2007 CBC or Sections 1405.16 and 1405.17 of the 2010 CBC, as applicable.

The exterior wall coverings may be used in the construction of new buildings located in Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area, as permitted in Section 701A.3 of the 2007 and 2010 CBC.

The products recognized in this supplement have not been evaluated for compliance with the *International Wildland-Urban Interface Code®*.

This supplement expires concurrently with the master report reissued on March 1, 2012.

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