EVALUATION SUBJECT

HardiePlank® Lap Siding; HardieShingle® Notched Panel

James Hardie Product Trade Names covered in this evaluation:
HardiePlank® Lap Siding, Cemplank® Siding, Prevail™ Lap Siding, HardieShingle® Notched Panel Siding

EVALUATION SCOPE:

ASCE 7-22 (referenced in 2023 FBC)
2023 Florida Building Code (8th Edition)

EVALUATION PURPOSE:

This analysis is to determine the maximum design 3-second gust wind speed to be resisted by an assembly of HardiePlank (Cemplank, Prevail Lap) siding and HardieShingle Notched Panel Siding fastened to ASTM C90 compliant Concrete Masonry Units (CMU).

REFERENCE REPORTS:

1. Intertek Report 3067913 (ASTM C1186) Material properties HardiePlank Siding and HardieShingle Siding

2. Applied Research Laboratories of South Florida, Report 29278-UD1 (ASTM D1761) Pull out testing ET&F Nail (ET & F No. ASM-144-125, head dia. = 0.30 in., shank dia. = 0.14 in., length = 1.25-in. long).

3. Intertek Report 3096000 (ASMT D1761) Pull out testing 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) and Max USA Corp Block Nail (CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.145 in., length = 1.25 in.)

4. Intertek Report 3117855-001 (ASTM E488) Pull out testing Aerosmith® Surepin Nail (5323HP, head dia. = 0.30 in., shank dia. = 0.144 in., length, 1.25in.) and 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)

5. Ramtech Laboratories, Inc. Report IC-1034-88 (ASTM E330) Transverse Load Test, 5/16" Thick by 9.5 inch wide HardiePlank Lap Siding installed on 2X4 Hem-Fir wood studs space at 16 inches on center with a Number 11 gauge 1-3/4 inch long galvanized roofing nail

6. Ramtech Laboratories, Inc. Report 2149-07-10 (C) (ASTM E330) Transverse Load Test, 5/16" Thick by 8.25 inch wide HardiePlank Lap Siding installed on 2X4 Doug-Fir-Larch wood studs space at 16 inches on center with an 8d ring shank box nail, 0.113 inch shank by 0.260 inch head diameter by 2.375 inch long

7. Ramtech Laboratories, Inc. Report 11436-99/1603 (ASTM E330) Transverse Load Test, 1/4" Thick by 48 inch wide HardieShingle Notched Panels installed on 2X4 Wood Studs SG = 0.40 spaced at 16 inches on center with a 1-1/2 inch long by 0.083 inch shank diameter by 0.187 inch head diameter ring shank nail

TEST RESULTS:

Table 1, Results of Transverse Load Testing

Product	Report Number	Test Agency	Thickness (in.)	Width (in.)	Frame Type	Frame Spacing (in.)	Weather Exposure (in.)	Fastening Method	Fastener Type	Ultimate Load (PSF)	Allowable Design Load[1] (PSF)	Effective Area Tributary (sq.ft.)	Fastener Load (lbs)
HardiePlank	IC-1034-88	Ramtech	0.3125	9.5	2X4 wood Hem-Fir	16	8.25	blind nail through top edge of plank	No. 11 ga. X 1-3/4" long Roofing nail	-146.6	-48.9	0.917	-44.8
HardiePlank	2149-07-10 (C)	Ramtech	0.3125	8.25	2X4 wood DFL	16	7	face nail through plank overlap	8d ring shank box nail, 0.113" shank X 0.260" HD X 2.375" L	-296	-98.7	0.778	-76.7
HardieShingle Notched Panels	11436-99/1603	Ramtech	0.25	48	2X4 wood SG≥0.40	16	7	blind nailed at stud	1.5 in. long X 0.083 in. shank X 0.187 in. HD, ring shank nail	-192	-64.0	0.778	-49.8

1. Allowable Design Load is the Ultimate Load divided by a Factor of safety of 3.
2. HardiePlank Lap Siding complies with ASTM C1186, *Standard Specification for Grade II, Type A Non-asbestos Fiber-Cement Flat Sheets.*
3. HardieShingle Siding complies with ASTM C1186, *Standard Specification for Grade II, Type A Non-asbestos Fiber-Cement Flat Sheets.*

Pull out values for the block nails in Table 2A, reported by Applied Research Laboratories (29278-UD1) and Intertek (3096000 and 3117855-001), all averaged above 725 pounds force with penetration into ASTM C90 block of between 3/4 inch and 1 inch when shot with a special tool. Using a factor of safety of 8, the allowable withdrawal load is 90 pounds (725lbs/8). Therefore, withdrawal is not a concern from concrete masonry units compliant to ASTM C90.

Table 2A, Block Nail Withdrawal Loads

		Report		
		29278-UD1	3096000	3117855-001
Manufacturer	Block Nail	Average ultimate withdrawal load (lbf)		
ET&F Fastening Systems	ET & F No. ASM-144-0125, head dia. = 0.30 in., shank dia. = 0.144 in., length = 1.25 in.	725	963	1113
Max Usa Corp	CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.145 in., length = 1.25 in.	-	893	-
Aerosmith Fastening	5323P, head dia. = 0.30 in., shank dia. = 0.144 in., length, 1.25 in.	-	-	1165

HardieShingle Notched Panels in Table 1, Report 11436-99/1603, achieved an ultimate test pressure of -192 psf, the failure is governed by fastener withdrawal from timber and fastener head pull-through the fiber-cement. The allowable design load is -64psf (-192psf divided by a safety factor of 3). The tested fastener is a 1.5 in. long X 0.083 in. shank X 0.187 in. head diameter, ring shank nail, with a tested fastener load of 49.8 pounds. Since the HardieShingle Notched Panel fastener load of 49.8 pounds per fastener is below the block nail allowable fastener load of 90 pounds per fastener, the block nails in Table 2a can be substituted for the 1.5 in. long X 0.083 in. shank X 0.187 in. head diamter, ring shank nail in Table 1. This can be done since the bearing area for the block nails Table 2C is greater than bearing area for the 1.5 in. long X 0.083 in. shank X 0.187 in. head diamter, ring shank nail Table 2C. Table 7 contains the maximum allowable wind speed for HardieShingle Notched Panels attached to ASTM C90 CMU walls.

For face nailed application, HardiePlank Lap Siding in Table 1, Report C 2149-07-10 (C), achieved an ultimate test pressure of -296 psf, the failure is governed by fastener head pull-through the fiber-cement. The allowable design load is -98.7psf (-296psf divided by a safety factor of 3). The tested fastener is an 8d ring shank box nail, 0.113" shank X 0.260" head diameter X 2.375" long, with a tested fastener load of 76.7 pounds. Since the HardiePlank lap siding fastener load of 76.7 pounds per fastener is below the block nail allowable fastener load of 90 pounds per fastener, the block nails in Table 2a can be substituted for the 8d ring shank box nail, 0.113" shank X 0.260" head diameter X 2.375" long nail in Table 1 / Table 2B. This can be done since the bearing area for the block nails Table 2C is greater than bearing area for the 8d ring shank box nail, 0.113" shank X 0.260" head diameter X 2.375" long nail Table 2C.

For Table 2B the designs loads are calculated by proportioning the tributary area to each fastener, thereby design load to each fastener will be kept constant. By doing so, the allowable design load for various HardiePlank widths and stud spacings are determined. The allowable design loads in Table 2B will be used to determine the maximum allowable wind speed in Table 7 for HardiePlank lap siding attached to ASTM C90 CMUs.

Table 2B, Allowable Design Loads Based on Constant Fastener Load, 8d (2-3/8"L) ring shank box nail, DFL Studs, fasteners exposed (face nail)

Block nails from Table 2A are substituted into Table 2B in order to populate Table 7.
Check for results using 8.25 inch plank values from Report Number 2149-07-10 (C).
Design load = ultimate failure load/FOS = -296psf/3 = -98.7 psf
Effective tributary = ((plank width exposed to weather X stud spacing)/144) = ((8.25-1.25) X 16)/144 = 0.778 sq.ft.
Fastener load = design load X tributary area = -98.7 X 0.778 = -76.74 pounds
Calculated allowable design load = fastener load tested condition divided by area tributary for the condition to be calculated

HardiePlank Width (inches)	Tested Condition, Ultimate (psf)	Stud Spacing (inches)	Effective Area Tributary (sq.ft.)	Allowable Design Load (PSF)	Fastener Load (lbs)
5.25		16	0.4444	-172.67	-76.74
6.25		16	0.5556	-138.13	-76.74
7.25		16	0.6667	-115.11	-76.74
7.5		16	0.6944	-110.51	-76.74
8		16	0.7500	-102.32	-76.74
8.25	**-296**	**16**	**0.7778**	**-98.67**	**-76.74**
9.25		16	0.8889	-86.33	-76.74
9.5		16	0.9167	-83.72	-76.74
12		16	1.1944	-64.25	-76.74

Stud Spacing (inches)	Effective Area Tributary (sq.ft.)	Allowable Design Load (PSF)
24	0.6667	-115.11
24	0.8333	-92.09
24	1.0000	-76.74
24	1.0417	-73.67
24	1.1250	-68.21
24	1.1667	-65.78
24	1.3333	-57.56
24	1.3750	-55.81
24	1.7917	-42.83

For blind nailed application,the block nail bearing area under the fastener head is less than the 11 gauge roofing nail. Therefore in order to use the block nails in Table 2A as a substitute for the 11 gauge roofing nail, the spacing must be adjusted to accomodate the block nail's smaller bearing area.

According to report IC-1034-88, the failure of the concealed fastener system was by fastener head pull through the fiber-cement (HardiePlank). Therefore, the bearing stress on the nail head is analyzed for determining the allowable design load using proportional analysis.

Table 2C, Fastener Head Bearing Area (Head Area - Shank Area)

Fastener	Shank Diameter (inches)	Shank Area (sq. in.)	Head Diameter (inches)	Head Area (sq. in.)	**Bearing Area (sq. in.)**
1.5 in. long X 0.083 in. shank X 0.187 in. HD, ring shank nail	0.083	0.005	0.187	0.027	**0.0221**
8d ring shank box nail, 0.113" shank X 0.260" HD X 2.375" L	0.113	0.010	0.260	0.053	**0.0431**
Block nail, head dia. = 0.30 in., shank dia. = 0.144 in., length = 1.25 in	0.144	0.016	0.300	0.071	**0.0544**
No. 11 ga. X 1-3/4" long Roofing nail	0.120	0.011	0.375	0.110	**0.0991**

From Table 2C the bearing area for the 11 gauge roofing nail is 0.0991 inches and the bearing area for the block nail is 0.0544.
From Table 1, the tested fastener load for the 1.75 inch 11 gauge roofing nail is 44.8 lbs/fastener.
The fastener load for block nail is determined by the proportional anlysis of the two properties below:

	Bearing Area (sq.in)	Fastener Load (lb/fastener)
11 gauge roofing nail	0.0991	44.8
Block nail	0.0544	**24.6**

Thus, the block nail allowable fastener load of 24.6 lb/fastener is used with Equation 10 (below) to populate Table 8.

DESIGN WIND LOAD PROCEDURES:

Fiber-cement siding transverse load capacity (wind load capacity) is determined from transverse load testing in accordance with ASTM E330 or E72 as noted in Section 4.0 of the ICC ES AC90, Acceptance Criteria for Fiber Cement Siding Used as Exterior Wall Siding (approved October 2018). The allowable or design capacity from the testing is based on a factor of safety of 3 applied to the ultimate test load per AC90. The wind load values are determined from the ASCE 7 equations.

Since the allowable design load is based on factor of safety of 3, allowable design loads on fiber-cement siding correlate directly to required design pressures for Allowable Stress Design, and therefore should be used with combination loading equations for Allowable Stress Design (ASD).

By using the combination loading equations for Allowable Stress Design (ASD), the tested allowable design loads for fiber-cement siding are aligned with the wind speed requirements in ASCE 7-22 (Figures 26.5-1A to -1D), or the figures in the 2023 FBC as applicable.

Equation 1, $q_z=0.00256*K_z*K_{zt}*K_d*K_e*V^2$ *{ref. ASCE 7-22 Eq. 26.10-1}*

q_z , velocity pressure at height z
K_z , velocity pressure exposure coefficient evaluated at height z
K_{zt} , topographic factor
K_d , wind directionality factor
K_e , ground elevation factor, permitted to take K_e = 1.0
V , basic wind speed (3-second gust MPH) as determined from:
ASCE 7-22 Figures 26.5-1A, B, C, or D
2023 FBC Figures 1609.3(1) -1609.3(4)

Equation 2,

$V=V_{ult}$

V_{ult} , ultimate design wind speeds (3-second gust MPH) determined from 2023 FBC Figures 1690.3(1) - 1609.3(4)

Equation 3, $p=q_h K_d (GC_p - GC_{pi})$ h <= 60 ft *{ref. ASCE 7-22 Eq. 30.3-1}*

q_h , velocity pressure at mean roof height h *{ref. ASCE 7-22 Section 26.10}*

GC_p , product of external pressure coefficient and gust-effect factor *{ref. ASCE 7-22 Figure 30.3-1 for walls}*

GC_{pi} , product of internal pressure coefficient and gust-effect factor *{ref. ASCE 7-22 Table 26.13-1}*

K_d , wind directionality factor *{ref. ASCE 7-22 Section 26.6}*

p , design pressure (PSF) for siding (allowable design load for siding)

To determine design pressure, substitute q_h into Equation 3,

Equation 4, $p=0.00256*K_z*K_{zt}*K_d*K_e*V^2*(GC_p-GC_{pi})$

Allowable Stress Design, ASCE 7-22 Section 2.4.1, load combination 7,

Equation 5, 0.6D + 0.6W *{ref. ASCE 7-22 section 2.4.1, load combination 7}*

D , dead load

W , wind load (load due to wind pressure)

To determine the Allowable Stress Design Pressure, apply the load factor for W (wind) from Equation 5 to p (design pressure) determined from equation 4

Equation 6, $p_{asd} = 0.6*[p]$

Equation 7, $p_{asd} = 0.6*[0.00256*K_z*K_{zt}*K_d*K_e*V^2(GC_p-GC_{pi})]$

Equation 7 is used to populate Table 4, 5, and 6.

To determine the allowable ultimate basic wind speed for Hardie Siding in Table 7, solve Equation 7 for V_{ult},

Equation 8, $V_{ult} = (p_{asd}/0.6*0.00256*K_z*K_{zt}*K_d*K_e*(GC_p-GC_{pi}))^{0.5}$

Applicable to methods specified in Exceptions 1 through 3 of 2023 FBC Section 1609.1.1., to determine the allowable nominal design wind speed (Vasd) in Table 7, apply the conversion formula below,

Equation 9, $V_{asd} = V_{ult} * (0.6)^{0.5}$ *{ref. 2023 FBC Eq. 16-17}*

$V_{asd} = V * (0.6)^{0.5}$

V_{asd} , Nominal design wind speed (3-second gust mph)

V_{ult} , Ultimate design wind speed (3-second gust, mph) determined from Figure 1609.3(1), 1609.3(2), 1609.3(3) or 1609.3(4)

Table 3, Coefficients and Constants used in Determining V and p,

	K_z							Wall Zone 5		
Height (ft)	Exp B (ASCE 7-22)	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}
0-15	0.57	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
20	0.62	0.70	0.90	1.08		1	0.85	1	-1.4	0.18
25	0.66	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
30	0.70	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
35	0.72	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
40	0.74	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
45	0.765	0.765	1.065	1.245		1	0.85	1	-1.4	0.18
50	0.79	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
55	0.81	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
60	0.83	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
100	0.95	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18

The coefficients and constants listed in Table 2 above were consistent for ASCE 7-22 except for Kz at Exposure B under 30 ft, where ASCE 7-22 allows to use lower exposure coefficient that previous codes used a more conservative values (resulted in higher design pressure). For the simplicity of the tables, the tables in the following sheet was populated using the more conservative ASCE 7-10 coefficients.

Table 4, Allowable Stress Design - Component and Cladding (C&C) Pressures (PSF) to be Resisted at Various Wind Speeds - Wind Exposure Category B,

Wind Speed (3-second gust)	100	105	110	115	120	130	140	150	160	170	180	190	200	210
Height (ft)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
0-15	-14.4	-15.9	-17.5	-19.1	-20.8	-24.4	-28.3	-32.5	-37.0	-41.7	-46.8	-52.1	-57.8	-63.7
20	-14.4	-15.9	-17.5	-19.1	-20.8	-24.4	-28.3	-32.5	-37.0	-41.7	-46.8	-52.1	-57.8	-63.7
25	-14.4	-15.9	-17.5	-19.1	-20.8	-24.4	-28.3	-32.5	-37.0	-41.7	-46.8	-52.1	-57.8	-63.7
30	-14.4	-15.9	-17.5	-19.1	-20.8	-24.4	-28.3	-32.5	-37.0	-41.7	-46.8	-52.1	-57.8	-63.7
35	-14.9	-16.4	-18.0	-19.6	-21.4	-25.1	-29.1	-33.4	-38.0	-42.9	-48.1	-53.6	-59.4	-65.5
40	-15.3	-16.8	-18.5	-20.2	-22.0	-25.8	-29.9	-34.3	-39.1	-44.1	-49.5	-55.1	-61.1	-67.3
45	-15.8	-17.4	-19.1	-20.9	-22.7	-26.7	-30.9	-35.5	-40.4	-45.6	-51.1	-57.0	-63.1	-69.6
50	-16.3	-18.0	-19.7	-21.6	-23.5	-27.5	-31.9	-36.7	-41.7	-47.1	-52.8	-58.8	-65.2	-71.9
55	-16.7	-18.4	-20.2	-22.1	-24.1	-28.2	-32.7	-37.6	-42.8	-48.3	-54.1	-60.3	-66.8	-73.7
60	-17.1	-18.9	-20.7	-22.6	-24.7	-28.9	-33.6	-38.5	-43.8	-49.5	-55.5	-61.8	-68.5	-75.5
100	-24.6	-27.1	-29.7	-32.5	-35.4	-41.5	-48.1	-55.3	-62.9	-71.0	-79.6	-88.7	-98.2	-108.3

Table 5, Allowable Stress Design - Component and Cladding (C&C) Pressures (PSF) to be Resisted at Various Wind Speeds - Wind Exposure Category C,

Wind Speed (3-second gust)	100	105	110	115	120	130	140	150	160	170	180	190	200	210
Height (ft)	C	C	C	C	C	C	C	C	C	C	C	C	C	C
0-15	-17.5	-19.3	-21.2	-23.2	-25.2	-29.6	-34.4	-39.5	-44.9	-50.7	-56.8	-63.3	-70.1	-77.3
20	-18.6	-20.5	-22.5	-24.6	-26.7	-31.4	-36.4	-41.8	-47.5	-53.7	-60.2	-67.0	-74.3	-81.9
25	-19.4	-21.4	-23.5	-25.6	-27.9	-32.8	-38.0	-43.6	-49.6	-56.0	-62.8	-70.0	-77.6	-85.5
30	-20.2	-22.3	-24.5	-26.7	-29.1	-34.2	-39.6	-45.5	-51.8	-58.4	-65.5	-73.0	-80.9	-89.2
35	-20.8	-23.0	-25.2	-27.6	-30.0	-35.2	-40.8	-46.9	-53.3	-60.2	-67.5	-75.2	-83.3	-91.9
40	-21.5	-23.7	-26.0	-28.4	-30.9	-36.3	-42.0	-48.3	-54.9	-62.0	-69.5	-77.4	-85.8	-94.6
45	-22.0	-24.2	-26.6	-29.1	-31.6	-37.1	-43.1	-49.4	-56.2	-63.5	-71.2	-79.3	-87.9	-96.9
50	-22.5	-24.8	-27.2	-29.7	-32.4	-38.0	-44.1	-50.6	-57.6	-65.0	-72.9	-81.2	-89.9	-99.2
55	-22.9	-25.2	-27.7	-30.3	-33.0	-38.7	-44.9	-51.5	-58.6	-66.2	-74.2	-82.7	-91.6	-101.0
60	-23.3	-25.7	-28.2	-30.8	-33.6	-39.4	-45.7	-52.4	-59.7	-67.4	-75.5	-84.1	-93.2	-102.8
100	-32.6	-35.9	-39.4	-43.1	-46.9	-55.0	-63.8	-73.3	-83.4	-94.1	-105.5	-117.6	-130.3	-143.6

Table 6, Allowable Stress Design - Component and Cladding (C&C) Pressures (PSF) to be Resisted at Various Wind Speeds - Wind Exposure Category D,

Wind Speed (3-second gust)	100	105	110	115	120	130	140	150	160	170	180	190	200	210
Height (ft)	D	D	D	D	D	D	D	D	D	D	D	D	D	D
0-15	-21.2	-23.4	-25.7	-28.1	-30.6	-35.9	-41.6	-47.8	-54.4	-61.4	-68.8	-76.7	-85.0	-93.7
20	-22.3	-24.6	-27.0	-29.5	-32.1	-37.7	-43.7	-50.1	-57.0	-64.4	-72.2	-80.4	-89.1	-98.2
25	-23.1	-25.5	-28.0	-30.6	-33.3	-39.0	-45.3	-52.0	-59.1	-66.8	-74.9	-83.4	-92.4	-101.9
30	-23.9	-26.4	-29.0	-31.6	-34.5	-40.4	-46.9	-53.8	-61.3	-69.2	-77.5	-86.4	-95.7	-105.5
35	-24.5	-27.1	-29.7	-32.5	-35.3	-41.5	-48.1	-55.2	-62.8	-70.9	-79.5	-88.6	-98.2	-108.3
40	-25.2	-27.7	-30.5	-33.3	-36.2	-42.5	-49.3	-56.6	-64.4	-72.7	-81.5	-90.9	-100.7	-111.0
45	-25.7	-28.3	-31.1	-34.0	-37.0	-43.4	-50.3	-57.8	-65.7	-74.2	-83.2	-92.7	-102.7	-113.3
50	-26.2	-28.9	-31.7	-34.6	-37.7	-44.3	-51.3	-58.9	-67.1	-75.7	-84.9	-94.6	-104.8	-115.5
55	-26.6	-29.3	-32.2	-35.2	-38.3	-45.0	-52.2	-59.9	-68.1	-76.9	-86.2	-96.1	-106.4	-117.4
60	-27.0	-29.8	-32.7	-35.7	-38.9	-45.7	-53.0	-60.8	-69.2	-78.1	-87.6	-97.6	-108.1	-119.2
100	-37.0	-40.8	-44.7	-48.9	-53.2	-62.5	-72.5	-83.2	-94.6	-106.8	-119.8	-133.4	-147.9	-163.0

Tables 4, 5, and 6 are based off of ASCE 7-22, and are consistent with the 2023 Florida Building Code.

Wind Speed Calculation Example:

The following is an example of the wind speed calculation for Table 6:

P_{asd} = - 172.7 psf; K_z = 0.7 (Exp B); K_{zt} = 1; K_d = 0.85; K_e =1; GC_p = -1.4; GC_{pi} = 0.18

Use Equation 6:

$$V = V_{ult} = \sqrt{\frac{P_{asd}}{0.6 \times 0.00256 \times K_z \times K_{zt} \times K_d \times Ke \times (GC_p - GC_{pi})}} = \sqrt{\frac{-172.7}{0.6 \times 0.00256 \times 0.7 \times 1 \times 0.85 \times 1 \times (-1.4 - 0.18)}} = 346\ mph$$

Use Equation 7:

$V_{asd} = V \times \sqrt{0.6} = 346 \times \sqrt{0.6} = 268\ mph$

TABLE 7 - MAXIMUM WIND SPEEDS (MPH) HARDIEPLANK LAP SIDING[1]

								2023 FBC (Ultimate Design Wind Speed, V_{ult}[4])			2023 FBC (Nominal Design Wind, Speed, V_{asd}[3,6])															
								Applicable to methods specified in Section 1609.1.1. of 2023 FBC			Applicable to methods specified in Exceptions 1 through 3 of Section 1609.1.1 of 2023 FBC				Coefficients used in calculations for V_{ult}[5]										
								Wind exposure category			Wind exposure category			Siding	K_z										
Product	Product Thickness (inches)	Width (inches)	Fastener Type[7]	Fastener Method	Frame Type	Fastener Spacing (inches)	Building Height[2] (feet)	B	C	D	B	C	D	Design Load (PSF)	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}
HardiePlank	5/16	5.25	Block Nail	Face nail	ASTM C90 CMU	16	0-15	346	314	285	268	243	221	-172.7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	346	305	278	268	236	216	-172.7	0.70	0.90	1.08		1	0.85	1	-1.4	0.18
							25	346	298	273	268	231	212	-172.7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	346	292	269	268	226	208	-172.7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	341	288	265	264	223	205	-172.7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	336	284	262	261	220	203	-172.7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	331	280	259	256	217	201	-172.7	0.77	1.07	1.25		1	0.85	1	-1.4	0.18
							50	326	277	257	252	215	199	-172.7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	321	275	255	249	213	197	-172.7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	318	272	253	246	211	196	-172.7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	265	230	216	205	178	167	-172.7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	6.25	Block Nail	Face nail	ASTM C90 CMU	16	0-15	309	281	255	240	217	198	-138.1	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	309	273	249	240	211	193	-138.1	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	309	267	245	240	207	189	-138.1	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	309	261	240	240	202	186	-138.1	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	305	257	237	236	199	184	-138.1	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	301	254	234	233	197	181	-138.1	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	296	251	232	229	194	180	-138.1	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	291	248	230	226	192	178	-138.1	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	288	246	228	223	190	176	-138.1	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	284	243	226	220	189	175	-138.1	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	237	206	193	184	160	150	-138.1	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	7.25	Block Nail	Face nail	ASTM C90 CMU	16	0-15	282	256	233	219	198	180	-115.1	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	282	249	227	219	193	176	-115.1	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	282	244	223	219	189	173	-115.1	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	282	239	219	219	185	170	-115.1	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	278	235	217	216	182	168	-115.1	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	275	232	214	213	179	166	-115.1	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	270	229	212	209	177	164	-115.1	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	266	226	210	206	175	162	-115.1	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	262	224	208	203	174	161	-115.1	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	259	222	206	201	172	160	-115.1	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	217	188	176	168	146	137	-115.1	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	7.5	Block Nail	Face nail	ASTM C90 CMU	16	0-15	277	251	228	214	194	177	-110.5	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	277	244	223	214	189	173	-110.5	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	277	239	219	214	185	169	-110.5	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	277	234	215	214	181	166	-110.5	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	273	230	212	211	178	164	-110.5	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	269	227	210	208	176	162	-110.5	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	265	224	207	205	174	161	-110.5	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	260	222	205	202	172	159	-110.5	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	257	220	204	199	170	158	-110.5	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	254	218	202	197	169	157	-110.5	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	212	184	173	164	143	134	-110.5	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	8	Block Nail	Face nail	ASTM C90 CMU	16	0-15	266	242	219	206	187	170	-102.3	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	266	235	214	206	182	166	-102.3	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	266	230	210	206	178	163	-102.3	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	266	225	207	206	174	160	-102.3	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	262	222	204	203	172	158	-102.3	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	259	218	202	201	169	156	-102.3	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	255	216	200	197	167	155	-102.3	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	251	213	198	194	165	153	-102.3	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	247	211	196	192	164	152	-102.3	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	244	210	195	189	162	151	-102.3	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	204	177	166	158	137	129	-102.3	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	8.25	Block Nail	Face nail	ASTM C90 CMU	16	0-15	261	237	215	202	184	167	-98.7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	261	231	210	202	179	163	-98.7	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	261	226	207	202	175	160	-98.7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	261	221	203	202	171	157	-98.7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	258	218	200	200	169	155	-98.7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	254	214	198	197	166	153	-98.7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	250	212	196	194	164	152	-98.7	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	246	209	194	191	162	150	-98.7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	243	208	193	188	161	149	-98.7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	240	206	191	186	159	148	-98.7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	200	174	163	155	135	127	-98.7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18

TABLE 7 - MAXIMUM WIND SPEEDS (MPH) HARDIEPLANK LAP SIDING[1]

								2023 FBC (Ultimate Design Wind Speed, V_{ult}[4])			2023 FBC (Nominal Design Wind, Speed, V_{asd}[3,6])															
								Applicable to methods specified in Section 1609.1.1. of 2023 FBC			Applicable to methods specified in Exceptions 1 through 3 of Section 1609.1.1 of 2023 FBC				Coefficients used in calculations for V_{ult}[5]									
								Wind exposure category			Wind exposure category			Siding	K_z									
Product	Product Thickness (inches)	Width (inches)	Fastener Type[7]	Fastener Method	Frame Type	Fastener Spacing (inches)	Building Height[2] (feet)	B	C	D	B	C	D	Design Load (PSF)	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}
HardiePlank	5/16	9.25	Block Nail	Face nail	ASTM C90 CMU	16	0-15	245	222	202	189	172	156	-86.3	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	245	216	197	189	167	152	-86.3	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	245	211	193	189	163	150	-86.3	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	245	207	190	189	160	147	-86.3	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	241	204	188	187	158	145	-86.3	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	238	201	185	184	155	143	-86.3	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	234	198	183	181	154	142	-86.3	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	230	196	182	178	152	141	-86.3	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	227	194	180	176	150	140	-86.3	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	225	192	179	174	149	138	-86.3	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	187	163	153	145	126	118	-86.3	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	9.5	Block Nail	Face nail	ASTM C90 CMU	16	0-15	241	219	198	187	169	154	-83.7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	241	212	194	187	164	150	-83.7	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	241	208	190	187	161	147	-83.7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	241	203	187	187	158	145	-83.7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	237	200	185	184	155	143	-83.7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	234	198	182	181	153	141	-83.7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	230	195	181	178	151	140	-83.7	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	227	193	179	176	149	138	-83.7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	224	191	177	173	148	137	-83.7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	221	190	176	171	147	136	-83.7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	185	160	150	143	124	117	-83.7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	12	Block Nail	Face nail	ASTM C90 CMU	16	0-15	211	191	174	163	148	135	-64.2	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	211	186	170	163	144	132	-64.2	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	211	182	167	163	141	129	-64.2	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	211	178	164	163	138	127	-64.2	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	208	176	162	161	136	125	-64.2	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	205	173	160	159	134	124	-64.2	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	202	171	158	156	132	123	-64.2	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	199	169	157	154	131	121	-64.2	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	196	168	155	152	130	120	-64.2	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	194	166	154	150	129	119	-64.2	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	162	140	132	125	109	102	-64.2	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	5.25	Block Nail	Face nail	ASTM C90 CMU	24	0-15	282	256	233	219	198	180	-115.1	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	282	249	227	219	193	176	-115.1	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	282	244	223	219	189	173	-115.1	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	282	239	219	219	185	170	-115.1	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	278	235	217	216	182	168	-115.1	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	275	232	214	213	179	166	-115.1	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	270	229	212	209	177	164	-115.1	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	266	226	210	206	175	162	-115.1	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	262	224	208	203	174	161	-115.1	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	259	222	206	201	172	160	-115.1	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	217	188	176	168	146	137	-115.1	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	6.25	Block Nail	Face nail	ASTM C90 CMU	24	0-15	253	229	208	196	178	161	-92.1	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	253	223	203	196	173	157	-92.1	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	253	218	200	196	169	155	-92.1	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	253	213	196	196	165	152	-92.1	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	249	210	194	193	163	150	-92.1	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	246	207	191	190	160	148	-92.1	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	242	205	189	187	159	147	-92.1	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	238	202	187	184	157	145	-92.1	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	235	201	186	182	155	144	-92.1	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	232	199	185	180	154	143	-92.1	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	194	168	158	150	130	122	-92.1	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18

TABLE 7 - MAXIMUM WIND SPEEDS (MPH) HARDIEPLANK LAP SIDING[1]

								2023 FBC (Ultimate Design Wind Speed, V_{ult}[4])			2023 FBC (Nominal Design Wind, Speed, V_{asd}[3,6])															
								Applicable to methods specified in Section 1609.1.1. of 2023 FBC			Applicable to methods specified in Exceptions 1 through 3 of Section 1609.1.1 of 2023 FBC				Coefficients used in calculations for V_{ult}[5]									
								Wind exposure category			Wind exposure category			Siding	K_z									
Product	Product Thickness (inches)	Width (inches)	Fastener Type[7]	Fastener Method	Frame Type	Fastener Spacing (inches)	Building Height[2] (feet)	B	C	D	B	C	D	Design Load (PSF)	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}
HardiePlank	5/16	7.25	Block Nail	Face nail	ASTM C90 CMU	24	0-15	231	209	190	179	162	147	-76.7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	231	203	186	179	157	144	-76.7	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	231	199	182	179	154	141	-76.7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	231	195	179	179	151	139	-76.7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	227	192	177	176	149	137	-76.7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	224	189	175	174	147	135	-76.7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	221	187	173	171	145	134	-76.7	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	217	185	171	168	143	133	-76.7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	214	183	170	166	142	132	-76.7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	212	181	169	164	141	131	-76.7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	177	153	144	137	119	112	-76.7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	7.5	Block Nail	Face nail	ASTM C90 CMU	24	0-15	226	205	186	175	159	144	-73.7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	226	199	182	175	154	141	-73.7	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	226	195	179	175	151	138	-73.7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	226	191	175	175	148	136	-73.7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	223	188	173	173	146	134	-73.7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	220	185	171	170	144	133	-73.7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	216	183	169	167	142	131	-73.7	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	213	181	168	165	140	130	-73.7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	210	179	166	163	139	129	-73.7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	207	178	165	161	138	128	-73.7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	173	150	141	134	116	109	-73.7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	8	Block Nail	Face nail	ASTM C90 CMU	24	0-15	217	197	179	168	153	139	-68.2	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	217	192	175	168	148	136	-68.2	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	217	188	172	168	145	133	-68.2	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	217	184	169	168	142	131	-68.2	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	214	181	167	166	140	129	-68.2	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	211	178	165	164	138	128	-68.2	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	208	176	163	161	136	126	-68.2	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	205	174	161	158	135	125	-68.2	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	202	173	160	157	134	124	-68.2	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	200	171	159	155	133	123	-68.2	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	167	145	136	129	112	105	-68.2	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	8.25	Block Nail	Face nail	ASTM C90 CMU	24	0-15	213	194	176	165	150	136	-65.8	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	213	188	172	165	146	133	-65.8	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	213	184	169	165	143	131	-65.8	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	213	180	166	165	140	128	-65.8	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	210	178	164	163	138	127	-65.8	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	208	175	162	161	136	125	-65.8	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	204	173	160	158	134	124	-65.8	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	201	171	158	156	132	123	-65.8	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	198	169	157	154	131	122	-65.8	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	196	168	156	152	130	121	-65.8	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	164	142	133	127	110	103	-65.8	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	9.25	Block Nail	Face nail	ASTM C90 CMU	24	0-15	200	181	165	155	140	127	-57.6	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	200	176	161	155	136	125	-57.6	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	200	172	158	155	133	122	-57.6	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	200	169	155	155	131	120	-57.6	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	197	166	153	152	129	119	-57.6	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	194	164	151	150	127	117	-57.6	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	191	162	150	148	125	116	-57.6	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	188	160	148	146	124	115	-57.6	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	186	159	147	144	123	114	-57.6	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	183	157	146	142	122	113	-57.6	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	153	133	125	119	103	97	-57.6	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18

TABLE 7 - MAXIMUM WIND SPEEDS (MPH) HARDIEPLANK LAP SIDING[1]

								2023 FBC (Ultimate Design Wind Speed, V_{ult}[4])			2023 FBC (Nominal Design Wind, Speed, V_{asd}[3,6])																
								Applicable to methods specified in Section 1609.1.1. of 2023 FBC			Applicable to methods specified in Exceptions 1 through 3 of Section 1609.1.1 of 2023 FBC				Coefficients used in calculations for V_{ult}[5]										
								Wind exposure category			Wind exposure category			Siding	K_z										
Product	Product Thickness (inches)	Width (inches)	Fastener Type[7]	Fastener Method	Frame Type	Fastener Spacing (inches)	Building Height[2] (feet)	B	C	D	B	C	D	Design Load (PSF)	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}
HardiePlank	5/16	9.5	Block Nail	Face nail	ASTM C90 CMU	24	0-15	197	178	162	152	138	126	-55.8	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	197	173	158	152	134	123	-55.8	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	197	170	155	152	131	120	-55.8	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	197	166	153	152	129	118	-55.8	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	194	164	151	150	127	117	-55.8	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	191	161	149	148	125	115	-55.8	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	188	159	147	146	123	114	-55.8	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	185	158	146	143	122	113	-55.8	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	183	156	145	142	121	112	-55.8	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	181	155	144	140	120	111	-55.8	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	151	131	123	117	101	95	-55.8	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardiePlank	5/16	12	Block Nail	Face nail	ASTM C90 CMU	24	0-15	172	156	142	133	121	110	-42.8	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	172	152	139	133	118	107	-42.8	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	172	149	136	133	115	105	-42.8	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	172	146	134	133	113	104	-42.8	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	170	143	132	132	111	102	-42.8	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	168	141	130	130	109	101	-42.8	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	165	140	129	128	108	100	-42.8	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	162	138	128	126	107	99	-42.8	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	160	137	127	124	106	98	-42.8	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	158	136	126	123	105	98	-42.8	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	132	115	108	102	89	83	-42.8	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18
HardieShingle Notched Panel[8]	1/4	48	Block Nail	Blind nail	ASTM C90 CMU	16	0-15	211	191	174	163	148	134	-64.0	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18
							20	211	186	169	163	144	131	-64.0	0.70	0.9	1.08		1	0.85	1	-1.4	0.18
							25	211	182	166	163	141	129	-64.0	0.70	0.94	1.12		1	0.85	1	-1.4	0.18
							30	211	178	164	163	138	127	-64.0	0.70	0.98	1.16		1	0.85	1	-1.4	0.18
							35	208	175	161	161	136	125	-64.0	0.72	1.01	1.19		1	0.85	1	-1.4	0.18
							40	205	173	159	159	134	124	-64.0	0.74	1.04	1.22		1	0.85	1	-1.4	0.18
							45	201	171	158	156	132	122	-64.0	0.77	1.065	1.245		1	0.85	1	-1.4	0.18
							50	198	169	156	154	131	121	-64.0	0.79	1.09	1.27		1	0.85	1	-1.4	0.18
							55	196	167	155	152	130	120	-64.0	0.81	1.11	1.29		1	0.85	1	-1.4	0.18
							60	193	166	154	150	128	119	-64.0	0.83	1.13	1.31		1	0.85	1	-1.4	0.18
							100	161	140	132	125	109	102	-64.0	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18

1. Installation must be in accordance with siding manufacturer's instructions.
2. Building height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
3. V_{asd} = nominal design wind speed
4. V_{ult} = ultimate design wind speed
5. Wind speed design coefficient assumptions per Section 30.4 of ASCE 7-22: K_{zt}=1, K_d=0.85, Ke = 1; GC_p=-1.4 (h≤60), GC_p=-1.8 (h>60), GC_{pi}=0.18.
6. 2023 FBC Section 1609.3.1 Eq. 16-17, $V_{asd} = V_{ult}(0.6)^{0.5}$
7. The following are block nails to be used and with the minimum penetration of 3/4 inch into the CMU:
   ET&F Fastening Systems [ET & F No. ASM-144-0125, head dia. = 0.30 in., shank dia. = 0.144 in., length = 1.25 in.],
   Max Usa Corp [CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.145 in., length = 1.25 in.], or
   Aerosmith Fastening [5323P, head dia. = 0.30 in., shank dia. = 0.144 in., length, 1.25 in.]
8. Exposure to the weather for HardieShingle is 7 inches maximum.

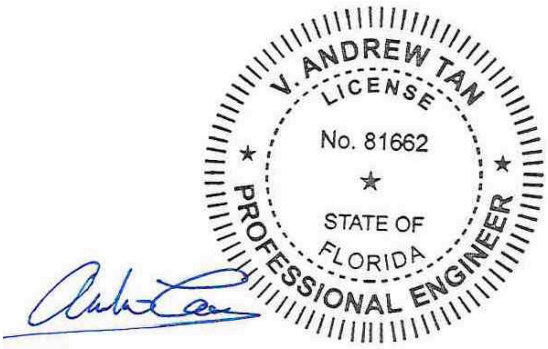


Table 8, Allowable Fastener Spacing (inches) HardiePlank Blind Nailed to ASTM C90 CMU Walls[1]

Block Nail Fastener Load Used in Calculation (lb/fastener)[2]	-24.60

Ultimate Design Wind Speed, Vult[3], (3-second gust mph)	Building Height[4,5] (ft.)	2023 FBC															Coefficients[6]									
		Plank Width in inches installed to ASTM C90 Block Wall (inches)																								
		5.25			6.25			7.25			8.25			9.5												
		Exposure															K_z									
		B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}	V_{ult}
105	0-15	24	24	24	24	24	24	24	24	24	24	24	22	24	22	18	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	105
	20	24	24	24	24	24	24	24	24	24	24	24	21	24	21	17	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	105
	25	24	24	24	24	24	24	24	24	23	24	24	20	24	20	17	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	105
	30	24	24	24	24	24	24	24	24	22	24	23	19	24	19	16	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	105
	35	24	24	24	24	24	24	24	24	22	24	22	19	24	19	16	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	105
	40	24	24	24	24	24	24	24	24	21	24	21	18	24	18	15	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	105
	45	24	24	24	24	24	24	24	24	21	24	21	18	24	18	15	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	105
	50	24	24	24	24	24	24	24	24	20	24	20	18	24	17	15	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	105
	55	24	24	24	24	24	24	24	23	20	24	20	17	23	17	15	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	105
	60	24	24	24	24	24	24	24	23	20	24	20	17	23	17	14	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	105
	100	24	24	22	24	20	17	22	16	14	19	14	12	16	12	11	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	105
110	0-15	24	24	24	24	24	24	24	24	23	24	24	20	24	20	17	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	110
	20	24	24	24	24	24	24	24	24	22	24	23	19	24	19	16	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	110
	25	24	24	24	24	24	24	24	24	21	24	22	18	24	18	15	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	110
	30	24	24	24	24	24	24	24	24	20	24	21	17	24	18	15	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	110
	35	24	24	24	24	24	24	24	23	20	24	20	17	24	17	14	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	110
	40	24	24	24	24	24	23	24	23	19	24	19	17	23	17	14	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	110
	45	24	24	24	24	24	23	24	22	19	24	19	16	22	16	14	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	110
	50	24	24	24	24	24	22	24	22	19	24	19	16	22	16	14	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	110
	55	24	24	24	24	24	22	24	21	18	24	18	16	21	15	13	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	110
	60	24	24	24	24	24	22	24	21	18	24	18	15	21	15	13	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	110
	100	24	22	20	24	18	16	20	15	13	17	13	11	14	11	10	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	110
115	0-15	24	24	24	24	24	24	24	24	21	24	22	18	22	19	15	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	115
	20	24	24	24	24	24	24	24	24	20	24	21	17	22	17	15	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	115
	25	24	24	24	24	24	23	24	23	19	24	20	17	22	17	14	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	115
	30	24	24	24	24	24	22	24	22	19	24	19	16	22	16	14	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	115
	35	24	24	24	24	24	22	24	21	18	24	18	16	22	16	13	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	115
	40	24	24	24	24	24	21	24	21	18	24	18	15	21	15	13	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	115
	45	24	24	24	24	24	21	24	20	17	24	17	15	21	15	13	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	115
	50	24	24	24	24	24	20	24	20	17	23	17	15	20	14	12	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	115
	55	24	24	24	24	23	20	24	19	17	23	17	14	19	14	12	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	115
	60	24	24	24	24	23	20	24	19	17	22	16	14	19	14	12	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	115
	100	24	21	18	22	16	14	18	14	12	16	12	10	13	10	9	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	115
120	0-15	24	24	24	24	24	23	24	23	19	24	20	17	21	17	14	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	120
	20	24	24	24	24	24	22	24	22	18	24	19	16	21	16	13	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	120
	25	24	24	24	24	24	21	24	21	18	24	18	15	21	15	13	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	120
	30	24	24	24	24	24	21	24	20	17	24	17	15	21	15	12	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	120
	35	24	24	24	24	24	20	24	20	17	24	17	14	20	14	12	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	120
	40	24	24	24	24	23	20	24	19	16	23	16	14	20	14	12	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	120
	45	24	24	24	24	22	19	24	19	16	22	16	14	19	14	12	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	120
	50	24	24	23	24	22	19	24	18	16	22	16	13	18	13	11	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	120
	55	24	24	23	24	21	18	24	18	15	21	15	13	18	13	11	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	120
	60	24	24	23	24	21	18	24	18	15	21	15	13	17	13	11	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	120
	100	24	19	17	20	15	13	17	13	11	14	11	10	12	9	8	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	120
130	0-15	24	24	24	24	24	20	24	20	16	21	17	14	18	14	12	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	130
	20	24	24	24	24	23	19	24	19	16	21	16	13	18	14	11	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	130
	25	24	24	23	24	22	18	24	18	15	21	15	13	18	13	11	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	130
	30	24	24	22	24	21	18	24	17	15	21	15	13	18	13	11	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	130
	35	24	24	21	24	20	17	24	17	14	20	14	12	17	12	10	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	130
	40	24	24	21	24	20	17	23	16	14	20	14	12	17	12	10	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	130
	45	24	24	20	24	19	16	22	16	14	19	14	12	16	12	10	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	130
	50	24	23	20	24	19	16	21	16	13	18	13	11	16	11	10	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	130
	55	24	23	20	24	18	16	21	15	13	18	13	11	15	11	10	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	130
	60	24	22	19	24	18	16	20	15	13	17	13	11	15	11	9	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	130
	100	21	16	14	17	13	11	14	11	9	12	9	8	10	8	7	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	130
140	0-15	24	24	21	24	21	17	21	17	14	18	15	12	15	12	10	0.70	0.85	1.03		1	0.85	1	-1.4	0.18	140
	20	24	24	20	24	19	16	21	16	14	18	14	12	15	12	10	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	140
	25	24	23	20	24	19	16	21	16	13	18	13	11	15	11	9	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	140
	30	24	22	19	24	18	15	21	15	13	18	13	11	15	11	9	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	140
	35	24	22	18	24	17	15	20	14	12	17	12	11	15	11	9	0.72	1.01	1.19	h≤60	1	0.85	1	-1.4	0.18	140
	40	24	21	18	24	17	14	20	14	12	17	12	10	14	10	9	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	140
	45	24	21	18	23	16	14	19	14	12	16	12	10	14	10	9	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	140
	50	24	20	17	22	16	14	18	13	11	16	11	10	13	10	8	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	140
	55	24	20	17	22	16	14	18	13	11	15	11	10	13	10	8	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	140
	60	24	19	17	21	16	13	18	13	11	15	11	10	13	9	8	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	140
	100	18	14	12	15	11	10	12	9	8	11	8	7	9	7	6	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	140

Table 8, Allowable Fastener Spacing (inches) HardiePlank Blind Nailed to ASTM C90 CMU Walls[1]

Block Nail Fastener Load Used in Calculation (lb/fastener)[2]	-24.60

Ultimate Design Wind Speed, Vult[3], (3-second gust mph)	Building Height[4,5] (ft.)	2023 FBC															Coefficients[6]									
		Plank Width in inches installed to ASTM C90 Block Wall (inches)																								
		5.25			6.25			7.25			8.25			9.5												
		Exposure															K_z									
		B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}	V_{ult}
150	0-15	24	22	19	22	18	15	18	15	12	16	13	11	13	11	9	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	150
	20	24	21	18	22	17	14	18	14	12	16	12	10	13	10	9	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	150
	25	24	20	17	22	16	14	18	14	11	16	12	10	13	10	8	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	150
	30	24	19	16	22	16	13	18	13	11	16	11	9	13	9	8	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	150
	35	24	19	16	21	15	13	18	13	11	15	11	9	13	9	8	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	150
	40	24	18	16	21	15	13	17	12	10	15	10	9	13	9	8	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	150
	45	24	18	15	20	14	12	17	12	10	14	10	9	12	9	7	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	150
	50	24	18	15	19	14	12	16	12	10	14	10	9	12	8	7	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	150
	55	24	17	15	19	14	12	16	11	10	13	10	8	11	8	7	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	150
	60	23	17	15	18	14	12	15	11	10	13	10	8	11	8	7	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	150
	100	16	12	11	13	10	9	11	8	7	9	7	6	8	6	5	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	150
160	0-15	24	20	16	19	16	13	16	13	11	14	11	9	12	10	8	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	160
	20	24	19	16	19	15	12	16	12	10	14	11	9	12	9	8	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	160
	25	24	18	15	19	14	12	16	12	10	14	10	9	12	9	7	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	160
	30	24	17	14	19	14	12	16	11	10	14	10	8	12	8	7	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	160
	35	23	17	14	19	13	11	16	11	9	13	9	8	11	8	7	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	160
	40	23	16	14	18	13	11	15	11	9	13	9	8	11	8	7	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	160
	45	22	16	13	18	13	11	15	10	9	13	9	8	11	8	7	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	160
	50	21	15	13	17	12	11	14	10	9	12	9	8	10	7	6	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	160
	55	21	15	13	17	12	10	14	10	9	12	9	7	10	7	6	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	160
	60	20	15	13	16	12	10	13	10	9	12	8	7	10	7	6	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	160
	100	14	11	9	11	8	7	9	7	6	8	6	5	7	5	5	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	160
170	0-15	21	17	14	17	14	12	14	12	10	12	10	8	10	8	7	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	170
	20	21	17	14	17	13	11	14	11	9	12	9	8	10	8	7	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	170
	25	21	16	13	17	13	11	14	11	9	12	9	8	10	8	6	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	170
	30	21	15	13	17	12	10	14	10	9	12	9	7	10	7	6	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	170
	35	21	15	12	17	12	10	14	10	8	12	8	7	10	7	6	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	170
	40	20	14	12	16	11	10	13	10	8	11	8	7	10	7	6	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	170
	45	19	14	12	16	11	10	13	9	8	11	8	7	9	7	6	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	170
	50	19	14	12	15	11	9	13	9	8	11	8	7	9	7	6	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	170
	55	18	13	12	15	11	9	12	9	8	10	8	7	9	6	6	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	170
	60	18	13	11	14	11	9	12	9	8	10	8	6	9	6	5	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	170
	100	12	9	8	10	8	7	8	6	6	7	5	5	6	5	4	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	170
180	0-15	19	16	13	15	12	10	13	10	9	11	9	7	9	8	6	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	180
	20	19	15	12	15	12	10	13	10	8	11	8	7	9	7	6	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	180
	25	19	14	12	15	11	9	13	9	8	11	8	7	9	7	6	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	180
	30	19	14	11	15	11	9	13	9	8	11	8	7	9	7	6	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	180
	35	18	13	11	15	10	9	12	9	7	11	7	6	9	6	5	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	180
	40	18	13	11	14	10	9	12	8	7	10	7	6	9	6	5	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	180
	45	17	12	11	14	10	9	12	8	7	10	7	6	8	6	5	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	180
	50	17	12	10	13	10	8	11	8	7	10	7	6	8	6	5	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	180
	55	16	12	10	13	10	8	11	8	7	9	7	6	8	6	5	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	180
	60	16	12	10	13	9	8	11	8	7	9	7	6	8	6	5	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	180
	100	11	8	7	9	7	6	7	6	5	6	5	4	5	4	4	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	180
190	0-15	17	14	12	14	11	9	11	9	8	10	8	7	8	7	6	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	190
	20	17	13	11	14	11	9	11	9	7	10	8	6	8	6	5	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	190
	25	17	13	11	14	10	8	11	8	7	10	7	6	8	6	5	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	190
	30	17	12	10	14	10	8	11	8	7	10	7	6	8	6	5	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	190
	35	17	12	10	13	9	8	11	8	7	9	7	6	8	6	5	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	190
	40	16	11	10	13	9	8	11	8	6	9	7	6	8	6	5	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	190
	45	16	11	10	12	9	8	10	7	6	9	6	5	8	5	5	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	190
	50	15	11	9	12	9	7	10	7	6	9	6	5	7	5	5	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	190
	55	15	11	9	12	9	7	10	7	6	8	6	5	7	5	4	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	190
	60	14	11	9	11	8	7	10	7	6	8	6	5	7	5	4	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	190
	100	10	8	7	8	6	5	7	5	4	6	4	4	5	4	3	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	190
200	0-15	15	13	10	12	10	8	10	8	7	9	7	6	7	6	5	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	200
	20	15	12	10	12	10	8	10	8	7	9	7	6	7	6	5	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	200
	25	15	11	10	12	9	8	10	8	6	9	7	5	7	6	5	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	200
	30	15	11	9	12	9	7	10	7	6	9	6	5	7	5	4	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	200
	35	15	11	9	12	9	7	10	7	6	9	6	5	7	5	4	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	200
	40	15	10	9	12	8	7	10	7	6	8	6	5	7	5	4	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	200
	45	14	10	9	11	8	7	9	7	6	8	6	5	7	5	4	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	200
	50	14	10	8	11	8	7	9	7	6	8	6	5	7	5	4	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	200
	55	13	10	8	11	8	7	9	6	6	8	6	5	6	5	4	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	200
	60	13	9	8	10	8	7	9	6	5	7	5	5	6	5	4	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	200
	100	9	7	6	7	5	5	6	5	4	5	4	3	4	3	3	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	200

Table 8, Allowable Fastener Spacing (inches) HardiePlank Blind Nailed to ASTM C90 CMU Walls[1]

Block Nail Fastener Load Used in Calculation (lb/fastener)[2]	-24.60

Ultimate Design Wind Speed, Vult[3], (3-second gust mph)	Building Height[4,5] (ft.)	2023 FBC																Coefficients[6]								
		Plank Width in inches installed to ASTM C90 Block Wall (inches)																								
		5.25			6.25			7.25			8.25			9.5												
		Exposure																K_z								
		B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	Exp B	Exp C	Exp D		K_{zt}	K_d	K_e	GC_p	GC_{pi}	V_{ult}
210	0-15	14	11	9	11	9	8	9	8	6	8	7	5	7	6	5	0.70	0.85	1.03	h≤60	1	0.85	1	-1.4	0.18	210
	20	14	11	9	11	9	7	9	7	6	8	6	5	7	5	4	0.70	0.9	1.08		1	0.85	1	-1.4	0.18	210
	25	14	10	9	11	8	7	9	7	6	8	6	5	7	5	4	0.70	0.94	1.12		1	0.85	1	-1.4	0.18	210
	30	14	10	8	11	8	7	9	7	6	8	6	5	7	5	4	0.70	0.98	1.16		1	0.85	1	-1.4	0.18	210
	35	14	10	8	11	8	7	9	6	5	8	6	5	7	5	4	0.72	1.01	1.19		1	0.85	1	-1.4	0.18	210
	40	13	9	8	11	7	6	9	6	5	8	5	5	6	5	4	0.74	1.04	1.22		1	0.85	1	-1.4	0.18	210
	45	13	9	8	10	7	6	8	6	5	7	5	4	6	4	4	0.77	1.07	1.25		1	0.85	1	-1.4	0.18	210
	50	12	9	8	10	7	6	8	6	5	7	5	4	6	4	4	0.79	1.09	1.27		1	0.85	1	-1.4	0.18	210
	55	12	9	8	10	7	6	8	6	5	7	5	4	6	4	4	0.81	1.11	1.29		1	0.85	1	-1.4	0.18	210
	60	12	9	7	9	7	6	8	6	5	7	5	4	6	4	4	0.83	1.13	1.31		1	0.85	1	-1.4	0.18	210
	100	8	6	5	7	5	4	5	4	4	5	4	3	4	3	3	0.95	1.26	1.43	h>60	1	0.85	1	-1.8	0.18	210

Notes to Table 8:

1. Installation must be in accordance with siding manufacturer's instructions.
2. The following are block nails to be used and with the minimum penetration of 3/4 inch into the CMU:
   ET&F Fastening Systems [ET & F No. ASM-144-0125, head dia. = 0.30 in., shank dia. = 0.144 in., length = 1.25 in.],
   Max Usa Corp [CP-C 832 W7-ICC, head dia. = 0.30 in., shank dia. = 0.145 in., length = 1.25 in.], or
   Aerosmith Fastening [5323P, head dia. = 0.30 in., shank dia. = 0.144 in., length, 1.25 in.]
3. V_{ult} = ultimate design wind speed
4. Building height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
5. Interpolation to address building height (≤ 60 ft) and other HardiePlank width is permitted.
6. Wind speed design coefficient assumptions per Section 30.4 of ASCE 7-10 and ASCE 7-16: Kzt=1, Kd=0.85, Ke = 1, GCp=-1.4 (h≤60), GCp=-1.8 (h>60), GCpi=0.18.

LIMITATIONS OF USE:

1) In High Velocity Hurricane Zones (HVHZ) install per Miami-Dade County Florida, NOA 17-0406.06

