

Design Wind Pressures (PSF) – Tables for Exterior Soffits

Metal Panel Wind Loads

Responsibility:

These tables are merely a guide, it is the responsibility of the architect or engineer of record to determine the design wind pressure and applicability for each project.

Component and Cladding Wind Loads for Soffits:

Journal of Structural Engineering, Volume 134, Issue 5, pp. 846-853 (May 2008)

Soffit pressures are nearly fully correlated with nearby wall pressures, and a simple and accurate solution...is to prescribe that the component and cladding pressures for use in the design of soffits be identical to the component and cladding loads used for the design of wall components.

Winds Loads:

Florida Building Code 2007

All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1.

Notes:

Florida Building Code 2007

a: 10% of least horizontal dimension or 40% of the mean roof height, whichever is smaller, but no less than either 4% of least horizontal dimension of 3 feet.

h: Mean roof height which is the average of the roof eave height and the height to the highest point on the roof surface, except that, for roof angles of less than or equal to 10 degrees, the mean roof height shall be the roof eave height.

θ: Angle of plane of roof from horizontal, in degrees.

Exposure Categories:

Florida Building Code 2007

B: Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

C: Open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country, grasslands and all water surfaces in hurricane prone regions.

D: Flat, unobstructed areas and water surfaces outside hurricane prone regions. This category includes smooth mud flats, salt flats and unbroken ice.

IMPORTANCE FACTORS:

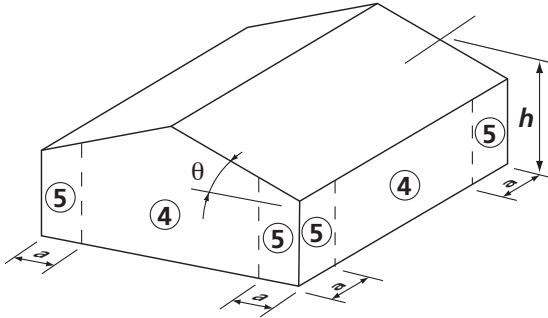
Occupancy Category	Non-Hurricane Prone Regions and Hurricane Prone Regions with V = 85 - 100 mph and Alaska	Hurricane Prone Regions with V > 100 mph
I	0.87	0.77
II	1.00	1.00
III	1.15	1.15
IV	1.15	1.15

Note: See ASCE 7-05, Table 1-1 for building occupancy categories.

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Component and Cladding Wall Zones:



DESIGN WIND PRESSURE, p (psf)
IBC 2009 / FBC 2007 / ASCE 7-05

Exposure Category: B		Importance Factor: 1.00															
Height (ft)	Zone	Wind Speed (mph)															
		85	90	100	110	120	130	140	150	85	90	100	110	120	130	140	150
15	4	13.0	-14.1	14.6	-15.8	18.0	-19.5	21.8	-23.6	25.9	-28.1	30.4	-33.0	35.3	-38.2	40.5	-43.9
	5	13.0	-17.4	14.6	-19.5	18.0	-24.1	21.8	-29.1	25.9	-34.7	30.4	-40.7	35.3	-47.2	40.5	-54.2
20	4	13.0	-14.1	14.6	-15.8	18.0	-19.5	21.8	-23.6	25.9	-28.1	30.4	-33.0	35.3	-38.2	40.5	-43.9
	5	13.0	-17.4	14.6	-19.5	18.0	-24.1	21.8	-29.1	25.9	-34.7	30.4	-40.7	35.3	-47.2	40.5	-54.2
25	4	13.0	-14.1	14.6	-15.8	18.0	-19.5	21.8	-23.6	25.9	-28.1	30.4	-33.0	35.3	-38.2	40.5	-43.9
	5	13.0	-17.4	14.6	-19.5	18.0	-24.1	21.8	-29.1	25.9	-34.7	30.4	-40.7	35.3	-47.2	40.5	-54.2
30	4	13.0	-14.1	14.6	-15.8	18.0	-19.5	21.8	-23.6	25.9	-28.1	30.4	-33.0	35.3	-38.2	40.5	-43.9
	5	13.0	-17.4	14.6	-19.5	18.0	-24.1	21.8	-29.1	25.9	-34.7	30.4	-40.7	35.3	-47.2	40.5	-56.6
35	4	13.6	-14.7	15.2	-16.5	18.8	-20.4	22.7	-24.7	27.1	-29.4	31.8	-34.5	36.8	-40.0	42.3	-45.9
	5	13.6	-18.2	15.2	-20.4	18.8	-25.2	22.7	-30.5	27.1	-36.2	31.8	-42.5	36.8	-49.3	42.3	-54.2
40	4	14.1	-15.3	15.8	-17.2	19.5	-21.2	23.6	-25.6	28.1	-30.5	33.0	-35.8	38.3	-41.5	43.9	-47.7
	5	14.1	-18.9	15.8	-21.2	19.5	-26.2	23.6	-31.6	28.1	-37.7	33.0	-44.2	38.3	-51.3	43.9	-58.8
45	4	14.6	-15.8	16.4	-17.7	20.2	-21.9	24.4	-26.5	29.1	-31.6	34.1	-37.0	39.6	-42.9	45.4	-49.3
	5	14.6	-19.5	16.4	-21.9	20.2	-27.0	24.4	-32.7	29.1	-38.9	34.1	-45.7	39.6	-53.0	45.4	-60.9
50	4	15.0	-16.3	16.9	-18.3	20.8	-22.6	25.2	-27.3	30.0	-32.5	35.2	-38.2	40.8	-44.3	46.8	-50.8
	5	15.0	-20.1	16.9	-22.6	20.8	-27.9	25.2	-33.7	30.0	-40.1	35.2	-47.1	40.8	-54.6	46.8	-62.7
55	4	15.5	-16.8	17.3	-18.8	21.4	-23.2	25.9	-28.1	30.8	-33.4	36.1	-39.2	41.9	-45.5	48.1	-52.2
	5	15.5	-20.7	17.3	-23.2	21.4	-28.6	25.9	-34.7	30.8	-41.2	36.1	-48.4	41.9	-56.1	48.1	-64.4
60	4	15.8	-17.2	17.8	-19.3	21.9	-23.8	26.5	-28.8	31.6	-34.3	37.1	-40.2	43.0	-46.6	49.3	-53.5
	5	15.8	-21.2	17.8	-23.8	21.9	-29.4	26.5	-35.5	31.6	-42.3	37.1	-49.6	43.0	-57.5	49.3	-66.1

Notes:

1. Positive pressure values act toward the soffit plenum, negative pressure values act away from the soffit plenum.
2. Directionality Factor; $K_d = 0.85$; Topographic Factor, $K_{zt} = 1.00$
3. Building is assumed to be fully enclosed; $G_{cpi} = \pm 0.18$

Design Wind Pressures (PSF) – Tables for Exterior Soffits

Metal Panel Wind Loads

DESIGN WIND PRESSURE, p (psf)
IBC 2009 / FBC 2007 / ASCE 7-05

Height (ft)	Zone	Exposure Category: B								Importance Factor: 1.15							
		Wind Speed (mph)															
		85	90	100	110	120	130	140	150	85	90	100	110	120	130	140	150
15	4	14.9	-16.2	16.8	-18.2	20.7	-22.4	25.0	-27.2	29.8	-32.3	35.0	-37.9	40.5	-44.0	46.5	-50.5
	5	14.9	-20.0	16.8	-22.4	20.7	-27.7	25.0	-33.5	29.8	-39.9	35.0	-46.8	40.5	-54.3	46.5	-62.3
20	4	14.9	-16.2	16.8	-18.2	20.7	-22.4	25.0	-27.2	29.8	-32.3	35.0	-37.9	40.5	-44.0	46.5	-50.5
	5	14.9	-20.0	16.8	-22.4	20.7	-27.7	25.0	-33.5	29.8	-39.9	35.0	-46.8	40.5	-54.3	46.5	-62.3
25	4	14.9	-16.2	16.8	-18.2	20.7	-22.4	25.0	-27.2	29.8	-32.3	35.0	-37.9	40.5	-44.0	46.5	-50.5
	5	14.9	-20.0	16.8	-22.4	20.7	-27.7	25.0	-33.5	29.8	-39.9	35.0	-46.8	40.5	-54.3	46.5	-62.3
30	4	14.9	-16.2	16.8	-18.2	20.7	-22.4	25.0	-27.2	29.8	-32.3	35.0	-37.9	40.5	-44.0	46.5	-50.5
	5	14.9	-20.0	16.8	-22.4	20.7	-27.7	25.0	-33.5	29.8	-39.9	35.0	-46.8	40.5	-54.3	46.5	-62.3
35	4	15.6	-16.9	17.5	-19.0	21.6	-23.5	26.2	-28.4	31.1	-33.8	36.5	-39.6	42.4	-46.0	48.6	-52.8
	5	15.6	-20.9	17.5	-23.4	21.6	-28.9	26.2	-35.0	31.1	-41.7	36.5	-48.9	42.4	-56.7	48.6	-65.1
40	4	16.2	-17.6	18.2	-19.7	22.5	-24.4	27.2	-29.5	32.3	-35.1	38.0	-41.2	44.0	-47.8	50.5	-54.8
	5	16.2	-21.7	18.2	-24.4	22.5	-30.1	27.2	-36.4	32.3	-43.3	38.0	-50.8	44.0	-58.9	50.5	-67.7
45	4	16.8	-18.2	18.8	-20.4	23.2	-25.2	28.1	-30.5	33.4	-36.3	39.3	-42.6	45.5	-49.4	52.3	-56.7
	5	16.8	-22.5	18.8	-25.2	23.2	-31.1	28.1	-37.6	33.4	-44.8	39.3	-52.6	45.5	-61.0	52.3	-70.0
50	4	17.3	-18.8	19.4	-21.0	23.9	-26.0	29.0	-31.4	34.5	-37.4	40.5	-43.9	46.9	-50.9	53.9	-58.4
	5	17.3	-23.2	19.4	-26.0	23.9	-32.1	29.0	-38.8	34.5	-46.2	40.5	-54.2	46.9	-62.8	53.9	-72.1
55	4	17.8	-19.3	19.9	-21.6	24.6	-26.7	29.8	-32.3	35.4	-38.4	41.6	-45.1	48.2	-52.3	55.3	-60.0
	5	17.8	-23.8	19.9	-26.7	24.6	-32.9	29.8	-39.9	35.4	-47.4	41.6	-55.7	48.2	-64.6	55.3	-74.1
60	4	18.2	-19.8	20.4	-22.2	25.2	-27.4	30.5	-33.1	36.3	-39.4	42.6	-46.2	49.4	-53.6	56.7	-61.5
	5	18.2	-24.4	20.4	-27.4	25.2	-33.8	30.5	-40.9	36.3	-48.6	42.6	-57.1	49.4	-66.2	56.7	-76.0

Notes:

1. Positive pressure values act toward the soffit plenum, negative pressure values act away from the soffit plenum.
2. Directionality Factor; Kd = 0.85; Topographic Factor, Kzt = 1.00
3. Building is assumed to be fully enclosed; Gcpi = ± 0.18

Design Wind Pressures (PSF) – Tables for Exterior Soffits

Metal Panel Wind Loads

DESIGN WIND PRESSURE, p (psf) IBC 2009 / FBC 2007 / ASCE 7-05

Height (ft)	Zone	Exposure Category: C								Importance Factor: 1.00																							
		Wind Speed (mph)																															
		85	90	100	110	120	130	140	150	85	90	100	110	120	130	140	150																
15	4	15.7	-17.1	17.7	-19.2	21.8	-23.6	26.4	-28.6	31.4	-34.0	36.8	-40.0	42.7	-46.3	49.0	-53.2	15.7	-21.1	17.7	-23.6	21.8	-29.2	26.4	-35.3	31.4	-42.0	36.8	-49.3	42.7	-57.2	49.0	-65.7
	5	16.7	-18.1	18.8	-20.3	23.2	-25.1	28.0	-30.4	33.3	-36.2	39.1	-42.5	45.4	-49.2	52.1	-56.5	16.7	-22.4	18.8	-25.1	23.2	-31.0	28.0	-37.5	33.3	-44.7	39.1	-52.4	45.4	-60.8	52.1	-69.8
20	4	17.5	-19.0	19.7	-21.3	24.3	-26.3	29.4	-31.9	35.0	-37.9	41.0	-44.5	47.6	-51.6	54.6	-59.2	17.5	-23.5	19.7	-26.3	24.3	-32.5	29.4	-39.3	35.0	-46.8	41.0	-54.9	47.6	-63.7	54.6	-73.1
	5	18.2	-19.8	20.4	-22.2	25.2	-27.4	30.5	-33.1	36.3	-39.4	42.6	-46.2	49.4	-53.6	56.7	-61.6	18.2	-24.4	20.4	-27.4	25.2	-33.8	30.5	-40.9	36.3	-48.6	42.6	-57.1	49.4	-66.2	56.7	-76.0
25	4	18.8	-20.4	21.1	-22.9	26.1	-28.3	31.5	-34.2	37.5	-40.7	44.0	-47.8	51.1	-55.4	58.6	-63.6	18.8	-25.2	21.1	-28.3	26.1	-34.9	31.5	-42.2	37.5	-50.2	44.0	-59.0	51.1	-68.4	58.6	-78.5
	5	19.4	-21.0	21.7	-23.5	26.8	-29.1	32.4	-35.2	38.6	-41.9	45.3	-49.1	52.5	-57.0	60.3	-65.4	19.4	-25.9	21.7	-29.1	26.8	-35.9	32.4	-43.4	38.6	-51.7	45.3	-60.6	52.5	-70.3	60.3	-80.7
30	4	19.8	-21.5	22.2	-24.1	27.5	-29.8	33.2	-36.1	39.6	-42.9	46.4	-50.4	53.8	-58.4	61.8	-67.0	19.8	-26.6	22.2	-29.8	27.5	-36.8	33.2	-44.5	39.6	-53.0	46.4	-62.2	53.8	-72.1	61.8	-82.8
	5	20.3	-22.0	22.7	-24.7	28.1	-30.5	34.0	-36.9	40.4	-43.9	47.5	-51.5	55.0	-59.7	63.2	-68.5	20.3	-27.2	22.7	-30.5	28.1	-37.6	34.0	-45.5	40.4	-54.2	47.5	-63.6	55.0	-73.7	63.2	-84.6
35	4	20.7	-22.5	23.2	-25.2	28.7	-31.1	34.7	-37.6	41.3	-44.8	48.4	-52.5	56.2	-60.9	64.5	-69.9	20.7	-27.7	23.2	-31.1	28.7	-38.4	34.7	-46.4	41.3	-55.2	48.4	-64.8	56.2	-75.2	64.5	-86.3
	5	21.1	-22.9	23.6	-25.6	29.2	-31.7	35.3	-38.3	42.0	-45.6	49.3	-53.5	57.2	-62.0	65.7	-71.2	21.1	-28.2	23.6	-31.7	29.2	-39.1	35.3	-47.3	42.0	-56.3	49.3	-66.0	57.2	-76.6	65.7	-87.9
40	4	21.1	-22.9	23.6	-25.6	29.2	-31.7	35.3	-38.3	42.0	-45.6	49.3	-53.5	57.2	-62.0	65.7	-71.2	21.1	-28.2	23.6	-31.7	29.2	-39.1	35.3	-47.3	42.0	-56.3	49.3	-66.0	57.2	-76.6	65.7	-87.9
	5	21.1	-28.2	23.6	-31.7	29.2	-39.1	35.3	-47.3	42.0	-56.3	49.3	-66.0	57.2	-76.6	65.7	-87.9																

Notes:

1. Positive pressure values act toward the soffit plenum, negative pressure values act away from the soffit plenum.
2. Directionality Factor; Kd = 0.85; Topographic Factor, Kzt = 1.00
3. Building is assumed to be fully enclosed; Gcpi = ± 0.18

Design Wind Pressures (PSF) – Tables for Exterior Soffits

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DESIGN WIND PRESSURE, p (psf)
IBC 2009 / FBC 2007 / ASCE 7-05

Height (ft)	Zone	Exposure Category: C								Importance Factor: 1.15																							
		Wind Speed (mph)																															
		85	90	100	110	120	130	140	150	85	90	100	110	120	130	140	150																
15	4	18.1	-19.6	20.3	-22.0	25.1	-27.2	30.3	-32.9	36.1	-39.2	42.4	-46.0	49.1	-53.3	56.4	-61.2	18.1	-24.2	20.3	-27.2	25.1	-33.6	30.3	-40.6	36.1	-48.3	42.4	-56.7	49.1	-65.8	56.4	-75.5
	5	19.2	-20.9	21.6	-23.4	26.6	-28.9	32.2	-35.0	38.3	-41.6	45.0	-48.8	52.2	-56.6	59.9	-65.0	19.2	-25.8	21.6	-28.9	26.6	-35.7	32.2	-43.1	38.3	-51.3	45.0	-60.3	52.2	-69.9	59.9	-80.2
20	4	20.2	-21.9	22.6	-24.5	27.9	-30.3	33.8	-36.6	40.2	-43.6	47.2	-51.2	54.7	-59.3	62.8	-68.1	20.2	-27.0	22.6	-30.3	27.9	-37.4	33.8	-45.2	40.2	-53.8	47.2	-63.2	54.7	-73.3	62.8	-84.1
	5	21.0	-22.7	23.5	-25.5	29.0	-31.5	35.1	-38.1	41.8	-45.3	49.0	-53.2	56.8	-61.7	65.3	-70.8	21.0	-28.1	23.5	-31.5	29.0	-38.8	35.1	-47.0	41.8	-55.9	49.0	-65.6	56.8	-76.1	65.3	-87.4
25	4	21.6	-23.5	24.3	-26.3	30.0	-32.5	36.3	-39.3	43.1	-46.8	50.6	-54.9	58.7	-63.7	67.4	-73.1	21.6	-29.0	24.3	-32.5	30.0	-40.1	36.3	-48.5	43.1	-57.8	50.6	-67.8	58.7	-78.6	67.4	-90.3
	5	22.3	-24.2	25.0	-27.1	30.8	-33.4	37.3	-40.4	44.4	-48.1	52.1	-56.5	60.4	-65.5	69.3	-75.2	22.3	-29.8	25.0	-33.4	30.8	-41.3	37.3	-49.9	44.4	-59.4	52.1	-69.7	60.4	-80.9	69.3	-92.8
30	4	22.8	-24.8	25.6	-27.8	31.6	-34.3	38.2	-41.5	45.5	-49.3	53.4	-57.9	61.9	-67.2	71.1	-77.1	22.8	-30.6	25.6	-34.3	31.6	-42.3	38.2	-51.2	45.5	-60.9	53.4	-71.5	61.9	-82.9	71.1	-95.2
	5	23.3	-25.3	26.2	-28.4	32.3	-35.0	39.1	-42.4	46.5	-50.4	54.6	-59.2	63.3	-68.7	72.7	-78.8	23.3	-31.2	26.2	-35.0	32.3	-43.2	39.1	-52.3	46.5	-62.3	54.6	-73.1	63.3	-84.8	72.7	-97.3
35	4	23.8	-25.8	26.7	-29.0	33.0	-35.7	39.9	-43.3	47.5	-51.5	55.7	-60.4	64.6	-70.1	74.1	-80.4	23.8	-31.9	26.7	-35.7	33.0	-44.1	39.9	-53.4	47.5	-63.5	55.7	-74.6	64.6	-86.5	74.1	-99.3
	5	24.2	-26.3	27.2	-29.5	33.6	-36.4	40.6	-44.1	48.3	-52.4	56.7	-61.5	65.8	-71.4	75.5	-81.9	24.2	-32.5	27.2	-36.4	33.6	-44.9	40.6	-54.4	48.3	-64.7	56.7	-75.9	65.8	-88.1	75.5	-101.1
40	4	24.2	-26.3	27.2	-29.5	33.6	-36.4	40.6	-44.1	48.3	-52.4	56.7	-61.5	65.8	-71.4	75.5	-81.9	24.2	-32.5	27.2	-36.4	33.6	-44.9	40.6	-54.4	48.3	-64.7	56.7	-75.9	65.8	-88.1	75.5	-101.1
	5	24.2	-26.3	27.2	-29.5	33.6	-36.4	40.6	-44.1	48.3	-52.4	56.7	-61.5	65.8	-71.4	75.5	-81.9	24.2	-32.5	27.2	-36.4	33.6	-44.9	40.6	-54.4	48.3	-64.7	56.7	-75.9	65.8	-88.1	75.5	-101.1

Notes:

1. Positive pressure values act toward the soffit plenum, negative pressure values act away from the soffit plenum.
2. Directionality Factor; Kd = 0.85; Topographic Factor, Kzt = 1.00
3. Building is assumed to be fully enclosed; Gcpi = ± 0.18