Effective: May 15, 2009

## **Broward County Board of Rules and Appeals Policy #09-02**

Subject: <u>Administrative Guidelines for Processing Solar</u>
Thermal/Electric Permits

- A. Adopt the Solar Thermal and Solar Electric Matrix as a "BCBRA" Approved Guideline" establishing minimum code requirements regarding permit application submittals, thereby creating and instituting countywide uniformity.
- B. Building Departments shall establish an individual master permit for both Solar Thermal and Solar Electric installations to which applicable subsidiary categories are to be tied. Adding additional categories to the master permit may not require an additional permit obtained by a separate contractor, but will require a separate trade review in every instance.
- C. It is established that Certified Solar Contractors may obtain the master permit in either the Solar Thermal or Solar Electric categories. Certified or Registered Plumbing Contractors may obtain the master permit in the Solar Thermal category. Certified or Registered Electrical Contractors may obtain the master permit in the Solar Electric category. Registered Solar Contractors may obtain the master permit in the Solar Thermal category, restricted to residential installation only. Each of these contractors may perform all work identified in their individual scopes of work including the installation of appurtenances, apparatus, or equipment. However, such contractor shall subcontract all other work, which is specified as being the work in the trade of another contractor.
- D. Building Departments shall provide inspections of solar thermal and solar electric systems. More than one inspection may be performed during any inspection visit.

#### Solar Thermal

Building/Structure/Roofing - Time of installation and Final

Plumbing - Final

Solar Electric

Building/Structure/Roofing - Time of Installation and Final

Electrical – Rough and Final

Hybrid Systems (Complete PV Panel System combined with integral solar water panels)

Building/Structure/Roofing – Time of Installation and Final

Electrical – Rough and Final

Plumbing – Final

- E. The Board recommends Building Departments establish an inspection procedure to ensure all required inspections are completed within a specified two-hour timeframe.
- F. Recommend that Building Departments include an Owner notification on all solar thermal or solar electric permit applications, for existing structures, using substantially the language provided below:

"Installation of roof mounted photovoltaic or solar support systems typically require roof system penetrations to allow attachment to the structure, which may create additional long-term roof system maintenance requirements and/or jeopardize roof system manufacturer's warranties. Roof mounted solar systems generally require removal and reinstallation of solar panels/arrays in order to perform routine roof system maintenance, repair or replacement."

- G. The Board recommends Building Departments maintain accurate records regarding the type, number and the location of solar energy installations.
- H. Recommend and encourage Building Departments to expand access of renewable energy technology to the community, by not imposing needless or excessive oversight measures and through a program streamlined permitting and inspections.
- I. Recommend and encourage manufacturers to pursue optional product approval as a means of accelerating the permit approval process by ensuring a less complicated and less expensive process for consumers.
- J. BCCO to continue the ongoing awareness program designed to ensure all certified personnel understand the process of permitting and inspecting Solar Thermal and Solar Electric installations.
- K. BCCO will provide guidelines and assistance to the Solar Energy Industry, provide mediation, and assist with the BORA appeal process as necessary.

# UNIFORM PERMIT SUBMITTAL MATRIX for

## **SOLAR THERMAL AND SOLAR ELECTRIC INSTALLATIONS**

#### in

## THE HIGH VELOCITY HURRICANE ZONE

FBCB 105.3  1. Baldin VFL plipment Layour.  Photovoltaic Roof Mounted Panel & Solar Thermal Equipment  Poccessional Engineer or Registered Architect showing:  Documentation/verification exposed solar panel equipment meet wind loads.  Documentation/verification support faming meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification for true wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification for true wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification for true wind loads. Documentation/verification for true wind loads. Documentation/verification for true wind loads. Documentation/verification for the wind loads. FBCR4403.1.2 FBCR4403.1.2 FBCR4403.1.3 FBCR4403.10 Note: Dead load compliance with the Exception contained in FBCE Section 707.4.1 may be demonstration by providing Dead Load criteria from the original plans.  Submit a Uniform HVHZ Permit fBCR4402.1.3 FBCR4402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.2.1 FBCR8402.1.3 FBCR8402.1.3.1 FBCR8 1512.3.1 FBCR8402.1.3.1 FBCR8402.3.1 FBCR8402.	General Requirement	Submittal Requirements	F.S./Code Section
FBCB 105.3 BCAP 105 BCCAP 1			
BCAP 105.3    Book	L. Péinté Application		
Photovoltaic Roof Mounted Panel & Solar Thermal Equipment  Panel & Solar Thermal Equipment  Panel & Solar Thermal Equipment  Documentation/verification exposed solar panel equipment meet wind loads. Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification support small accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads.  Building Integrated Photovoltaic (BIPV)  Photovoltaic Roof Mounted Panel  Submit a Uniform HVHZ Permit Application.  Submit a detail of the roof penetration flashing.  Submit a detail of the roof penetration flashing.  FBCR4402.13 FBCB 1512.3.1 FBCR4402.13 FBCB 1514			
Photovoltaic Roof Mounted Panel & Solar Thermal Equipment  Submit signed and sealed drawings & design calculations by licensed Professional Engineer or Registered Architect showing:  Documentation/verification exposed solar panel equipment meet wind loads. Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  FBCR4403.9.2 FBCR4403.9.3 FBCR4403.10	2. Childa Zeaupment Cayout		
Photovoltaic Roof Mounted Panel & Solar Thermal Equipment  Submit signed and sealed drawings & design calculations by licensed Professional Engineer or Registered Architect showing:  Documentation/verification exposed solar panel equipment meet wind loads. Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads. Submit a Uniform HVHZ Permit Application.  Submit a detail of the roof penetration flashing.  BCAP 106  BBCAP 106  BBCR 4002.11.2 FBCEB 404 FBCR4403.12. FBCR4403.9.1 FBCR4403.9.1 FBCR4403.9.1 FBCR4403.9.1 FBCR4403.9.1 FBCR4403.9.2 FBCR4403.9.3 FBCR4403	Plan	A TO THE RESERVE OF THE STATE O	EBCR 106
Photovoltaic Roof Mounted Panel & Solar Thermal Equipment  Submit signed and sealed drawings & design calculations by licensed Professional Engineer or Registered Architect showing:  Documentation/verification exposed solar panel equipment meet wind loads.  Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads.  Documentation/verification supports will accommodate additional dead loads.  Documentation/verification structural supports will accommodate additional dead loads.  Building Integrated Photovoltaic (BIPV)  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing.  Submit a detail of the roof penetration flashing.  Building Integrated Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing.  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Building Integrated Photovoltaic Roof Mounted Panel  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Moun			
design calculations by licensed Professional Engineer or Registered Architect showing:  Documentation/verification exposed solar panel equipment meet wind loads. Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads. FBCR4403.9.2 FBCR4403.9.3 FBCR4403.9.3 FBCR4403.9.3 FBCR4403.9.3 FBCR4403.10 Note: Dead load compliance with the Exception contained in FBCE Section 707.4.1 may be demonstration by providing Dead Load criteria from the original plans.  Building Integrated Photovoltaic (BIPV) Application. FBCR4402.1.3 FBCR4402.1.2 FBCB 1512.2 FBCB 1516.2  Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing  Submit clearance requirements.  FBCR4402.1.3 FBCR4402.1.3 FBCB 1514 FBCR4402.1.3 FBCR4402.1.3 FBCB 1514 FBCR4402.3 FBCB 1514 FBCR4402.3 FBCB 1514			
exposed solar panel equipment meet wind loads.  Documentation/verification support framing meets both uplift and lateral forces. Design of connections for the wind loads. Documentation/verification structural supports will accommodate additional dead loads. Documentation/verification structural supports will accommodate additional dead loads.  Building Integrated Photovoltaic (BIPV)  Building Integrated Photovoltaic Roof Mounted Panel  Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing.  Submit a detail of the roof penetration flashing.  ERCR4403.9.2  FBCR4403.9.3  FBCR4403.9.3  FBCR4403.10  Note: Dead load compliance with the Exception contained in FBCE Section 707.4.1 may be demonstration by providing Dead Load criteria from the original plans.  FBCR4402.1.3  FBCR 4402.1.3  FBCR 4502.1.3  FBCR 1512.3  FBCR 1512.3  FBCR 1514  FBCR4402.1.3  FBCR 1514  FBCR4402.1.3  FBCR 1514	Panel & Solar Thermal	design calculations by licensed Professional Engineer or Registered	
structural supports will accommodate additional dead loads.  Exception contained in FBCE Section 707.4.1 may be demonstration by providing Dead Load criteria from the original plans.  Building Integrated Photovoltaic (BIPV)  Application.  Submit a Uniform HVHZ Permit FBCR4402.1.3 FBCB 1512.3 FBCR4402.1.2.1 FBCB 1512.2.1 FBCR4402.5.2 FBCB 1516.2  Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing  Submit clearance requirements.  Submit a detail of the roof penetration flashing.  FBCR4402.3 FBCB 1514  FBCR4402.11.3.1 FBCB 1522.3.1  FBCR4402.3 FBCB 1514		exposed solar panel equipment meet wind loads.  • Documentation/verification support framing meets both uplift and lateral forces.  • Design of connections for the wind loads.	FBCR4403.1.2 FBCEB 707 FBCR4403.7.8 FBCR4403.9.1 FBCR4403.9.2 FBCR4403.9.3 FBCR4403.10
<ul> <li>Building Integrated Photovoltaic (BIPV)</li> <li>Photovoltaic (BIPV)</li> <li>Photovoltaic Roof Mounted Panel</li> <li>Submit a detail of the roof penetration flashing</li> <li>Submit clearance requirements.</li> <li>Submit a detail of the roof penetration FBCR4402.11.3.1</li> <li>FBCB 1512.2.1 FBCB 1516.2</li> <li>FBCR4402.3</li> <li>FBCB 1514</li> <li>FBCR4402.11.3.1</li> <li>FBCB 1522.3.1</li> <li>FBCR4402.11.3.1</li> <li>FBCB 1522.3.1</li> </ul>		structural supports will accommodate additional dead	Exception contained in FBCE Section 707.4.1 may be demonstration by providing Dead Load criteria from the
Photovoltaic (BIPV)  Application.  FBCR4402.1.2.1 FBCB 1512.2.1 FBCB 1516.2  Photovoltaic Roof Mounted Panel  Submit a detail of the roof penetration flashing  Submit clearance requirements.  FBCR4402.3 FBCB 1514 FBCB 1514 FBCB 1514 FBCB 1514 FBCB 1514 FBCB 1514 FBCB 1522.3.1  FBCB 1514 FBCB 1514 FBCB 1514	S. COLICE MAN		
Panel flashing Submit clearance requirements. FBCR4402.11.3.1 FBCB 1522.3.1  Submit a detail of the roof penetration flashing. FBCR4402.3 FBCB 1514		i .	FBCR4402.1.2.1 FBCB 1512.2.1
Submit a detail of the roof penetration FBCR4402.3 FBCB 1514  • Solar Thermal flashing.		· ·	FBCR4402.3 FBCB 1514
Solar Thermal flashing.			FBCR4402.11.3.1 FBCB 1522.3.1
Submit clearance requirements. FBCR4402.11.3.1 FBCB 1522.3.1	Solar Thermal	1	FBCR4402.3 FBCB 1514
		Submit clearance requirements.	FBCR4402.11.3.1 FBCB 1522.3.1

yelem Estyr Sycholog		
Solar Water Heater	Submit FSEC Approval/Listing and System Reference Drawing.	FBCB 101 FBCR N1112 BCAP 101
<ul> <li>Solar Water Heater using a PV powered pump</li> </ul>	Submit listing for PV panel and pump.	NEC Article 690
Solar Swimming Pool Water Heater	Manufacturers selected system installation manual/detail and system specifications.	FBCB 106 BCAP 106
Solar Swimming Pool Water Heater	Submit FSEC Approval/Listing and System Reference Drawing.	FBCB 101 F.S. 377.705 BCAP 101
<ul> <li>Photovoltaic System</li> <li>Electrical Engineer Requirements</li> </ul>	Plans must be signed and sealed by a Professional Engineer if: a.) The system has a value of more than \$50,000, or; b.) The systems has an aggregate service capacity of 600 amperes (240 volts) or more for a residential electrical system, or; c.) The system has an aggregate service capacity of 800 amperes (240 volts) or more for a commercial or industrial electrical system.	F.S. 471.003(h)
Statutory Requirement	FSEC will generate a System Certification Approval Form.	F.S. 377.705
Electrical Diagram	Submit electrical diagram designed in accordance to the National Electrical Code Article 690 Solar Photovoltaic Systems, in its entirely.	NEC Article 690
Component Documentation	FSEC Certification.	F.S. 377.705 NEC 110.3(B)
Abbreviations	BCAP - Broward County Administrative Pr FBCB - Florida Building Code, Building Vo FBCEB - Florida Building Code, Existing Bu FBCR - Florida Building Code, Residential F.S - Florida Statute FSEC - Florida Solar Energy Center NEC - National Electric Code	lume uilding Volume

#### 1- PERMIT APPLICATION

## 105.3 Application for Permit Required. (Broward County Administrative Chapter 1)

Any qualified applicant desiring a permit to be issued by the Building Official as required, shall file an application therefore in writing on a form furnished by the Building Official for that purpose and application for permit will be accepted from only qualified applicants as set forth in Paragraph 105.3.1.

## 105.3.2 Application Form. (Broward County Administrative Chapter 1)

Each application for a permit, with the required fee, shall be filed with the Building department on a form furnished for that purpose and shall describe the land on which the proposed work is to be done, by legal description and address; shall show the use or occupancy of the building or structure; shall be accompanied by plans and/or specifications as required hereafter; shall state the value of the proposed work; as specified in Section 108.5.1, shall give such other information as reasonably may be required by the Building Official to describe the proposed work; and shall be attested by the qualified applicant. Application form shall be inscribed with the application date and the date of the Code in effect. Permit application forms shall be in the format prescribed by a local administrative board, if applicable, and must comply with the requirements of Section 713.135(6) & (7) Florida Statutes. The code in effect on the date of application shall govern the project.

## PER UNE PAR DUPMENT E LA YOUR

## 106.1.1 Submittal documents. (Broward County Administrative Chapter 1)

Construction documents, a statement of special inspections and other data shall be submitted in two or more sets of plans and/or specifications as described in Section 106.3 with each application for a permit. The application for permit shall be inscribed with the application date and the date of the Code in effect as set forth herein. The construction documents shall be prepared by a design professional where required by the Florida statutes and this Code. Where special conditions exist, the Building Official is authorized to require additional construction documents to be prepared by a design professional.

## <u>106.1.5 Information on construction documents.</u> (Broward County Administrative Chapter 1)

Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the Building Official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to this Code and the FFPC, relevant laws, ordinances, rules and regulations, as determined by the Building Official and/or fire marshal/fire code official.

### 3-STRUCTURAL DESIGN

## Photovokaic Roof Mounce Pake & Solar Premai Equipment

## R4402.11.2 Rooftop mounted equipment.

All rooftop equipment and supports shall be secured to the structure in compliance with the loading requirements of Section R4403. The use of wood "sleepers" shall not be permitted.

#### R4403.1.2

Buildings, structures and all parts thereof shall be designed and constructed to be of sufficient strength to support the estimated or actual imposed dead, live, wind, and any other loads, both during construction and after completion of the structure, without exceeding the allowable materials stresses specified by this code.

#### R4403.7.8 Load combination.

The safety of structures shall be checked using the provisions of 2.3 and 2.4 of ASCE 7 with commentary.

<u>Exception:</u> Increases in allowable stress shall be permitted in accordance with ACI 530/ASCE 5/TMS 402 provided the load reduction factor of 0.75 of combinations 4 and 6 of ASCE 7 Section 2.4.1 shall not be applied.

### R4403.9.1

Buildings and structures, and every portion thereof, shall be designed and constructed to meet the requirements of Section 6 of ASCE 7, as more specifically defined in this section, based on a 50-year mean recurrence interval.

#### R4403.9.2

Wind velocity (3-second gust) used in structural calculations shall be 140 miles per hour (63 m/s) in Broward County and 146 miles per hour (65 m/s) in Miami-Dade County.

## R4403.9.3

All buildings and structures shall be considered to be in Exposure Category C as defined in Section 6.5.6.3 of ASCE 7.

## <u>SECTION R4403.10 HIGH VELOCITY HURRICANE ZONES — OVERTURNING MOMENT AND UPLIFT</u>

## R4403.10.1

Computations for overturning moment and uplift shall be based on ASCE 7.

### R4403.10.2

Overturning and uplift stability of any building, structure or part thereof taken as a whole shall be provided, and be satisfied by conforming to the load combination requirements of ASCE 7.

## **EB SECTION 404 ALTERATION—LEVEL 2**

**EB 404.1** Scope. Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

**EB 404.2** Application. Level 2 alterations shall comply with the provisions of Chapter 6 for Level 1 alterations as well as the provisions of Chapter 7.

## **EB SECTION 707 STRUCTURAL**

<u>EB 707.1</u> General. Where alteration work includes installation of additional equipment that is structurally supported by the building or reconfiguration of space such that portions of the building become subjected to higher gravity loads as required by Tables 1607.1 and 1607.6 (High-Velocity Hurricane Zones shall comply with Table 1615 and Section 1615.2) of the Florida Building Code, Building, the provisions of this section shall apply.

**EB 707.2** Reduction of strength. Alterations shall not reduce the structural strength or stability of the building, structure, or any individual member thereof.

**Exception:** Such reduction shall be allowed as long as the strength and the stability of the building are not reduced to below the Florida Building Code, Building levels.

**EB 707.3** New structural members. New structural members in alterations, including connections and anchorage, shall comply with the Florida Building Code, Building.

**EB 707.4** Existing structural members. Existing structural components supporting additional equipment or subjected to additional loads based on Florida Building Code, Building, Tables 1607.1 and 1607.6 (High-Velocity Hurricane Zones shall comply with Table 1615 and Section 1615.2) as a result of a reconfiguration of spaces shall comply with Sections 707.4.1 through 707.4.3.

**EB 707.4.1** Gravity loads. Existing structural elements supporting any additional gravity loads as a result of additional equipment or space reconfiguration shall comply with the Florida Building Code, Building.

## **Exceptions:**

- 1. Structural elements whose stress is not increased by more than 5 percent.
- 2. Buildings of Group R occupancy with not more than five dwelling units or sleeping units used solely for residential purposes where the existing building and its

alteration comply with the conventional light-frame construction methods as defined in Chapter 2.

## 4. RG0 = 6 = 3 | CN

## Building integrated Photosobale (1912)

#### R4402.1.3

Permits outside these High-Velocity Hurricane Zone requirements shall comply with Section 105 of the Florida Building Code, Building. Permits within high wind areas shall be required for all work in connection with the application, repair or maintenance of any roofing component or any roofing assembly and/or any of its components except as otherwise permitted in Section 105 of the Florida Building Code, Building.

## R4402.1.3.1

All new roofing construction, including recovering and reroofing, repair and maintenance shall have a uniform roofing permit application, as established by the authority having jurisdiction, completed and executed by a licensed contractor.

## R4402.1.3.2

The uniform roofing permit shall include calculations per Section R4403 of this code, unless the roofing assembly is less than the height/pressure threshold allowed in the applicable protocols herein.

## R4402.1.3.4

Attachments to the uniform roofing permit application shall include two copies of each of the following documents: properly executed OWNERS NOTIFICATION FOR ROOFING CONSIDERATIONS herein; the fire directory listing pages product approval cover sheet, product approval specific system description, product approval specific system limitation, product approval general limitations, and applicable detail drawings; the municipal permit application; other components approvals; and any other additional data reasonably required by the authority having jurisdiction needed to determine the integrity of the roofing system.

## R4402.1.2.1

All roofing components, roofing systems and roofing assemblies for construction regulated by this code shall comply with this chapter. All roofing components, roofing systems and roofing assemblies shall have a valid and current, referred to as product approval hereinafter. In the event that the manufacturers published literature or instructions are in conflict with those of the product approval, the product approval shall prevail. Where items specifically and expressly addressed in this section are in conflict with the product approval, the provisions of this section shall prevail.

#### R4402.5.2

Fire-resistant roofing assemblies and coverings shall be provided on all structures. Fire classification of roofing assemblies and coverings shall be based on the exposure hazard as follows:

#### R4402.5.2.1

Class A. Zero feet to 20 feet (0 to 6.1 m) distance separation measured horizontally from the closest point of any building edge to the nearest point to an adjoining structure, and all buildings with occupation greater than 300 persons.

**Exception:** Brick, masonry, slate, clay or concrete roof tile and exposed concrete roof deck are considered to meet Class A roof covering provisions without testing.

R4402.5.2.2 Class B. All other structures, except as noted below

R4402.5.2.3 Class C. Structures not occupied by humans.



## SECTION R4402.3 HIGH-VELOCITY HURRICANE ZONES — WEATHER PROTECTION

## R4402.3.1 General.

Roof decks shall be covered with roof coverings secured to the building or structure in accordance with the provisions of this section. Roof coverings shall be designed, installed and maintained in accordance with this code and the manufacturer's installation instructions such that the roof covering shall serve to protect the building or structure. All roof coverings, roof systems and roof assemblies shall be designed and installed to resist the wind load requirements of Section R4403 of this code.

## R4402.11.3.1

Permanently mounted rooftop equipment shall be installed to provide clearances, in accordance with Table R4402.11.3, to permit repairs, replacement and/or maintenance of the roofing system or any of its components.

## **TABLE R4402.11.3**

## **ROOF MOUNTED EQUIPMENT HEIGHT REQUIREMENTS**

HEIGHT OF LEGS (in.)
14
18

37 to 48	24	
49 to 60	30	
61 and wider	48	

For SI: 1 inch = 25.4 mm



#### SECTION R4402.3

HIGH-VELOCITY HURRICANE ZONES — WEATHER PROTECTION

## R4402.3.1 General.

Roof decks shall be covered with roof coverings secured to the building or structure in accordance with the provisions of this section. Roof coverings shall be designed, installed and maintained in accordance with this code and the manufacturer's installation instructions such that the roof covering shall serve to protect the building or structure. All roof coverings, roof systems and roof assemblies shall be designed and installed to resist the wind load requirements of Section R4403 of this code.

## R4402.3.2 Flashings.

Flashings shall be installed in such a manner as to prevent moisture entering the wall through the joints in the coping, through moisture permeable materials, at intersections with the roof plane or at parapet wall penetrations. All roof flashing and terminations shall be designed and installed to resist the wind load requirements of Section R4403 of this code, and shall be in compliance with the provisions set forth in RAS 111.

## R4402.3.2.1 Locations.

Flashings shall be installed at (1) wall and roof intersections (2) at gutters, (3) wherever there is a change in roof slope or direction this requirement does not apply to hip and ridge junctions, and (4) around roof openings. Where flashing is of metal, the metal shall conform to the provisions of RAS 111.

## R4402.3.2.2 Membrane flashings.

All membrane flashing shall be installed according to the roof assembly manufacturer's published literature and in accordance with the provisions set forth in RAS 111.

## R4402.3.2.3 Metal flashings and terminations.

Metal flashing and terminations shall be of the material and thickness described in Section R4402.6.6 and RAS 111 of this code, and shall be designed and installed in accordance with

RAS 111. Metal flashing shall be installed after the roofing felts have been laid and turned up the vertical surfaces, in compliance with the roofing assembly Product Approval.

## R4402.3.2.3.1

Such felts shall be embedded in hot bitumen or an approved adhesive.

#### R4402.3.2.3.2

Metal surfaces shall be primed with an ASTM D 41 or ASTM D 43 primer, as appropriate and allowed to dry prior to receiving hot bitumen or cold adhesive.

## R4402.3.2.4 Metal counterflashing.

Metal counterflashing shall be of the material and thickness described in Sections R4402.6.6 and RAS 111 of this code, and shall be installed in accordance with RAS 111.

## R4402.3.2.4.1

Metal counterflashing shall be built into walls, set in reglets or applied as stucco type and shall be turned down over base flashing not less than 3 inches (76 mm).

#### R4402.3.2.4.2

Metal counterflashing shall be side lapped a minimum of 4 inches (102 mm).

## R4402.3.2.4.3

Metal counterflashing, where set in reglets or surface-mounted, shall be waterproofed, in accordance with applicable application standards.

## R4402.3.2.4.4

Where metal counterflashing is used as the means of sealing (such as a vented system) it shall be set in an approved sealant, sealed with an approved adhesive on the top flange and all joints shall be sealed with an approved sealant and lapped a minimum of 4 inches (102 mm).

## R4402.11.3.1

Permanently mounted rooftop equipment shall be installed to provide clearances, in accordance with Table R4402.11.3, to permit repairs, replacement and/or maintenance of the roofing system or any of its components.

## **TABLE R4402.11.3**

## ROOF MOUNTED EQUIPMENT HEIGHT REQUIREMENTS

WIDTH OF EQUIPMENT (in.)	HEIGHT OF LEGS (in.)
Up to 24	14

25 to 36	18	
37 to 48	24	
49 to 60	30	<del>*************************************</del>
61 and wider	48	**

For SI: 1 inch = 25.4 mm

#### 5. System components



## 101.2 Scope. (Broward County Chapter 1)

The provisions of this Chapter shall govern the administration and enforcement of the FBC, Fire Protection Provisions of this Code and the FFPC and shall apply countywide in both incorporated and unincorporated areas of Broward County, Florida. The provisions of this Code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

## **Exceptions:**

- A. Detached one-and two-family dwellings and multiple single-family dwellings (town houses) not more than three stories above grade plane in height with a separate means of egress and their accessory structures shall comply with the FBC, Residential.
- B. Existing buildings undergoing repair, alterations or additions and change of occupancy shall comply with Chapter 34 of this Code.

## 101.4.1 Electrical. (Broward County Administrative Chapter 1)

The provisions of Chapter 27 of the FBC, Building, Fire Protection Provisions of this Code and the FFPC shall apply to electrical systems. It shall be unlawful to perform or commence any installation of heat, light, power or low voltage systems (burglar alarms, central vacuums, communications, computer systems, fiber optics, fire alarms, telephone, television and all other systems 98 volts and less) either permanent or temporary wiring, or to make extensions and/or changes to existing installations of light, heat, power or low voltage systems, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto upon premises, inside, outside and/or attached to buildings or structures of any character without having filed an application and obtained an electrical permit. Electrical wiring, apparatus and equipment, and all installations for light, heat, power or low voltage systems as are required and/or regulated in provisions of Chapter 27 of the FBC, Building, Fire Protection Provisions of this Code and the FFPC shall be maintained in a safe condition and all devices and safeguards maintained in good working order.

## 101.4.4 Plumbing. (Broward County Administrative Chapter 1)

The provisions of the FBC, Plumbing, Fire Protection Provisions of this Code and the FFPC shall apply to every plumbing installation, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances when connected to a water or sewerage systems, lawn sprinkler systems and all aspects of a medical gas system. All Plumbing work shall be done in a workmanlike manner and in compliance with the provisions of this Code.

#### N1112.ABC.3.4

#### Solar water heating systems.

Solar systems for domestic hot water production are rated by the annual solar energy factor of the system. The solar energy factor of a system shall be determined from the Florida Solar Energy Center Directory of Certified Solar Systems. Solar collectors shall be tested in accordance with ISO 9806, Test Methods for Solar Collectors, and SRCC TM-1, Solar Domestic Hot Water System and Component Test Protocol. Collectors in installed solar water heating systems should meet the following criteria:

- 1. Be installed with a tilt angle between 10 degrees and 40 degrees of the horizontal; and
- 2. Be installed at an orientation within 45 degrees of true south.



## 106.1.1 Submittal documents. (Broward County Administrative Chapter 1)

Construction documents, a statement of special inspections and other data shall be submitted in two or more sets of plans and/or specifications as described in section 106.3 with each application for a permit. The application for permit shall be inscribed with the application date and the date of the Code in effect as set forth herein. The construction documents shall be prepared by a design professional where required by the Florida statutes and this Code. Where special conditions exist, the Building Official is authorized to require additional construction documents to be prepared by a design professional.

## 106.1.5 Information on construction documents. (Broward County Administrative Chapter 1)

Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the Building Official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to this Code and the FFPC.

relevant laws, ordinances, rules and regulations, as determined by the Building Official and/or fire marshal/fire code official.

## Photovoltaic System & Electrical Engineer Requirements

### Florida Statutes 471.003(h)

- (h) Any electrical, plumbing, air-conditioning, or mechanical contractor whose practice includes the design and fabrication of electrical, plumbing, air-conditioning, or mechanical systems, respectively, which she or he installs by virtue of a license issued under Chapter 489, under part I of Chapter 553, or under any special act or ordinance when working on any construction project which:
- 1. Requires an electrical or plumbing or air-conditioning and refrigeration system with a value of \$50,000 or less; and
- 2.a. Requires an aggregate service capacity of 600 amperes (240 volts) or less on a residential electrical system or 800 amperes (240 volts) or less on a commercial or industrial electrical system;

## Statutory Requirements (1200)

#### Florida Statutes 377.705

Solar Energy Center; development of solar energy standards.--

- (3) DEFINITIONS .--
- (a) "Center" is defined as the Florida Solar Energy Center of the Board of Governors.
- (b) "Solar energy systems" is defined as equipment which provides for the collection and use of incident solar energy for water heating, space heating or cooling, or other applications which normally require or would require a conventional source of energy such as petroleum products, natural gas, or electricity and which performs primarily with solar energy. In such other systems in which solar energy is used in a supplemental way, only those components which collect and transfer solar energy shall be included in this definition.
- (4) FLORIDA SOLAR ENERGY CENTER TO SET STANDARDS, REQUIRE DISCLOSURE, SET TESTING FEES.--
- (a) The center shall develop and promulgate standards for solar energy systems manufactured or sold in this state based on the best currently available information and shall consult with scientists, engineers, or persons in research centers who are engaged in the construction of, experimentation with, and research of solar energy systems to properly identify

the most reliable designs and types of solar energy systems.

- (b) The center shall establish criteria for testing performance of solar energy systems and shall maintain the necessary capability for testing or evaluating performance of solar energy systems. The center may accept results of tests on solar energy systems made by other organizations, companies, or persons when such tests are conducted according to the criteria established by the center and when the testing entity has no vested interest in the manufacture, distribution or sale of solar energy systems.
- (c) The center shall be entitled to receive a testing fee sufficient to cover the costs of such testing. All testing fees shall be transmitted by the center to the Chief Financial Officer to be deposited in the Solar Energy Center Testing Trust Fund, which is hereby created in the State Treasury, and disbursed for the payment of expenses incurred in testing solar energy systems.
- (d) All solar energy systems manufactured or sold in the state must meet the standards established by the center and shall display accepted results of approved performance tests in a manner prescribed by the center.



## NEC Article 690 in its entirety



**NEC 110.3(B)** Installation and Use Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.