



# BROWARD COUNTY BOARD OF RULES AND APPEALS

## **FBC 5<sup>th</sup> Edition (2014)**

### **FORMAL INTERPRETATION (#13)**

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**DATE:** October 8, 2015  
**TO:** All Building Officials  
**FROM:** James DiPietro,  
Administrative Director

**SUBJECT:** Mechanical Equipment Wind Load Voluntary Design Pressure Chart

#### **2015 Voting Members**

Mr. Ron Burr  
Chair  
Mr. Jeffrey Lucas, Deputy Fire Chief  
Vice-Chair  
Fire Service Professional  
Mr. Gregg D'Attilio  
Mechanical Contractor  
Mr. John Famularo  
Roofing Contractor  
Mrs. Shalanda Giles Nelson  
General Contractor  
Mr. Gary Elzweig, P.E.  
Structural Engineer  
Vacant  
Master Plumber  
Mr. Allan Kozich, P.E.  
Electrical Engineer  
Vacant  
Consumer Advocate  
Mr. Kenneth B. Wynn  
Representative Disabled Community  
Mr. John Sims  
Master Electrician  
Vacant  
Mechanical Engineer  
Mr. Abbas H. Zackria, CSI  
Architect

#### **2015 Alternate Board Members**

Mr. Steven Feller, P.E.  
Mechanical Engineer  
Mr. Alberto Fernandez  
General Contractor  
Mr. Daniel Lavrich, P.E.  
Structural Engineer  
Assistant Chief Jeff Moral, CFO  
Fire Service  
Mr. David Rice, P.E.  
Electrical Engineer  
Vacant  
Master Plumber  
Mr. David Tringo  
Master Electrician  
Mr. William Flett  
Roofing Contractor  
Vacant  
Architect

**Board Attorney**  
Charles M. Kramer, Esq.

**Board Administrative Director**  
James DiPietro

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At its meeting of October 8, 2015, the Board approved an interpretation of the 5<sup>th</sup> Edition FBC Existing Building, 503.1 Alteration Level 1, FMC 301.15, and FBC Ch. 16.

#### **Formal Interpretation:**

To obtain the required design pressure for any mechanical equipment, at a specific site, an individual must use one of the following options and submit documentation as indicated.

- a) A site-specific plan (signed and sealed) by a Florida Professional Engineer indicating the location of mechanical equipment and the required design pressures.
- b) A site-specific plan (not sealed) or written description, indicating the location of mechanical equipment accompanied by a worst case design pressure chart (signed and sealed) prepared by a Florida P.E.
- c) A site-specific plan (not sealed) or written description, indicating the location of mechanical equipment and indicating the required design pressures based on the Broward County Mechanical Equipment Wind Load Voluntary Design Pressure Chart. (See attached chart).

All permit applications must be accompanied by evidence acceptable to the AHJ that the mechanical equipment and its installation complies with FMC 301.15 and the design pressures as determined by one of the above methods.

Mechanical equipment located at a height more than 100 feet shall comply with FMC 301.15, have a site-specific design (signed and sealed) by a Florida Professional Engineer, indicating the location of mechanical equipment, the required design pressures and the installation method.

**EFFECTIVE DATE:** October 9, 2015

**\*\*\*\*PLEASE POST AT YOUR PERMIT COUNTER\*\*\*\***

## Broward County - Wind Load Design Pressures For Mechanical Equipment (HVHZ only)\*

\* Using Allowable Stress Design methodology (P = 0.6w)

### Per ASCE 7-10 Chapter 29, Design Loads for Other Structures, and Florida Building Code Fifth Edition (2014)

Wind 170 mph (3-second gust) / Exposure C-D\*\* / Kzt = 1.0  
 K<sub>d</sub> = 0.90 for square shaped units / K<sub>d</sub> = 0.95 for round, hexagonal & octagonal shaped units  
 \*\* Exposure shall be determined according to ASCE 7-10 Section 26.7.3 (Exposure Categories)

#### GROUND-MOUNTED APPLICATIONS

##### Exposure 'C' (Non-Coastal)

Mounting Height	Unit Size		Wind Load Design Pressures		
	Width/Diameter	Height	Square	Hexagonal, Octagonal	Round
GROUND	24 – 60 IN	24 – 60 IN	39 PSF	32 PSF	16 PSF

##### Exposure 'D' (Coastal)

Mounting Height	Unit Size		Wind Load Design Pressures		
	Width/Diameter	Height	Square	Hexagonal, Octagonal	Round
GROUND	24 – 60 IN	24 – 60 IN	47 PSF	39 PSF	20 PSF

#### ROOFTOP-MOUNTED APPLICATIONS

##### Exposure 'C' (Non-Coastal)

Mounting Height Above Grade	Unit Size		Wind Load Design Pressures		
	Width/Diameter	Height		Square	Round, Hex/Octagonal
15 FT	< 60 IN	< 60 IN	LATERAL	112 PSF	118 PSF
			UPLIFT	55 PSF	58 PSF
20 FT	< 60 IN	< 60 IN	LATERAL	118 PSF	124 PSF
			UPLIFT	57 PSF	60 PSF
30 FT	< 60 IN	< 60 IN	LATERAL	126 PSF	133 PSF
			UPLIFT	61 PSF	65 PSF
40 FT	< 60 IN	< 60 IN	LATERAL	133 PSF	140 PSF
			UPLIFT	65 PSF	68 PSF
50 FT	< 60 IN	< 60 IN	LATERAL	139 PSF	146 PSF
			UPLIFT	67 PSF	71 PSF
60 FT	< 60 IN	< 60 IN	LATERAL	144 PSF	152 PSF
			UPLIFT	70 PSF	74 PSF
70 FT	< 60 IN	< 60 IN	LATERAL	148 PSF	156 PSF
			UPLIFT	72 PSF	76 PSF
80 FT	< 60 IN	< 60 IN	LATERAL	152 PSF	160 PSF
			UPLIFT	74 PSF	78 PSF
90 FT	< 60 IN	< 60 IN	LATERAL	156 PSF	164 PSF
			UPLIFT	76 PSF	80 PSF
100 FT	< 60 IN	< 60 IN	LATERAL	159 PSF	168 PSF
			UPLIFT	77 PSF	81 PSF

##### Exposure 'D' (Coastal)

Mounting Height Above Grade	Unit Size		Wind Load Design Pressures		
	Width/Diameter	Height		Square	Round, Hex/Octagonal
15 FT	< 60 IN	< 60 IN	LATERAL	135 PSF	142 PSF
			UPLIFT	65 PSF	69 PSF
20 FT	< 60 IN	< 60 IN	LATERAL	140 PSF	148 PSF
			UPLIFT	68 PSF	72 PSF
30 FT	< 60 IN	< 60 IN	LATERAL	148 PSF	157 PSF
			UPLIFT	72 PSF	76 PSF
40 FT	< 60 IN	< 60 IN	LATERAL	155 PSF	164 PSF
			UPLIFT	75 PSF	79 PSF
50 FT	< 60 IN	< 60 IN	LATERAL	160 PSF	169 PSF
			UPLIFT	78 PSF	82 PSF
60 FT	< 60 IN	< 60 IN	LATERAL	165 PSF	174 PSF
			UPLIFT	80 PSF	85 PSF
70 FT	< 60 IN	< 60 IN	LATERAL	169 PSF	179 PSF
			UPLIFT	82 PSF	87 PSF
80 FT	< 60 IN	< 60 IN	LATERAL	173 PSF	183 PSF
			UPLIFT	84 PSF	89 PSF
90 FT	< 60 IN	< 60 IN	LATERAL	176 PSF	186 PSF
			UPLIFT	86 PSF	90 PSF
100 FT	< 60 IN	< 60 IN	LATERAL	179 PSF	189 PSF
			UPLIFT	87 PSF	92 PSF

#### GENERAL NOTES AND INSTRUCTIONS FOR TABLE USE:

1. Design is based on the Florida Building Code (FBC) Fifth Edition (2014) using ASCE 7-10 "other structures - tanks" calculation of a 3-second gust (wind velocity) per ASCE section 29.4, 29.5, or FBC section 1620.6 for a category II (general residential & commercial construction) installation. These tables not for use with essential facilities or assembly occupancies. Topographic factor kzt=1.0 for flat terrain use only. Tables use 'ASD' design method.
2. No certification is offered for the integrity of the host structure.
3. Tables are intended to depict the 'worst case' design pressure. 'Worst case' is defined as the critical condition of any unknown variable as described herein. Use of critical conditions required for use with these tables. Deviations require site specific evaluation.
4. Use of this drawing assumes the following criteria:
  - Permanent attachment to the existing structure (attachment method and integrity of host structure certified by others)
  - The unit is not located in a region susceptible to channeling effects or buffeting in the wake of upwind obstructions.

5. It is the installer's responsibility to ensure that the mounting method meets or exceeds the requirements of the aforementioned building code which shall be provided per separate certification.
6. Always round down unit width/depth dimensions and/or round up unit height dimension to the worst-case table value or to a conservative assumption.
7. Use any combination of unit sizes, provided base attachment certification is approved for that configuration. When considering multiple sizes, utilize minimum unit depth/width along with maximum unit height to determine required design pressure from these tables.
8. Read off required pressures (for ground-mounted applications, pressures act laterally upon vertical windward faces in any direction; for rooftop applications, pressures act as specified in table).
9. For use only as required by the local municipality in accordance with code.