

ASCE 7 Design Wind Speed Analysis

**Deck and Porch Boards as Cladding
3-1/2" & 7-1/4" Wide Deck Boards
5-1/2" & 3-1/4" Wide Tongue and Groove Porch Boards**

Report L2798.01-122-34

Rendered to:

AZEK BUILDING PRODUCTS
8730 El Camino Real
Atascadero, California 93422

Prepared by:


Daniel C. Culbert, P.E.
Adam R. Kunkel

Architectural Testing, Inc.
130 Derry Court
York, Pennsylvania 17406
(717) 764-7700
Florida COA: 29274

October 29, 2020

Daniel C. Culbert, P.E.
Engineer Team Leader

Adam R. Kunkel

	PROJECT: ASCE 7 Wind Speeds – Deck and Porch Boards as Cladding	BY: ARK DATE: 10/29/2020
	PROJECT NO.: L2798.01-122-34	CKD: DCC SHEET: 2 OF 22

Scope

Architectural Testing, Inc., an Intertek company, was contracted by AZEK Building Products to perform ASCE 7 analyses of their decking products utilized as cladding, and tested in Intertek Reports: J6771.01-119-19 dated 12/16/2019, F6955.01-119-19 dated 12/24/2016, and L4008.01-119-19 dated 10/13/2020. The tested allowable design pressures are used to calculate corresponding wind speeds for ASCE 7-10 and ASCE 7-16.

The reference materials utilized in this project include the following:


ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures. American Society of Civil Engineers, 2010.

ASCE/SEI 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. American Society of Civil Engineers, 2017.

J6771.01-119-19 AZEK Building Products Test Report – ICC-ES AC174 Compliance Evaluation on 3-1/2 in and 7-1/4 in Wide Deck Boards. Intertek, 12/16/2019.

F6955.01-119-19 CPG Building Products Test Report – AZEK Porch Board, Cellular PVC Composite Deck Boards. Intertek, 08/24/2016.

L4008.01-119-19 AZEK Building Products Test Report – Evaluation of Various Deck Boards for Wind Uplift Resistance. Intertek, 10/13/2020.

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Assumptions

Certain assumptions have been made in determining the wind speeds reported herein.

ASCE 7-10 Ultimate Wind Speed Assumptions

- Tested Pressures are Ultimate, Wind Load Factor equal to 1.0.
- Wind Directionality Factor (K_d) equal to 0.85.
- The Building is Considered Enclosed, Internal pressure coefficient (GC_{pi}) equal to +/-0.18.
- External pressure coefficient (GC_p) equal to -1.4.
- The effects of topographic features have not been considered, Topographic Factor (K_{zt}) equal to 1.0.
- Ultimate Test Pressures listed in Intertek Reports are divided by a Safety Factor.
- The wind speed has been limited to 210 mph.
- ASD wind load factor of 0.6 applied per ASCE 7-10.

ASCE 7-16 Ultimate Wind Speed Assumptions

- Tested Pressures are Ultimate, Wind Load Factor equal to 1.0.
- Wind Directionality Factor (K_d) equal to 0.85.
- The Building is Considered Enclosed, Internal pressure coefficient (GC_{pi}) equal to +/-0.18.
- External pressure coefficient (GC_p) equal to -1.4.
- The effects of topographic features have not been considered, Topographic Factor (K_{zt}) equal to 1.0.
- Ultimate Test Pressures listed in Intertek Reports are divided by a Safety Factor.
- Ground Elevation Factor (K_e) equal to 1.0
- The wind speed has been limited to 210 mph.
- ASD wind load factor of 0.6 applied per ASCE 7-16.

Analyses

Assemblies Ultimate Wind Speeds per ASCE 7-10/7-16

The Ultimate Wind Speeds are converted to the respective ASD Design Pressures per ASCE 7-10 and ASCE 7-16 as shown on page 10. The ASD Allowable Design Wind Pressures for the new assemblies are presented in the table below.

Table 1 ASD Design Pressures for Assemblies

Product	Assembly Description	Joist Spacing	Test Design Pressure (psf)	ASD ASCE 7-10/7-16 Design Pressure (psf)
3-1/2" Wide Deck Board	Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	382	226.8
	Two (2) #8 x 1-7/8 in SIDELOC Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	316	187.2
7-1/4" Wide Deck Board	Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	216	127.2
	Two (2) #8 x 1-7/8 in SIDELOC Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	163	95.4
5-1/2" Wide Tongue and Groove Porch Board	Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	294	174.0
	One (1) #10 x 2-1/2 in TOPLOC Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	177	103.8
	One (1) #10 x 2-1/2 in Cortex Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	158	92.4
	One (1) #10 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	144	84.0

Table 1 ASD Design Pressures for Assemblies with Safety Factor (continued)

Product	Assembly Description	Joist Spacing	Ultimate Test Pressure (psf)	ASD ASCE 7-10/7-16 Design Pressure (psf)
3-1/4" Wide Tongue and Groove Porch Board	Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	382	226.8
	One (1) #8 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	294	174.0
	One (1) 16 GA x 2 in Simpson Strong-Tie L Series Flooring Cleat into 2x8 MCA Preservative-Treated SYP Lumber Joists	16"	102	58.8

Calculations for the Ultimate Wind Speeds per ASCE 7-10 and ASCE 7-16 for the new assemblies are presented on page 11 through page 21. The resulting wind speeds are included in Table 2 through Table 5 which can be found on page 6 through page 9.

Table 2 ASCE 7 Wind Speeds for 3-1/2" Wide Deck Board

Assembly Description	Building Height (ft)	ASCE 7-10 or ASCE 7-16 Ultimate Wind Speed (mph)		
		Exp B	Exp C	Exp D
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210
Two (2) #8 x 1-7/8 in SIDELOC Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210

Table 3 ASCE 7 Wind Speeds for 7-1/4" Wide Deck Board

Assembly Description	Building Height (ft)	ASCE 7-10 or ASCE 7-16 Ultimate Wind Speed (mph)		
		Exp B	Exp C	Exp D
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210
Two (2) #8 x 1-7/8 in SIDELOC Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	207
	25	210	210	203
	30	210	210	199
	40	210	210	195
	50	210	206	191
	60	210	202	188

Table 4 ASCE 7 Wind Speeds for 5-1/2" Wide Tongue and Groove Porch Board

Assembly Description	Building Height (ft)	ASCE 7-10 or ASCE 7-16 Ultimate Wind Speed (mph)		
		Exp B	Exp C	Exp D
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210
One (1) #10 x 2-1/2 in TOPLoc Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	208
	40	210	210	203
	50	210	210	199
	60	210	210	196
One (1) #10 x 2-1/2 in Cortex Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	209
	20	210	210	203
	25	210	210	199
	30	210	210	196
	40	210	207	191
	50	210	202	188
	60	210	199	185
One (1) #10 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	199
	20	210	210	194
	25	210	208	190
	30	210	204	187
	40	210	198	183
	50	210	193	179
	60	210	189	176

Table 5 ASCE 7 Wind Speeds for 3-1/4" Wide Tongue and Groove Porch Board

Assembly Description	Building Height (ft)	ASCE 7-10 or ASCE 7-16 Ultimate Wind Speed (mph)		
		Exp B	Exp C	Exp D
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210
One (1) #8 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	210	210	210
	20	210	210	210
	25	210	210	210
	30	210	210	210
	40	210	210	210
	50	210	210	210
	60	210	210	210
One (1) 16 GA x 2 in Simpson Strong-Tie L Series Flooring Cleat into 2x8 MCA Preservative-Treated SYP Lumber Joists	15	202	183	166
	20	202	178	162
	25	202	174	159
	30	202	170	157
	40	194	165	153
	50	188	161	150
	60	183	158	147

ASCE 7-10 or ASCE -16 Design Wind Pressures for Deck/Porch Board Products

ASD Wind Load Factor: 0.6

Maximum Dead Load 4 psf

When tested as decking the dead load is added to the wind uplift resistance, this value is subtracted from the test design pressure values for the purpose of using the product as siding.

Ultimate Pressure	ASD Design Pressure
382.0 psf	226.8 psf
316.0 psf	187.2 psf
216.0 psf	127.2 psf
163.0 psf	95.4 psf
294.0 psf	174.0 psf
177.0 psf	103.8 psf
158.0 psf	92.4 psf
144.0 psf	84.0 psf
382.0 psf	226.8 psf
294.0 psf	174.0 psf
102.0 psf	58.8 psf

3-1/2" Wide Deck Board – Two (2) #10 x 2 in Cortex Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	226.8 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	226.8 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	226.8 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	226.8 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	226.8 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	226.8 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	226.8 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	226.8 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

3-1/2" Wide Deck Board – Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	187.2 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	187.2 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	187.2 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	187.2 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	187.2 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	187.2 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	187.2 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	187.2 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

7-1/4" Wide Deck Board – Two (2) #10 x 2 in Cortex Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	127.2 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	127.2 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	127.2 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	127.2 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	127.2 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	127.2 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	127.2 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	127.2 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

7-1/4" Wide Deck Board – Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	95.4 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #8 x 1-7/8 in SIDEloc Hidden Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	95.4 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	95.4 psf	20'	0.70	210 mph	0.90	210 mph	1.08	207 mph
	95.4 psf	25'	0.70	210 mph	0.95	210 mph	1.13	203 mph
	95.4 psf	30'	0.70	210 mph	0.98	210 mph	1.16	199 mph
	95.4 psf	40'	0.76	210 mph	1.04	210 mph	1.22	195 mph
	95.4 psf	50'	0.81	210 mph	1.09	206 mph	1.27	191 mph
	95.4 psf	60'	0.85	210 mph	1.14	202 mph	1.31	188 mph

5-1/2" Wide Tongue and Groove Porch Board – Two (2) #10 x 2 in Cortex Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	174.0 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	174.0 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	174.0 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	174.0 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	174.0 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	174.0 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	174.0 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	174.0 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

5-1/2" Wide Tongue and Groove Porch Board – One (1) #10 x 2-1/2 in TOPLoc Fastener – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly One (1) #10 x 2-1/2 in TOPLoc Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	103.8 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
One (1) #10 x 2-1/2 in TOPLoc Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	103.8 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	103.8 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	103.8 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	103.8 psf	30'	0.70	210 mph	0.98	210 mph	1.16	208 mph
	103.8 psf	40'	0.76	210 mph	1.04	210 mph	1.22	203 mph
	103.8 psf	50'	0.81	210 mph	1.09	210 mph	1.27	199 mph
	103.8 psf	60'	0.85	210 mph	1.14	210 mph	1.31	196 mph

5-1/2" Wide Tongue and Groove Porch Board – One (1) #10 x 2-1/2 in Cortex Fastener – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly One (1) #10 x 2-1/2 in Cortex Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	92.4 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
One (1) #10 x 2-1/2 in Cortex Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	92.4 psf	15'	0.70	210 mph	0.85	210 mph	1.03	209 mph
	92.4 psf	20'	0.70	210 mph	0.90	210 mph	1.08	203 mph
	92.4 psf	25'	0.70	210 mph	0.95	210 mph	1.13	199 mph
	92.4 psf	30'	0.70	210 mph	0.98	210 mph	1.16	196 mph
	92.4 psf	40'	0.76	210 mph	1.04	207 mph	1.22	191 mph
	92.4 psf	50'	0.81	210 mph	1.09	202 mph	1.27	188 mph
	92.4 psf	60'	0.85	210 mph	1.14	199 mph	1.31	185 mph

5-1/2" Wide Tongue and Groove Porch Board – One (1) #10 x 2-1/2 in HEADCOTE Fastener – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly One (1) #10 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	84.0 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
One (1) #10 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	84.0 psf	15'	0.70	210 mph	0.85	210 mph	1.03	199 mph
	84.0 psf	20'	0.70	210 mph	0.90	210 mph	1.08	194 mph
	84.0 psf	25'	0.70	210 mph	0.95	208 mph	1.13	190 mph
	84.0 psf	30'	0.70	210 mph	0.98	204 mph	1.16	187 mph
	84.0 psf	40'	0.76	210 mph	1.04	198 mph	1.22	183 mph
	84.0 psf	50'	0.81	210 mph	1.09	193 mph	1.27	179 mph
	84.0 psf	60'	0.85	210 mph	1.14	189 mph	1.31	176 mph

3-1/4" Wide Tongue and Groove Porch Board – Two (2) #10 x 2 in Cortex Fasteners – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	226.8 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
Two (2) #10 x 2 in Cortex Fasteners into 2x8 MCA Preservative-Treated SYP Lumber Joists	226.8 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	226.8 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	226.8 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	226.8 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	226.8 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	226.8 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	226.8 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

3-1/4" Wide Tongue and Groove Porch Board – One (1) #8 x 2-1/2 in HEADCOTE Fastener – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly One (1) #8 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	174.0 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
One (1) #8 x 2-1/2 in HEADCOTE Fastener into 2x8 MCA Preservative-Treated SYP Lumber Joists	174.0 psf	15'	0.70	210 mph	0.85	210 mph	1.03	210 mph
	174.0 psf	20'	0.70	210 mph	0.90	210 mph	1.08	210 mph
	174.0 psf	25'	0.70	210 mph	0.95	210 mph	1.13	210 mph
	174.0 psf	30'	0.70	210 mph	0.98	210 mph	1.16	210 mph
	174.0 psf	40'	0.76	210 mph	1.04	210 mph	1.22	210 mph
	174.0 psf	50'	0.81	210 mph	1.09	210 mph	1.27	210 mph
	174.0 psf	60'	0.85	210 mph	1.14	210 mph	1.31	210 mph

3-1/4" Wide Tongue and Groove Porch Board – One (1) 16 GA x 2 in Simpson Strong-Tie L Series Flooring Cleat – ASCE 7-10/7-16 Ultimate Wind Speeds

(Assume $K_e = 1.0$ for ASCE 7-16)

Design Wind Pressures for Components and Cladding

ASCE 7-10 and ASCE 7-16 for Ground Elevation Factor, $K_e = 1.0$

For Buildings ≤ 60 ft tall

Manufacturer AZEK Building Products

Assembly One (1) 16 GA x 2 in Simpson Strong-Tie L Series Flooring Cleat into 2x8 MCA
Preservative-Treated SYP Lumber Joists

Date: 10/28/20

Design Pressure	58.8 psf
Component Area	1.0 ft ²
Tested Pressure Type:	ASD
Wind Load Factor:	0.6
Building Roof Slope (θ):	45.0 degrees
External Pressure Coefficient (GC_p):	-1.40 Based on Zone 5 Corner Pressures
Topographic Factor (K_{zt}):	1.00
Wind Directionality Factor (K_d):	0.85
Enclosure Classification:	Enclosed
Internal Pressure Coefficient (GC_{pi}):	0.18

Assembly	Design Pressure	Building Roof Height (z):	Exposure B		Exposure C		Exposure D	
			Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed	Exposure Coeff (K_r):	Wind Speed
One (1) 16 GA x 2 in Simpson Strong-Tie L Series Flooring Cleat into 2x8 MCA Preservative-Treated SYP Lumber Joists	58.8 psf	15'	0.70	202 mph	0.85	183 mph	1.03	166 mph
	58.8 psf	20'	0.70	202 mph	0.90	178 mph	1.08	162 mph
	58.8 psf	25'	0.70	202 mph	0.95	174 mph	1.13	159 mph
	58.8 psf	30'	0.70	202 mph	0.98	170 mph	1.16	157 mph
	58.8 psf	40'	0.76	194 mph	1.04	165 mph	1.22	153 mph
	58.8 psf	50'	0.81	188 mph	1.09	161 mph	1.27	150 mph
	58.8 psf	60'	0.85	183 mph	1.14	158 mph	1.31	147 mph



PROJECT: ASCE 7 Wind Speeds – Deck and Porch Boards as Cladding

BY: ARK **DATE:** 10/29/2020

PROJECT NO.: L2798.01-122-34

CKD: DCC **SHEET:** 22 OF 22

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	10/29/20	N/A	Original report issue