



# BROWARD COUNTY BOARD OF RULES AND APPEALS

1 N. University Drive, Suite 3500B, Plantation, FL 33324

P: 954-765-4500 | F: 954-765-4504 [broward.org/CodeAppeals](http://broward.org/CodeAppeals)

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Structural Engineer

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Electrical Engineer

Mr. John Famularo,  
Roofing Contractor  
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Master Plumber  
Mr. Gregg D'Attile,  
Mechanical Contractor  
Mr. Ron Burr  
Swimming Pool Contractor  
Mr. John Sims,  
Master Electrician  
Mr. Dennis A. Ulmer  
Consumer Advocate  
Mr. Abbas H. Zackria, CSI  
Architect  
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Fire Service Professional

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General Contractor  
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Mr. David Rice, P.E.  
Electrical Engineer  
Mr. James Terry,  
Master Plumber  
Mr. David Tringo,  
Master Electrician  
Mr. William Flett,  
Roofing Contractor

### **Board Attorney**

Charles M. Kramer, Esq.

### **Board Administrative Director**

James DiPietro

—ESTABLISHED 1971—

**To:** Members of the Energy Conservation Committee

D. Rice, P.E.	M. Charmin	S. Danchuck	T. Fallon
W. Haygood	E. Jenison	A. Kamm, P.E.	B. Lomel, P.E.
J. Travers	D. Ulmer	B. Volin	A. Zackria, CSI

**From:** Timothy G. de Carion, Chief Energy Code Compliance Officer

**Date:** April 26, 2021 (1:30PM – 3:30PM)

**Subj:** Residential Energy Guidelines

The Chairman of Energy Conservation Committee, Mr. Dave Rice P.E., called for a meeting of the Energy Conservation Committee for the items listed.

## AGENDA

### **Roll Call**

**Approval of Minutes** – March 17, 2021

### **Chairman's Opening Remarks**

### **Chief Energy Code Compliance Officer Opening Remarks**

### **Regular Meeting**

#### **Item 1: Legal Opinion on Residential Fenestration Product Rating**

Submittal Form ..... Pg. 5 Email Dated 03/23/2021

**Item 2: Criteria for Code Items to be Included in Guidelines** ..... Pg. 10 Doc. Dated 04/26/2021

#### **Item 3: BORA Residential Energy Guidelines (Revision 04/26/2021)**

A. BORA Residential Energy Guidelines.....	Pg. 13
B. Residential Compliance Forms R405-2020 .....	Pg. 29
C. Envelope Leakage Report Summary .....	Pg. 44

### **General Discussion**

### **Schedule Next Meeting**

### **Adjournment**

### **Reference Documents for Committee Use**

Item 1)	Legal Opinion on Residential Fenestration Product Rating Submittal Form (Page 5)
Item 2)	Criteria for Code Item to be Included in Guidelines (Page 10)
Item 3)	BORA Residential Energy Guidelines (Page 13)
Item 3b)	Residential Compliance Forms R405-2020 (Page 29)
Item 3c)	Envelope Leakage Report Summary (Page 44)

*Sunshine Law Reminder: Advisory Board members cannot communicate with each other on a possible committee or Board topic outside of a public meeting, per State statute.*



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**MEETING OF THE ENERGY CONSERVATION COMMITTEE**

**Minutes  
March 17, 2021**

**Call to Order:**

Chair David Rice, P.E. called a published meeting of the Broward County Board of Rules and Appeals Energy Conservation Committee to order at 1:30PM.

The roll was called, and the following members were present:

**Present:**

Mike Charnin	Eric Jenison	John Travers
Samantha Danchuck	Art Kamm, P.E.	Dennis Ulmer
Tim Fallon	Brian Lomel, P.E.	Bob Volin
Wyatt T. Haygood	David Rice, P.E.	Abbas Zackria, CSI

Staff: Timothy de Carion, Chief Energy Code Compliance Officer

**A MOTION WAS MADE BY MR. ULMER AND SECONDED BY MR. KAMM TO APPROVE THE FEBRUARY 17, 2021 ENERGY CONSERVATION COMMITTEE MEETING MINUTES. THE MOTION PASSED BY UNANIMOUS VOTE.**

**Item 1: Blower Door Memo**

The committee discussed their recommended revisions for the “Blower Door Test Review” memo document with Mr. Timothy de Carion, Broward County Board of Rules and Appeals, at the February 17, 2021 meeting.

Mr. de Carion shared the revised memo with the committee.

**A MOTION WAS MADE BY MR. KAMM AND SECONDED BY MR. ZACRIA TO APPROVE THE “BLOWER DOOR TEST REVIEW” MEMO. THE MOTION PASSED BY UNANIMOUS VOTE.**

## **Item 2: Classification for Multifamily Buildings Memo**

The committee discussed their recommended revisions for the “Classification for Multifamily Buildings” memo document with Mr. de Carion at the February 17, 2021 meeting.

Mr. de Carion shared the revised memo with the committee.

**A MOTION WAS MADE BY MR. CHARNIN AND SECONDED BY MR. VOLIN TO APPROVE THE “CLASSIFICATION FOR MULTIFAMILY BUILDINGS” MEMO. THE MOTION PASSED BY UNANIMOUS VOTE.**

## **Item 3: Residential Fenestration Product Rating Submittal Form**

Mr. de Carion shared the draft of the “Residential Fenestration Product Rating Submittal Form” and explained that he would like to add a code section, Florida Building Code R405.4.3 Additional Documentation. He shared that adding the code section to the form has the potential to be beneficial to code officials because it is more specific and leaves much less room for confusion.

The “Residential Fenestration Product Rating Submittal Form” will allow code officials to document the description of the window, the U-Value and the shading coefficients (SHGC).

Mr. de Carion shared a resource with the committee members. He showed how to use the CPD Product Lines – Product Search on the NFRC website.

Chair Rice said that he was concerned about adding the form to the guidelines. He advised that the Board Attorney review it before it is approved to be added to the Residential Energy Guidelines. He would like to be sure that any form added should be an interpretation of the code, rather than create a code change.

Mr. Wyatt T. Haygood, City of Parkland, said that he liked the form, but he believes that the form, in its current state, requires Building Officials to request additional documentation. Compared to the current code which states that Building Officials have the option to request additional documentation. Mr. de Carion added that the form will allow the supporting documentation to be more organized for the building departments during the plan review process.

Mr. Bob Volin, Air Design Concepts, asked if it would be easier to have the requirement baked into the plans. Mr. Haygood said that that requirement would be more difficult to enforce.

Mr. Abbas Zackria, CSI, WZA Architects, added that the “Residential Fenestration Product Rating Submittal Form” is supplementary since the committee cannot make it mandatory. It would be made available to the building departments to adopt if they choose. It shouldn’t be perceived as a code change because it is a supplementary document.

Mr. de Carion updated the draft replacing “Required” with “Recommended for Review.”

Chair Rice said that since the code cannot be changed, he recommended the adding the “Residential Fenestration Product Rating Submittal Form” to the Residential Energy Guidelines document.

Mr. James DiPietro, Broward County Board of Rules and Appeals, explained the process of amending the code through the Board and on to the State of Florida to the committee.

Mr. Rolando Soto, Broward County Board of Rules and Appeals, mentioned that unlike the other technical codes, the Energy Code cannot be amended.

Chair Rice suggested holding the “Residential Fenestration Product Rating Submittal Form” until the next Energy Conservation Committee meeting.

**NO MOTION.**

**Item 4: BORA Residential Energy Guidelines (Revision 03/17/2021)**

Mr. de Carion shared the revisions that he made to the Residential Energy Guidelines. He asked the committee members for their input to revise the checklist for the next draft. The committee went through the checklists together.

Mr. Rolando Soto advised that the checklists have more distinct language to prevent the voluntary Residential Energy Guidelines checklists from being conflated with the required code.

Mr. Otto Vinas, Broward County Board of Rules and Appeals, recommended replacing the word “comments” with “checklists” throughout the section headings.

Mr. Zackria suggested that instead of replacing “comments” with “checklists,” “comments” could be removed to solve the terminology issue without confusing the section headings with the titles of the documents.

Mr. de Carion referred to the Florida Building Code – Chapter 4 [RE] Residential Energy Efficiency for clarification about the terminology used in the checklist.

The committee members and Mr. de Carion revised the Residential Energy Guidelines – Structural and Mechanical Checklists.

**NO MOTION.**

Chair Rice noted the time and suggested that the committee members wrap up the discussion before beginning the next section, Residential Energy Guidelines – BORA Blower Door Report Checklist.

He asked the committee members to send their comments and discussion topics that they would like to discuss at the next meeting.

**A MOTION WAS MADE BY MR. ZACKRIA AND SECONDED BY MR. HAYGOOD TO ADJOURN THE MEETING. THE MOTION PASSED BY UNANIMOUS VOTE.**

**Adjournment**

Having no further business to go before the Committee, the meeting adjourned at 3:04PM.

**Item 1:**

Legal Opinion on Residential Fenestration Product Rating  
Submittal Form

**From:** [Chuck Kramer](#)  
**To:** [Dipietro, James](#)  
**Cc:** [De Carion, Timothy](#); [David Rice \(dRice@rc-eng.com\)](#); [Curry, Brianna](#)  
**Subject:** RE: Residential Fenestration Product Rating Submittal Form  
**Date:** Tuesday, March 23, 2021 10:02:43 AM  
**Attachments:** [image004.png](#)  
[image001.png](#)

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Good morning, Jim,

My review of applicable authority, including Special Act 71-575, Sections 9.02(1) and (3) of the Broward County Charter, and the Residential Energy Code determines that the Broward County BORA has the authority to adopt the attached code form as a *recommended* part of the permit application procession.

Applicable law does not give BORA the authority to mandate use of the proposed form county wide.

The residential Energy Code allows for discretion on the part of the local code official.

Highest regards,

**Charles M. Kramer** |BENSON, MUCCI & WEISS PL  
General Counsel to the Broward County Board of Rules and Appeals  
General Counsel to the Broward County Building Certification Committee  
Florida Bar Board Certified in Construction Law  
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**Please consider the environment before printing.**

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**From:** Dipietro, James <JDIPIETRO@broward.org>

**Sent:** Tuesday, March 23, 2021 8:02 AM

**To:** Chuck Kramer <ckramer@bmvlawyers.net>

**Cc:** De Carion, Timothy <TDECARION@broward.org>; David Rice (dRice@rc-eng.com) <dRice@rc-eng.com>; Dipietro, James <JDIPIETRO@broward.org>; Curry, Brianna <BCURRY@broward.org>

**Subject:** FW: Residential Fenestration Product Rating Submittal Form

Good morning Chuck. Does Broward County BORA have the authority to adopt the attached code form and also to mandate it county-wide if it chooses? Please feel free to contact Tim on the cell number listed below if more technical information is needed. Thank you. Jim

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**From:** De Carion, Timothy <[TDECARION@broward.org](mailto:TDECARION@broward.org)>  
**Sent:** Monday, March 22, 2021 4:09 PM  
**To:** Dipietro, James <[JDIPIETRO@broward.org](mailto:JDIPIETRO@broward.org)>  
**Subject:** Residential Fenestration Product Rating Submittal Form

Jim:

Per our conversation

**Background:**

During our second Energy Committee meeting on “Energy Guidelines”, I mentioned that Miami Dade County had developed a form to aid in the submission process for windows and roofs in regards to **product “Energy Efficiency”**. Abbas Zackria commented in that meeting that we also need to develop a **simplified form** for the submission of the “Energy Efficiency” values of Windows products. After the meeting, Abbas and I met and developed the attached form to aid in this submission process. At this present time, no one is double checking the energy values of the windows and comparing them to the **“energy compliance report.”** This form will require the applicant to fill the **NFRC Directory number** corresponding to the window shown on the approved energy compliance report. This will save the plan review personnel from having to match up each window in the schedule and also **save additional paperwork** and extra documentation needed to cross reference each window. During the last Energy Committee meeting, the Chairman, David Rice raised a concern that this form would be a change to the energy code and would not be allowed. He recommended a legal review to determine if it was allowed to be a part of the energy guidelines.

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**Opinion:**

The current residential energy code allows the **code official** to request “organized documentation” of the fenestration products **tested U-Value** and “Solar Heat Gain Coefficients” (**SHGC**) in order to **verify the designers input** on the compliance report. Please see code references below.

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**Code:**

**R405.4.3 Additional documentation.** **The code official shall be permitted to require the**



following documents:

1. Verification that an EPL display card signed by the builder providing the building component characteristics of the *proposed design* will be provided to the purchaser of the home at time of title transfer.
2. Documentation of the component efficiencies used in the software calculations for the *proposed design*.

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Sincerely,  
Timothy G. de Carion  
Chief Energy Code Compliance Officer  
Broward Co. Board of Rules and Appeals  
1 N University Dr. Suite 3500B  
Plantation Fl 33324  
Cell 954-599-4205  
Email [tdecarion@broward.org](mailto:tdecarion@broward.org)  
Office 954-765-4500 Ext. 9853  
<http://www.broward.org/CodeAppeals/Pages/Default.aspx>



**STRONGER CODES MEAN SAFER BUILDINGS**  
~ ESTABLISHED 1971 ~

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**Item 2:**

Criteria for Code Items to be Included in Guidelines

## **Criteria for Code Items to be Included in Guidelines**

- 1) There is confusion over what discipline will enforce this code.
- 2) The code is not currently being enforced by any discipline.
- 3) The code is being misapplied or misunderstood.
- 4) The code item will save a significant amount of energy.

**Item 3:**

BORA Residential Energy Guidelines (Revision 04/26/2021)

**Item 3a:**

**BORA Residential Energy Guidelines**

# BORA Residential Energy Guidelines

## Broward County Board of Rules and Appeals

### Energy Conservation Seventh Edition (2020)



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FBC Seventh Edition (2020),  
Effective XXXXXXXXXX

For BORA Approval  
Revision #3  
4/26/2021

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## Overview

To obtain uniform energy code enforcement in residential buildings in Broward County, the Energy Conservation Committee has developed guidelines to aid jurisdictions in determining which discipline specific code official enforces certain sections of the 2020 Florida Building Code Energy Conservation.

The following code sections regarding enforcement duties are as stated:

### **R103.3 & C103.3 Examination of documents.**

*The code official shall examine or cause to be examined the accompanying construction documents and shall ascertain whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.*

### **R103.3.1 & C103.3.1 Approval of construction documents.**

*When the code official issues a permit where construction documents are required, the construction documents shall be endorsed in writing and stamped "Reviewed for Code Compliance."*

### **R104.1 & C104.1 General**

*Construction or work for which a permit is required shall be subject to inspection by the code official or his or her designated agent, and such construction or work shall remain accessible and exposed for inspection purposes until approved.*

### **Basis for the Guidelines:**

The Florida Building Code Seventh Edition (2020) Energy Conservation for new and existing buildings has designated that the code official is responsible for both the construction document approval and construction inspection approval.

Unfortunately, the Florida Building Code Energy Conservation administrative chapters do not designate which discipline specific code official will review compliance documents and building plans and inspect specific items for code compliance found in the Energy Conservation Code.

The "building official" or "code official" for energy code purposes shall be defined as: "The officer or other designated authority having jurisdiction charged with the administration and enforcement of this standard or a duly authorized representative."

Broward County is unique in that we have individual certified plan review and inspection personnel for each discipline and that a multi-discipline code official is not the norm. Subsequently, uniformity has been lacking in the enforcement of the energy code which created confusion by code officials over which specific disciplines will enforce certain provisions of the code.

This guide can be used as a tool for the Building Official to determine which discipline specific code official will review and inspect specific sections of the Energy Code for code compliance to address those issues. This guide shall not prevent any certified code official with issuing a correction notice for any Energy Code deficiency found in another discipline if they notify the Chief inspector of that discipline of the correction notice.



**BORA ENERGY GUIDELINES**  
**Building Code Administrators Checklist**

**Plan Review**

1. The building official shall appoint a code official to verify that all disciplines have reviewed the plans and the code compliance report for energy code compliance. This code official shall sign the code compliance report stating that the plans have been reviewed by all disciplines and the plans will be inspected according to the FECC.

**Code Section**

R103.3  
R103.3.1  
FS. 553.908

**Certificate of Occupancy**

1. The building official shall require that an energy performance level (EPL) display card be completed and signed by the building qualifier that it is accurate and correct before final approval for the building for occupancy. Florida law (Section 553.9085, Florida Statutes) requires the EPL display card to be included as an addendum to each sales contract for both presold and non-presold residential buildings.

**Code Section**

R401.3  
R405.4.3 #1

**Reporting Schedule**

1. A reporting form shall be submitted to the local building department by the owner or owner's agent with the submittal certifying compliance with this code. Reporting forms shall be a copy of the front page of the compliance form applicable for the code chapter under which compliance is demonstrated (R405-2020). It shall be the responsibility of the local building official to forward the reporting section of the proper form to the entity representing the Florida Building Commission on a quarterly basis by regular mail or email attachment to [raymond-issa@ufl.edu](mailto:raymond-issa@ufl.edu). Copies shall not exceed 300dpi.

**Code Section**

R103.1.1.2.1  
R103.1.1.2.1.1

**Send reporting form to:**

M. E. Rinker, Sr. School of Construction Management  
University of Florida  
Attn: R. Raymond Issa  
PO Box 115703  
304 Rinker, Third Floor  
Gainesville, FL 32611-5703 USA  
[raymond-issa@ufl.edu](mailto:raymond-issa@ufl.edu)

## BORA ENERGY GUIDELINES

### BORA Structural Checklist

#### Plan Review

- | <u>Plan Review</u>   | <u>Code Section</u>            |
|--|--------------------------------|
| <input type="checkbox"/> 1. <b>Energy Compliance Report</b> shall match the plans and shall comply with the following.   |                                |
| <input type="checkbox"/> A. The compliance report code version and date.   | R405.4.2.1 #6                  |
| <input type="checkbox"/> B. Buildings defined as residential which are three stories and less in height shall comply with the residential energy code. Mixed use buildings shall submit separate compliance reports. | R101.5.1.2<br>R101.4.1         |
| <input type="checkbox"/> C. Reports shall include the building street address, and climate zone #1a shall be selected for Broward County from Table R301.1   | R405.4.2.1 #1<br>R405.4.2      |
| <input type="checkbox"/> D. The name of the person who prepared the report and a signature is required certifying that the proposed design complies with the energy code.  | R405.4.2.1 #2<br>R405.4.2.1 #5 |
| <input type="checkbox"/> E. The building's owner, or architect, or "owner/agent", shall certify compliance with the Florida Energy Conservation Code by signing the prepared compliance report.                      | R103.1.1.2<br>R405.4.2.1 #2    |
| <input type="checkbox"/> F. The correct number of bedrooms shall be shown.   | R405.5.2                       |
| <input type="checkbox"/> G. Wall sections shall show the ceiling and wall insulation and shall show R-values.  | R103.2 #1                      |
| <input type="checkbox"/> H. Reports which claim a cool roof option shall provide documentation of testing.   | R405.7.2                       |

#### Plans

- |   |                          |
|---|--------------------------|
| <input type="checkbox"/> 2. Conditioned floor area and the building thermal envelope shall be shown.  | R103.2.1 & 2             |
| <input type="checkbox"/> 3. Air Barrier sealing details and materials used shall be shown.  | R103.2 #8                |
| <input type="checkbox"/> 4. Window schedules shall include the "NFRC tested" design U-factors and SHGC values. Submittals may use Appendix A, "Residential Fenestration Submittal Form" and shall be Shown <b>(S-1)</b> | R103.2 #2<br>R405.4.3 #2 |

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#### Rough Inspection

- | <u>Rough Inspection</u>   | <u>Code Section</u>    |
|---|------------------------|
| <input type="checkbox"/> 1. A continuous air barrier shall be installed in the exterior buildings thermal envelope.   | R402.4.1.1             |
| <input type="checkbox"/> 2. Window/door jambs, framing, and skylights shall be sealed on the exterior frame.  | R402.4.1.1             |
| <input type="checkbox"/> 3. Ceiling and wall insulation R-Values shall match the plans. Manufacturer's instructions shall be followed, and attic vents shall not be blocked. <b>(S-2)</b> | R405.5.2<br>R303.2 & 1 |
| <input type="checkbox"/> 4. A label shall be affixed to the window showing the tested U-Value and SHGC. These values shall match the values shown on plans. <b>(S-1)</b>                  | R303.1.3<br>R405.5.3.2 |

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#### Final Inspection

- | <u>Final Inspection</u>   | <u>Code Section</u>      |
|---|--------------------------|
| <input type="checkbox"/> 1. All installed attic insulation shall have an insulation certificate posted at or near the opening of the attic and an insulation certificate shall be submitted to the AHJ                          | R303.1.1.2<br>FTCR 460   |
| <input type="checkbox"/> 2. Blown or sprayed insulation shall be installed per inch according to plans. Blown insulation thickness shall be verified with markers installed every 300 sq. ft. Attic vents shall not be blocked. | R303.1.1.2.1<br>R402.2.3 |
| <input type="checkbox"/> 3. Access-openings, drop-down stairs, or knee wall doors to unconditioned attic spaces shall be sealed and baffled to maintain blown insulation. The attic hatch shall be insulated.                   | R402.2.4<br>R402.4       |
| <input type="checkbox"/> 4. Air sealing shall be provided for the interior garage door and the walls that separate conditioned spaces from the garage area.   | R402.4.1.1               |
| <input type="checkbox"/> 5. Any changes which effect the energy efficiency of the building shall require revised plans and a revised energy compliance report.  | R103.4                   |

**BORA ENERGY GUIDELINES**  
**BORA Mechanical Checklist**

**Plan Review**

**Code Section**

**1. Energy Compliance Report** shall match the plans and shall comply with the following.

- |   |                         |
|---|-------------------------|
| <input type="checkbox"/> <b>A.</b> The site plan showing actual home orientation shall be shown. Worst case orientations shall be accepted. HVAC load calculations shall be site specific.  | R405.4.2<br>R405.4.2.1  |
| <input type="checkbox"/> <b>B.</b> The conditioned floor area shown shall match the floor plans. <b>(M-1)</b>   | R405.4.2.1              |
| <input type="checkbox"/> <b>C.</b> Sliding glass doors and opaque doors with glazing equal to or over 30% of total area shall be included in the windows section.   | R-405.5.2<br>R405.5.3.3 |
| <input type="checkbox"/> <b>D.</b> Window overhang depth and separations shall be shown. <b>(M-2)</b>   | R405.5.3.2              |
| <input type="checkbox"/> <b>E.</b> Floor areas over garages and outside entry areas shall be shown separately.  | R405.5.2                |
| <input type="checkbox"/> <b>F.</b> Ceiling areas and insulation values shall be shown. Knee walls shall be shown separately as ceiling area. <b>(M-2)</b>   | R405.5.2                |
| <input type="checkbox"/> <b>G.</b> Exterior wall insulation R-values and adjacent garage walls shall be shown separately.   | R405.5.2                |
| <input type="checkbox"/> <b>H.</b> The R-Value of ducts, surface area, and the location of the ductwork shall be shown. Ductwork that is classified as "leak free" requires a duct leakage test report and shall be a requirement for final inspection. | R405.2<br>R405.2.3      |
| <input type="checkbox"/> <b>I.</b> The number of A/C systems, the efficiency rating of each system, and the size of the equipment shall be shown.   | R405.5.2                |
| <input type="checkbox"/> <b>J.</b> The heater type, size, and fuel source shall be shown.   | R405.5.2                |
| <input type="checkbox"/> <b>K.</b> Energy credits shall be shown. <b>(M-3)</b>  | R405.7                  |

**Plans**

- |   |                                    |
|---|------------------------------------|
| <input type="checkbox"/> <b>2.</b> The Energy compliance report and the cooling and heating load calculations shall be submitted with the plans. Equipment selected shall not be oversized more than 115% of the total calculated load. Strip heaters shall be sized within 4 kW of the btu load. | R403.7<br>R403.7.1<br>R403.7.1.2.2 |
| <input type="checkbox"/> <b>3.</b> Mechanical design criteria and controls (T-stat) shall be shown.   | R103.2                             |
| <input type="checkbox"/> <b>4.</b> Duct sealing methods, duct and pipe insulation values, and duct locations shall be shown.  | R103.2                             |
| <input type="checkbox"/> <b>5.</b> Outdoor air intakes and exhausts shall have automatic or gravity dampers and shall be shown.   | R403.6                             |
| <input type="checkbox"/> <b>6.</b> Replacement outdoor combustion air and tight-fitting flue dampers or tight-fitting doors for wood burning fireplaces shall be shown.   | R402.4.2                           |

**Rough Inspection**

**Code Section**

- |  |  |
|--|--|
| <input type="checkbox"/> <b>1.</b> Building framing cavities shall not be used as ducts or plenums.  | R403.3.3.5                                     |
| <input type="checkbox"/> <b>2.</b> Air-handling units may only be installed in the attic if all code exceptions are met.<br>a) The service panel of the equipment shall be located within 6 feet of an attic access.   | R403.3.6                                       |
| <input type="checkbox"/> <b>3.</b> All supply and return ducts not completely inside the <i>building thermal envelope</i> shall be insulated to a minimum of R-6. Suction line refrigerant piping shall be a minimum of R-3.   | R403.4<br>R405.2                               |
| <input type="checkbox"/> <b>4.</b> All ducts shall be mechanically attached and sealed. The reinforced lining shall be sealed and the duct collar flange shall be sealed to the duct board using tape, mastic, or gasket. The reinforced core shall be mechanically attached to the duct fitting by a draw-band. The outer jacket of the flexible duct shall be sealed to prevent condensation. <b>(M-4)</b> | R403.3.2<br>C403.2.9.2<br>R403.3.3<br>R405.2.3 |
| <input type="checkbox"/> <b>5.</b> Sufficient space shall be given to install the required ceiling and wall insulation   | R402.4.1.1                                     |
| <input type="checkbox"/> <b>6.</b> Combustion air ducts shall be installed for wood burning fireplaces.  | R402.4.2                                       |

## **BORA ENERGY GUIDELINES**

### **BORA Mechanical Checklist**

#### **Final Inspection**

	<b><u>Code Section</u></b>
<input type="checkbox"/> 1. The envelope leakage test report shall be provided to the code official and approved.	R402.4.1.2
<input type="checkbox"/> 2. HVAC register boots that penetrate the thermal envelope shall be sealed to the drywall. Penetrations shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location.	R402.4.1.1
<input type="checkbox"/> 3. Sufficient space (about 4 inches) shall be provided adjacent to all mechanical components of the air distribution system to assure room for inspection, seal, and maintenance	R403.3.2 C403.2.9.3.3
<input type="checkbox"/> 4. The efficiency rating of each system shall be verified by providing the (AHRI) certificate showing the corresponding model numbers shown on the plans. <b>(M-5)</b>	R405.4.3 #2 R303.1.2
<input type="checkbox"/> 5. Mechanical closets and enclosed support platforms shall be sealed to prevent leakage.	R403.3.2
<input type="checkbox"/> 6. Piping insulation exposed to weather shall be protected from damage.	R403.4.1
<input type="checkbox"/> 7. Tight fitting flue dampers or tight-fitting doors shall be installed for wood burning fireplaces.	R402.4.2
<input type="checkbox"/> 8. A duct leakage test report shall be submitted when “leak free” ducts are selected using performance method R405. A test can be performed at rough or post construction.	R405.2.3 R403.3.3
<input type="checkbox"/> 9. An envelope leakage test report shall be approved before a final inspection is approved.	R402.4.1.2
<input type="checkbox"/> 10. Any changes which effect the energy efficiency of the building shall require revised plans and a revised energy compliance report.	R103.4

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#### **BORA Envelope Leakage Test Report Checklist**

#### **Report Review**

	<b><u>Code Section</u></b>
<input type="checkbox"/> 1. The envelope leakage test shall be completed prior to the final inspection.	R402.4.1.2
<input type="checkbox"/> 2. The envelope leakage test report form from the approved software, which was submitted at application for permit, shall be used to show compliance with the code. <b>(M-6)</b>	R101.5.1
<input type="checkbox"/> 3. The envelope leakage test report shall have the address and permit number on the report and shall be completed and signed by a qualified tester.	R101.5.1 R402.4.1.2
<input type="checkbox"/> 4. The method of compliance shall be indicated on the form and shall match the method selected when the building permit was issued. <b>(M-7)</b>	R405.2.2 R401.2
<input type="checkbox"/> 5. The air change design rate shall be indicated in the box provided on the test report when using the performance method. <b>(M-8)</b>	R405.2.2 R405.4.2
<input type="checkbox"/> 6. Leakage rates that exceeding seven (7) ACH shall indicate “Fail”.	R402.4.1.2
<input type="checkbox"/> 7. Leakage rates exceeding the design rate shall not “Pass” even though it is under (7) air changes per hr.	R405.2.2 R402.4.1.2
<input type="checkbox"/> 8. Buildings with (ACH) rates less than three (3) shall have whole house mechanical ventilation added to the building and shall be indicated on the test report. <b>(M-9)</b>	R403.6 RBC R303.4
<input type="checkbox"/> 9. Buildings where whole house mechanical ventilation is required, shall not pass final inspection, and a revised mechanical plan showing compliance with the residential building code shall be provided.	R103.4 RBC R303.4

## BORA ENERGY GUIDELINES

### BORA Plumbing Checklist

#### Plan Review

#### Code Section

1. **Energy Compliance Report** shall match the plans and shall comply with the following.

- A. Service water heating appliance size and efficiency shall be shown.

R405.5.2  
R103.2 #5

#### Plans

2. Provide AHRI efficiency documentation for water heaters. Water-heating equipment installed in residential units shall meet the minimum efficiencies of Table C404.2. **(P-1)**
3. Gas and oil-fired pool and spa heaters shall have a tested minimum thermal efficiency of 82 percent in accordance with ANSI Z 21.56. Documentation shall be provided.
4. Heat pump pool heaters shall have a minimum COP of 4.0 when tested by a independent laboratory in accordance with AHRI 1160. Documentation shall be provided.
5. If a heated water circulation system is installed, it shall be provided with a circulation pump that will start on demand. The system return pipe shall be a dedicated return pipe or a cold-water supply pipe. Controls shall stop the pump when desired temperature is reached and there is no longer any demand for hot water.
6. Residential pools shall meet the requirements of APSP-15 (Standard for Energy Efficiency for Residential Inground Swimming Pools & Spa's).

R405.4.3 #2  
R403.5.6.2  
R103.2 #5  
R403.10.4  
R103.2 #5  
R403.10.5  
R403.5.1  
R403.12

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#### Rough Inspection

#### Code Section

1. Sufficient space shall be left for insulation on exterior walls adjacent to showers and tubs.
2. If a heated water circulation system is installed, it shall be provided with an accessible circulation pump. The automatic controls, temperature sensors, and the manual controls shall be readily accessible for operation.

R402.4.1.1  
R403.5.1

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#### Final Inspection

#### Code Section

1. Storage water heating model numbers and equipment efficiencies shall be verified and match the plumbing plans. **(P-1)**
2. Electric, gas, and oil type pool and spa heating equipment efficiencies shall be verified and match the plans.
3. Gas and oil type water heaters for permanent pools and spas shall be equipped with a vapor retardant cover on or at the water surface. A liquid cover or other means proven to reduce heat loss may be used and shall be on the job for final inspection. Heat pump and solar type heaters are excluded from this requirement.
5. Any changes which effect the energy efficiency of the building shall require revised plans and a revised energy compliance report.

R403.5.6.2  
R403.10  
R403.10.3  
R103.4

**BORA ENERGY GUIDELINES**  
**BORA Electrical Checklist**

**Plan Review**

**Code Section**

**1. Energy Compliance Report** shall match the plans and shall comply with the following.

- |  |                            |
|--|----------------------------|
| <input type="checkbox"/> <b>A.</b> Comfort heating and service water heating appliances using electricity shall be shown.                        | R405.4.2                   |
| <input type="checkbox"/> <b>B.</b> When a ceiling fan energy credit is indicated, ceiling fans and fan blade sizes are to be shown. <b>(E-1)</b> | R405.7.6<br>Table R405.7.6 |

**Plans**

- |  |                            |
|--|----------------------------|
| <input type="checkbox"/> <b>2.</b> When a ceiling fan energy credit is indicated on the energy compliance report. The required fans and blade sizes shall be shown.  | R405.7.6<br>Table R405.7.6 |
| <input type="checkbox"/> <b>3.</b> The electrical floor plans shall clearly identify all recessed luminaires that are installed in the building thermal envelope and shall show sealing details.   | R402.4.5<br>R103.2 #8      |
| <input type="checkbox"/> <b>4.</b> Recessed lighting shall be IC-rated and <i>labeled</i> as having an air leakage rate not more than 2.0 cfm when tested in accordance with ASTM E283   | R402.4.5                   |
| <input type="checkbox"/> <b>5.</b> The Luminaire Schedule shall clearly identify the “high efficacy lamps”. Not less than 90 percent of the lamps in permanently installed luminaires shall have an efficacy of at least 45 lumens-per-watt or shall utilize lamps with an efficacy of not less than 65 lumens-per-watt. | R404.1.1                   |

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**Rough Inspection**

**Code Section**

- |   |            |
|---|------------|
| <input type="checkbox"/> <b>1.</b> An air barrier shall be installed behind electrical or communication boxes or air sealed boxes shall be installed when these boxes are in the exterior thermal envelope. | R402.4.1.1 |
| <input type="checkbox"/> <b>2.</b> Thermal envelope penetrations by electrical conduits and cables in the wall top plate shall be sealed.   | R402.4.1.1 |

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**Final Inspection**

**Code Section**

- |  |          |
|--|----------|
| <input type="checkbox"/> <b>1.</b> Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering. | R402.4.5 |
| <input type="checkbox"/> <b>2.</b> Ceiling fans shall be installed per the electrical drawings.  | R405.7.6 |
| <input type="checkbox"/> <b>3.</b> Any changes which effect the energy efficiency of the building shall require revised plans and a revised energy compliance report.  | R103.4   |

# Appendix A

## Residential Fenestration Product Rating Submittal Form

In accordance with R405.4.3.2 #2 of the Florida Energy Conservation Code. This form is a tool for the submittal process of the proposed energy product rating for windows, doors, and skylights.

### Recommended for Review:

- Copy of the approved energy compliance report “window checklist” showing each fenestration design rating (U-value and SHGC) for all fenestration in the entire building.
- A list of the NFRC “Certified Product Directory” number of each window showing the U-Value and SHGC on the attached form. These numbers can be found on the NFRC site:  
<https://search.nfrc.org/search/searchDefault.aspx>

### Notes:

- Products not listed in the NFRC directory shall be tested by an accredited, independent laboratory in accordance with FECC R303.1.3. Products not tested and lacking certification and labeling shall be assigned a default rating from the energy tables.
- Products submitted that do not match the approved energy window checklist shall require a revised energy compliance report or window submittal per FECC R103.4

#	<u>NFRC Directory Number</u>	<u>Description</u>	<u>U-Value</u>	<u>SHGC</u>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

<u>Window #</u>	<u>NFRC Directory Number</u>	<u>Description</u>	<u>U-Value</u>	<u>SHGC</u>
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
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33				
34				
35				
36				
37				
38				



**TABLE R303.1.3(1)**

**DEFAULT GLAZED FENESTRATION U-FACTORS**

FRAME TYPE	SINGLE PANE	DOUBLE PANE	SKYLIGHT	
			SINGLE	DOUBLE
<u>Metal</u>	<u>1.20</u>	<u>0.80</u>	<u>2.00</u>	<u>1.30</u>
<u>Metal with Thermal Break</u>	<u>1.10</u>	<u>0.65</u>	<u>1.90</u>	<u>1.10</u>
<u>Nonmetal or Metal Clad</u>	<u>0.95</u>	<u>0.55</u>	<u>1.75</u>	<u>1.05</u>
<u>Glazed Block</u>	<u>0.60</u>			

**TABLE R303.1.3.(2)**

**DEFAULT OPAQUE DOOR U-FACTORS**

DOOR TYPE	U-FACTOR
<u>Uninsulated Metal</u>	<u>1.20</u>
<u>Insulated Metal</u>	<u>0.60</u>
<u>Wood</u>	<u>0.50</u>
<u>Insulated, nonmetal edge, max 45% glazing. Any glazing double pane</u>	<u>0.35</u>

**Example**


**Compliance Report Checklist**

WINDOWS														
Orientation shown is the entered, Proposed orientation.														
✓	#	Wall			Panels	NFRC	U-Factor	SHGC	Imp	Area	Overhang		Int Shade	Screening
		Ornt	ID	Frame							Depth	Separation		
_____	1	W	2	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
_____	2	S	3	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
_____	3	E	4	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
_____	4	N	5	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None

# Addendum

## STRUCTURAL

- 1) Windows are required to be tested for energy efficiency in accordance with the NFRC 200 testing standard by an accredited independent laboratory and then certified by the manufacturer. The code does not specify if this certification is required to be independent and by NFRC. Some manufactures have “Self-Certified” their product after testing. These products are not certified by NFRC and will not be listed in the NFRC’s “Certified Products Directory.” Products not certified by NFRC shall submit test reports and label their products to show compliance with FECC R303.1.3. (See example below of a NFRC certified label)

 National Fenestration Rating Council® <b>CERTIFIED</b>	<b>World's Best          Window Co.</b> Series "2000" Casement Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E XYZ-X-1-00001-00001
<b>ENERGY PERFORMANCE RATINGS</b>	
U-Factor (U.S. / I-P) <b>0.35</b>	Solar Heat Gain Coefficient <b>0.32</b>
<b>ADDITIONAL PERFORMANCE RATINGS</b>	
Visible Transmittance <b>0.51</b>	Air Leakage (U.S. / I-P) <b>≤ 0.3</b>
Condensation Resistance <b>51</b>	<b>—</b>
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>	

- 2) The plans shall be specific as to what that type and R-value of insulation is to be installed. It is unacceptable to have comments on the plan details that indicate: “see energy calculations”. Baffles are required for blown in insulation to keep the vents from becoming blocked upon installation and drift.

## MECHANICAL

- 1) The conditioned floor area is found on the architectural plans. The ceiling areas shall match the conditioned floor area on single story homes with a flat ceiling height throughout the home. On a two-story home, the second-floor conditioned floor area shall match this ceiling area. “Knee walls” occur when ceiling heights change from a vaulted ceiling to a lower ceiling height. Knee walls adjacent to the attic area and shall be listed separately as ceiling area on the compliance report. Knee walls shall not be shown as exterior wall area. (See figure A)

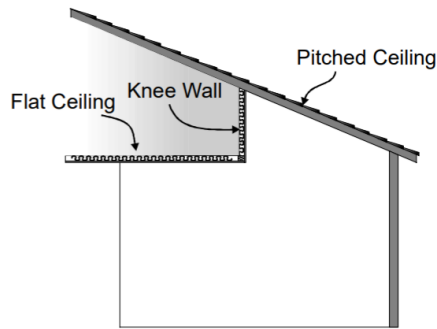


Figure A

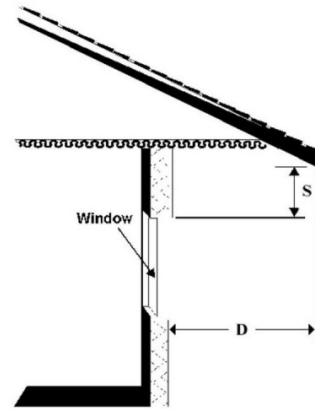


Figure B

- 2) Overhang measurements shown on the plan shall match what is listed on the compliance report. Overhangs are measured in terms of “Depth”, which is the horizontal measure protruding from the building) and “Separation”, which is the vertical distance from the overhang to the top of the window. (See Figure B)
- 3) Energy credits shall be verified. The credits are indicated by abbreviations on the compliance report or by statements on the bottom of the report. PSTAT- Programmable Thermostat, RB- Radiant Barrier, CV- Cross Ventilation, WHF- Whole House Fan, CF- Ceiling Fans, HRU- Heat Recovery Unit, HP- Heat Pump, Roof absorption and emittance test, and a “Duct Leakage Test Report” are possible credits.
- 4) The mechanical attachment and sealing of the flexible ductwork’s collar and inner core are hidden to the inspector by the insulation and vapor barrier during assembly. The tabs shall be bent over, and a draw-band shall be installed for a proper mechanical attachment. The collar flange and the inner core shall also be sealed airtight. The draw-band is not a code approved seal for flexible duct. Flexible duct joints shall be spot checked for compliance with this section by having the contractor open the duct joint for visual inspection.
- 5) Certificates can be obtained by going to the AHRI Certification Directory to verify equipment is designed to be operated together. Water heater efficiencies found in the directory are shown in UEF and shall be converted to EF to match the compliance report. A conversion calculator is found on the Resnet website.
- 6) The FBC approved software will generate an approved “Envelope Leakage Test Report” form and fill in important information such as the volume and the required air change rate specified by the designer.
- 7) The designer of record chooses which method of energy code compliance whether performance or prescriptive. Designers using compliance report R405-2020 shall select performance on the blower door test report. The testing agent shall not select prescriptive when the designer chooses performance method of compliance.
- 8) The design air change rate (ACH), chosen by the designer of record, shall be indicated in the box provided when using performance R405-2020 compliance report.
- 9) It is the code official’s responsibility to make sure this box is checked when the air change rate (ACH) is less than 3(ACH). This selection shall trigger the mechanical designer of record to determine which method they shall use to provide additional ventilation and then submit a revised plan.

## PLUMBING

- 1) The efficiency of the water heaters shown on the compliance report is shown in “EF” and the AHRI efficiency is now shown with a new standard referred to as “UEF”. A conversion is required to verify.

## ELECTRICAL

- 1) When a ceiling fan credit is taken, the ceiling fans shall be indicated on the electrical drawings. Future fans shall not be indicated when this credit is taken. The fans shall be installed per the plans at the electrical final inspection according to Table R405.7.6. Ceiling fans shall be installed in each of the bedrooms and a minimum of one living area in order to receive credit.

**TABLE R405.7.6  
FAN SIZING TABLE**

<b>LONGEST WALL LENGTH (feet)</b>	<b>MINIMUM FAN SIZE (inches)</b>
<b>= 12</b>	<b>36</b>
<b>&gt;12-16</b>	<b>48</b>
<b>&gt;16-17.5</b>	<b>52</b>
<b>&gt;17.5-25</b>	<b>56</b>
<b>&gt;25</b>	<b>2 fans (minimum of 48 inches each)</b>

**Item 3b:**

Residential Compliance Forms R405-2020

**RESIDENTIAL ENERGY CONSERVATION CODE DOCUMENTATION CHECKLIST****Florida Department of Business and Professional Regulation  
Simulated Performance Alternative (Performance) Method**

**Applications for compliance with the 2020 Florida Building Code, Energy Conservation via the Residential Simulated Performance Alternative shall include:**

- This checklist
- Form R405-2020 report
- Input summary checklist that can be used for field verification (usually four pages/may be greater)
- Energy Performance Level (EPL) Display Card (one page)
- HVAC system sizing and selection based on ACCA Manual S or per exceptions provided in Section R403.7
- Mandatory Requirements (five pages)

**Required prior to CO:**

- Air Barrier and Insulation Inspection Component Criteria checklist (Table R402.4.1.1 - one page)
- A completed 2020 Envelope Leakage Test Report (usually one page); exception in R402.4 allows dwelling units of R-2 Occupancies and multiple attached single family dwellings to comply with Section C403.9
- If Form R405 duct leakage type indicates anything other than "default leakage", then a completed 2020 Duct Leakage Test Report - Performance Method (usually one page)

**DEMONSTRATION PURPOSES ONLY**


# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name: Example_2020_Florida_Code_R405_Reports Street: Anyplace City, State, Zip: Tampa , FL , 34345 Owner: Energy Gauge Design Location: FL, Tampa	Builder Name: John Q. Hammer Permit Office: Permit Number: Jurisdiction: County: Hillsborough (Florida Climate Zone 2 )
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Glass/Floor Area: 0.160	Total Proposed Modified Loads: 60.15	PASS
	Total Baseline Loads: 60.46	

<p>I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.</p> <p>PREPARED BY: _____ DATE: _____</p> <p>I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.</p> <p>OWNER/AGENT: _____ DATE: _____</p>	<p>Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes.</p> <p style="text-align: right; font-weight: bold;">BUILDING OFFICIAL: _____ DATE: _____</p> <div style="text-align: right;">  </div>
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- Compliance requires certification by the air handler unit manufacturer that the air handler enclosure qualifies as certified factory-sealed in accordance with R403.3.2.1.
- Compliance requires an Air Barrier and Insulation Inspection Checklist in accordance with R402.4.1.1 and this project requires an envelope leakage test report with envelope leakage no greater than 7.00 ACH50 (R402.4.1.2).
- Compliance requires a roof absorptance test and a roof emittance test in accordance with R405.7.2
- Compliance with a proposed duct leakage Qn requires a Duct Leakage Test Report confirming duct leakage to outdoors, tested in accordance with ANSI/RESNET/ICC 380, is not greater than 0.030 Qn for whole house.

## INPUT SUMMARY CHECKLIST REPORT

PROJECT													
Title:	Example_2020_Florida_Code	Bedrooms:	3	Address Type:	Street Address								
Building Type:	User	Conditioned Area:	2000	Lot #									
Owner Name:	Energy Gauge	Total Stories:	1	Block/Subdivision:									
# of Units:	1	Worst Case:	No	PlatBook:									
Builder Name:	John Q. Hammer	Rotate Angle:	0	Street:	Anyplace								
Permit Office:		Cross Ventilation:	No	County:	Hillsborough								
Jurisdiction:		Whole House Fan:	No	City, State, Zip:	Tampa ,								
Family Type:	Detached				FL , 34345								
New/Existing:	New (From Plans)												
Comment:	Florida Code Example												
CLIMATE													
✓	Design Location	TMY Site	Design Temp 97.5 %	2.5 %	Int Design Temp Winter	Summer	Heating Degree Days	Design Moisture	Daily Temp Range				
_____	FL, Tampa	FL_TAMPA_INTERNATI	39	91	70	75	645.5	54	Medium				
BLOCKS													
Number	Name	Area	Volume										
1	Block1	2000	18000										
SPACES													
Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated			
1	Main	2000	18000	Yes	3	3	1	Yes	Yes	Yes			
FLOORS													
✓	#	Floor Type	Space	Perimeter	R-Value	Area		Tile	Wood	Carpet			
_____	1	Slab-On-Grade Edge Insulatio	Main	190 ft	0	2000 ft²	----	0.4	0	0.6			
ROOF													
✓	#	Type	Materials	Roof Area	Gable Area	Roof Color	Rad Barr	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
_____	1	Gable or shed	Composition shingles	2108 ft²	332 ft²	Medium	N	0.75	Yes	0.9	Yes	0	18.4
ATTIC													
✓	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC						
_____	1	Full attic	Vented	300	2000 ft²	N	N						
CEILING													
✓	#	Ceiling Type	Space	R-Value	Ins Type	Area	Framing Frac	Truss Type					
_____	1	Under Attic (Vented)	Main	38	Blown	2000 ft²	0.11	Wood					



**INPUT SUMMARY CHECKLIST REPORT**

<b>WALLS</b>															
✓ #	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	In	Height Ft	In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%	
1	W	Garage	Frame - Wood	Main	13	17	0	9	0	153.0 ft²	0	0.23	0.01	0	
2	W	Exterior	Concrete Block - Int Insul	Main	6	26.26		9		236.3 ft²		0	0.75	0	
3	S	Exterior	Concrete Block - Int Insul	Main	6	43.25		9		389.3 ft²		0	0.75	0	
4	E	Exterior	Concrete Block - Int Insul	Main	6	43.25		9		389.3 ft²		0	0.75	0	
5	N	Exterior	Concrete Block - Int Insul	Main	6	43.25		9		389.3 ft²		0	0.75	0	

<b>DOORS</b>											
✓ #	Ornt	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area	
1	N	Insulated	Main	None	.4	5		8		40 ft²	

<b>WINDOWS</b>													
Orientation shown is the entered, Proposed orientation.													
✓ #	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Imp	Area	Overhang Depth	Separation	Int Shade	Screening
1	W	2	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
2	S	3	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
3	E	4	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None
4	N	5	Vinyl	Low-E Double	Yes	0.4	0.25	N	80.0 ft²	0 ft 0 in	0 ft 0 in	IECC 2012	None

<b>GARAGE</b>						
✓ #	Floor Area	Ceiling Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation	
1	382.8 ft²	382.8 ft²	64 ft	9 ft	11	

<b>INFILTRATION</b>								
#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Proposed ACH(50)	.0004	2100	115.21	216.3	.14	7

<b>HEATING SYSTEM</b>									
✓ #	System Type	Subtype	Speed	Efficiency	Capacity	Block	Ducts		
1	Electric Heat Pump/	None	Singl	HSPF:8.2	19.5 kBtu/hr	1	sys#1		

<b>COOLING SYSTEM</b>									
✓ #	System Type	Subtype	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
1	Central Unit/	Split	Singl	SEER: 14	19.5 kBtu/hr	585 cfm	0.75	1	sys#1

**INPUT SUMMARY CHECKLIST REPORT**

HOT WATER SYSTEM									
✓	#	System Type	SubType	Location	EF	Cap	Use	SetPnt	Conservation
	1	Electric	None	Main	0.944999	50 gal	60 gal	120 deg	None

SOLAR HOT WATER SYSTEM							
✓	FSEC Cert #	Company Name	System Model #	Collector Model #	Collector Area	Storage Volume	FEF
	None	None			ft²		

DUCTS															
✓	#	---- Supply ----			---- Return ----			Leakage Type	Air Handler	CFM 25 TOT	CFM25 OUT	QN	RLF	HVAC #	
	1	Location	R-Value	Area	Location	Area								Heat	Cool
	1	Attic	8	400 ft²	Attic	100 ft²	Prop. Leak Free	Main	--- cfm	60.0 cfm	0.03	0.50	1	1	

**TEMPERATURES**

Programmable Thermostat: N				Ceiling Fans:																																		
Cooling	<input checked="" type="checkbox"/> Jan	<input checked="" type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input checked="" type="checkbox"/> Apr	<input checked="" type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input checked="" type="checkbox"/> Aug	<input checked="" type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input checked="" type="checkbox"/> Dec	Heating	<input checked="" type="checkbox"/> Jan	<input checked="" type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input checked="" type="checkbox"/> Apr	<input checked="" type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input checked="" type="checkbox"/> Aug	<input checked="" type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input checked="" type="checkbox"/> Dec	Venting	<input checked="" type="checkbox"/> Jan	<input checked="" type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input checked="" type="checkbox"/> Apr	<input checked="" type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input checked="" type="checkbox"/> Aug	<input checked="" type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input checked="" type="checkbox"/> Dec
Thermostat Schedule: FloridaCode 2014														Hours																								
Schedule Type		1	2	3	4	5	6	7	8	9	10	11	12																									
Cooling (WD)		AM PM	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75																									
Cooling (WEH)		AM PM	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75	75 75																									
Heating (WD)		AM PM	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72																									
Heating (WEH)		AM PM	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72	72 72																									

MASS					
Mass Type	Area	Thickness	Furniture Fraction	Space	
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Main	

# ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX\* = 99

The lower the EnergyPerformance Index, the more efficient the home.

Anyplace, Tampa, FL, 34345

1. New construction or existing	New (From Plans)	10. Wall Type and Insulation	Insulation	Area
2. Single family or multiple family	Detached	a. Concrete Block - Int Insul, Exterior	R=6.0	1404.40 ft²
3. Number of units, if multiple family	1	b. Frame - Wood, Adjacent	R=13.0	153.00 ft²
4. Number of Bedrooms	3	c. N/A	R=	ft²
5. Is this a worst case?	No	d. N/A	R=	ft²
6. Conditioned floor area (ft²)	2000	11. Ceiling Type and insulation level	Insulation	Area
7. Windows**	Description	Area	R=38.0	2000.00 ft²
a. U-Factor:	U=0.40	320.00 ft²	R=	ft²
SHGC:	SHGC=0.25		R=	ft²
b. U-Factor:	N/A	ft²		
SHGC:				
c. U-Factor:	N/A	ft²		
SHGC:				
d. U-Factor:	N/A	ft²		
SHGC:				
Area Weighted Average Overhang Depth:	0.000 ft.	12. Ducts, location & insulation level	R	ft²
Area Weighted Average SHGC:	0.250	a. Sup: Attic, Ret: Attic, AH: Main	8	400
8. Skylights	Description	Area		
a. U-Factor(AVG):	N/A	ft²		
SHGC(AVG):	N/A			
9. Floor Types	Insulation	Area	13. Cooling systems	kBtu/hr Efficiency
a. Slab-On-Grade Edge Insulation	R=0.0	2000.00 ft²	a. Central Unit	19.5 SEER:14.00
b. N/A	R=	ft²		
c. N/A	R=	ft²	14. Heating systems	kBtu/hr Efficiency
			a. Electric Heat Pump	19.5 HSPF:8.20
			15. Hot water systems	Cap: 50 gallons
			a. Electric	EF: 0.94
			b. Conservation features	None
			None	
			Credits (Performance method)	None

I certify that this home has complied with the Florida Energy Efficiency Code for Building Construction through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL Display Card will be completed based on installed Code compliant features.

Builder Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Address of New Home: \_\_\_\_\_ City/FL Zip: \_\_\_\_\_



\*Note: This is not a Building Energy Rating. If your Index is below 70, your home may qualify for energy efficient mortgage (EEM) incentives if you obtain a Florida Energy Rating. For information about the Florida Building Code, Energy Conservation, contact the Florida Building Commission's support staff.

\*\*Label required by Section R303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.

# Florida Building Code, Energy Conservation, 7th Edition (2020)

## Mandatory Requirements for Residential Performance, Prescriptive and ERI Methods

ADDRESS: Anyplace  
Tampa , FL , 34345

Permit Number:

### MANDATORY REQUIREMENTS - See individual code sections for full details.

#### SECTION R401 GENERAL

**R401.3 Energy Performance Level (EPL) display card (Mandatory).** The building official shall require that an energy performance level (EPL) display card be completed and certified by the builder to be accurate and correct before final approval of the building for occupancy. Florida law (Section 553.9085, Florida Statutes) requires the EPL display card to be included as an addendum to each sales contract for both presold and nonpresold residential buildings. The EPL display card contains information indicating the energy performance level and efficiencies of components installed in a dwelling unit. The building official shall verify that the EPL display card completed and signed by the builder accurately reflects the plans and specifications submitted to demonstrate code compliance for the building. A copy of the EPL display card can be found in Appendix RD.

#### SECTION R402 BUILDING THERMAL ENVELOPE

**R402.4 Air leakage (Mandatory).** The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.5.

**Exception:** Dwelling units of R-2 Occupancies and multiple attached single family dwellings shall be permitted to comply with Section C402.5.

**R402.4.1 Building thermal envelope** The building thermal envelope shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

**R402.4.1.1 Installation.** The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.

**R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding seven air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

**Exception:** Testing is not required for additions, alterations, renovations, or repairs, of the building thermal envelope of existing buildings in which the new construction is less than 85 percent of the building thermal envelope.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

**R402.4.2 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.

**R402.4.3 Fenestration air leakage.** Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m<sup>2</sup>), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m<sup>2</sup>), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

**Exception:** Site-built windows, skylights and doors.

## MANDATORY REQUIREMENTS - (Continued)

- R402.4.4 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion fuel burning appliances, the appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room, isolated from inside the thermal envelope. Such rooms shall be sealed and insulated in accordance with the envelope requirements of Table R402.1.2, where the walls, floors and ceilings shall meet not less than the basement wall R-value requirement. The door into the room shall be fully gasketed and any water lines and ducts in the room insulated in accordance with Section R403. The combustion air duct shall be insulated where it passes through conditioned space to a minimum of R-8.

### Exceptions:

1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
2. Fireplaces and stoves complying with Section R402.4.2 and Section R1006 of the Florida Building Code, Residential.

- R402.4.5 Recessed lighting.** Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

## SECTION R403 SYSTEMS

### R403.1 Controls.

- R403.1.1 Thermostat provision (Mandatory).** At least one thermostat shall be provided for each separate heating and cooling system.

- R403.1.3 Heat pump supplementary heat (Mandatory).** Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

- R403.3.2 Sealing (Mandatory)** All ducts, air handlers, filter boxes and building cavities that form the primary air containment passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section C403.2.9.2 of the Commercial Provisions of this code and shall be shown to meet duct tightness criteria below.

Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC 380 by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i), Florida Statutes, to be "substantially leak free" in accordance with Section R403.3.3.

- R403.3.2.1 Sealed air handler.** Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design airflow rate when tested in accordance with ASHRAE 193.

- R403.3.3 Duct testing (Mandatory).** Ducts shall be pressure tested to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.
2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

### Exceptions:

1. A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.
2. *Duct testing is not mandatory for buildings complying by Section 405 of this code. Duct leakage testing is required for Section R405 compliance where credit is taken for leakage, and a duct air leakage  $Q_n$  to the outside of less than 0.080 (where  $Q_n$  = duct leakage to the outside in cfm per 100 square feet of conditioned floor area tested at 25 Pascals) is indicated in the compliance report for the proposed design.*

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

- R403.3.5 Building cavities (Mandatory).** Building framing cavities shall not be used as ducts or plenums.

- R403.4 Mechanical system piping insulation (Mandatory).** Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

- R403.4.1 Protection of piping insulation.** Piping insulation exposed to weather shall be protected from damage, including that caused by sunlight, moisture, equipment maintenance and wind, and shall provide shielding from solar radiation that can cause degradation of the material. Adhesive tape shall not be permitted.

- R403.5.1 Heated water circulation and temperature maintenance systems (Mandatory).** If heated water circulation systems are installed, they shall be in accordance with Section R403.5.1.1. Heat trace temperature maintenance systems shall be in accordance with Section R403.5.1.2. Automatic controls, temperature sensors and pumps shall be accessible. Manual controls shall be readily accessible.

- R403.5.1.1 Circulation systems.** Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosiphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall start the pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.

- R403.5.1.2 Heat trace systems.** Electric heat trace systems shall comply with IEEE 515.1 or UL 515. Controls for such systems shall automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping in accordance with the times when heated water is used in the occupancy.

## MANDATORY REQUIREMENTS - (Continued)

- R403.5.5 Heat traps (Mandatory).** Storage water heaters not equipped with integral heat traps and having vertical pipe risers shall have heat traps installed on both the inlets and outlets. External heat traps shall consist of either a commercially available heat trap or a downward and upward bend of at least 3 ½ inches (89 mm) in the hot water distribution line and cold water line located as close as possible to the storage tank.
- R403.5.6 Water heater efficiencies (Mandatory).**
- R403.5.6.1.1 Automatic controls.** Service water-heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use. The minimum temperature setting range shall be from 100°F to 140°F (38°C to 60°C).
- R403.5.6.1.2 Shut down.** A separate switch or a clearly marked circuit breaker shall be provided to permit the power supplied to electric service systems to be turned off. A separate valve shall be provided to permit the energy supplied to the main burner(s) of combustion types of service water-heating systems to be turned off.
- R403.5.6.2 Water-heating equipment.** Water-heating equipment installed in residential units shall meet the minimum efficiencies of Table C404.2 in Chapter 4 of the Florida Building Code, Energy Conservation, Commercial Provisions, for the type of equipment installed. Equipment used to provide heating functions as part of a combination system shall satisfy all stated requirements for the appropriate water-heating category. Solar water heaters shall meet the criteria of Section R403.5.6.2.1.
- R403.5.6.2.1 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 Standard 9806, Test Methods for Solar Collectors, and SRCC Standard 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.
- R403.6 Mechanical ventilation (Mandatory).** The building shall be provided with ventilation that meets the requirements of the Florida Building Code, Residential, or Florida Building Code, Mechanical, as applicable, or with other approved means of ventilation including: Natural, Infiltration or Mechanical means. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.
- R403.6.1 Whole-house mechanical ventilation system fan efficacy.** When installed to function as a whole-house mechanical ventilation system, fans shall meet the efficacy requirements of Table R403.6.1.
- Exception:** Where an air handler that is integral to tested and listed HVAC equipment is used to provide whole-house mechanical ventilation, the air handler shall be powered by an electronically commutated motor.
- R403.6.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure or for mechanical ventilation shall meet the following criteria:
1. The design air change per hour minimums for residential buildings in ASHRAE 62.2, Ventilation for Acceptable Indoor Air Quality, shall be the maximum rates allowed for residential applications.
  2. No ventilation or air-conditioning system make-up air shall be provided to conditioned space from attics, crawlspaces, attached enclosed garages or outdoor spaces adjacent to swimming pools or spas.
  3. If ventilation air is drawn from enclosed space(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R-11 and the ceiling shall be insulated to a minimum of R-19, space permitting, or R-10 otherwise.

### R403.7 Heating and cooling equipment.

- R403.7.1 Equipment sizing (Mandatory).** Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies, based on building loads for the directional orientation of the building. The manufacturer and model number of the outdoor and indoor units (if split system) shall be submitted along with the sensible and total cooling capacities at the design conditions described in Section R302.1. This Code does not allow designer safety factors, provisions for future expansion or other factors that affect equipment sizing. System sizing calculations shall not include loads created by local intermittent mechanical ventilation such as standard kitchen and bathroom exhaust systems. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed.

**TABLE R403.6.1  
WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY**

FAN LOCATION	AIRFLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY <sup>a</sup> (CFM/WATT)	AIRFLOW RATE MAXIMUM (CFM)
HRV or ERV	Any	1.2 cfm/watt	Any
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 cfm/watt	Any
Bathroom, utility room	10	1.4 cfm/watt	<90
Bathroom, utility room	90	2.8 cfm/watt	Any

For SI: 1 cfm = 28.3 L/min.

a. When tested in accordance with HVI Standard 916

## MANDATORY REQUIREMENTS - (Continued)

- R403.7.1.1 Cooling equipment capacity.** Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section R403.7, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.

The published value for AHRI total capacity is a nominal, rating-test value and shall not be used for equipment sizing. Manufacturer's expanded performance data shall be used to select cooling-only equipment. This selection shall be based on the outdoor design dry-bulb temperature for the load calculation (or entering water temperature for water-source equipment), the blower CFM provided by the expanded performance data, the design value for entering wet-bulb temperature and the design value for entering dry-bulb temperature.

Design values for entering wet-bulb and dry-bulb temperatures shall be for the indoor dry bulb and relative humidity used for the load calculation and shall be adjusted for return side gains if the return duct(s) is installed in an unconditioned space.

Exceptions:

1. Attached single- and multiple-family residential equipment sizing may be selected so that its cooling capacity is less than the calculated total sensible load but not less than 80 percent of that load.
2. When signed and sealed by a Florida-registered engineer, in attached single- and multiple-family units, the capacity of equipment may be sized in accordance with good design practice.

### R403.7.1.2 Heating equipment capacity.

- R403.7.1.2.1 Heat pumps.** Heat pump sizing shall be based on the cooling requirements as calculated according to Section R403.7.1.1, and the heat pump total cooling capacity shall not be more than 1.15 times greater than the design cooling load even if the design heating load is 1.15 times greater than the design cooling load.

- R403.7.1.2.2 Electric resistance furnaces.** Electric resistance furnaces shall be sized within 4 kW of the design requirements calculated according to the procedure selected in Section R403.7.1.

- R403.7.1.2.3 Fossil fuel heating equipment.** The capacity of fossil fuel heating equipment with natural draft atmospheric burners shall not be less than the design load calculated in accordance with Section R403.7.1.

- R403.7.1.3 Extra capacity required for special occasions.** Residences requiring excess cooling or heating equipment capacity on an intermittent basis, such as anticipated additional loads caused by major entertainment events, shall have equipment sized or controlled to prevent continuous space cooling or heating within that space by one or more of the following options:

1. A separate cooling or heating system is utilized to provide cooling or heating to the major entertainment areas.
2. A variable capacity system sized for optimum performance during base load periods is utilized.

- R403.8 Systems serving multiple dwelling units (Mandatory).** Systems serving multiple dwelling units shall comply with Sections C403 and C404 of the Florida Building Code, Energy Conservation—Commercial Provisions in lieu of Section R403.

- R403.9 Snow melt and ice system controls (Mandatory)** Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F (10°C), and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F (4.8°C).

- R403.10 Pools and permanent spa energy consumption (Mandatory).** The energy consumption of pools and permanent spas shall be in accordance with Sections R403.10.1 through R403.10.5.

- R403.10.1 Heaters.** The electric power to heaters shall be controlled by a readily accessible on-off switch that is an integral part of the heater mounted on the exterior of the heater, or external to and within 3 feet (914 mm) of the heater. Operation of such switch shall not change the setting of the heater thermostat. Such switches shall be in addition to a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.

- R403.10.2 Time switches.** Time switches or other control methods that can automatically turn off and on according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate solar- and waste-heat-recovery pool heating systems.
3. Where pumps are powered exclusively from on-site renewable generation.

**R403.10.3 Covers.** Outdoor heated swimming pools and outdoor permanent spas shall be equipped with a vapor-retardant cover on or at the water surface or a liquid cover or other means proven to reduce heat loss.

**Exception:** Where more than 70 percent of the energy for heating, computed over an operation season, is from site-recovered energy, such as from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required.

**R403.10.4 Gas- and oil-fired pool and spa heaters.** All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 82 percent for heaters manufactured on or after April 16, 2013, when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural or LP gas shall not have continuously burning pilot lights.

**R403.10.5 Heat pump pool heaters.** Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with AHRI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratory is required to verify procedure compliance. Geothermal swimming pool heat pumps are not required to meet this standard.

**R403.11 Portable spas (Mandatory).** The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP-14.

**R403.13 Dehumidifiers (Mandatory)** If installed, a dehumidifier shall conform to the following requirements:

1. The minimum rated efficiency of the dehumidifier shall be greater than 1.7 liters/ kWh if the total dehumidifier capacity for the house is less than 75 pints/day and greater than 2.38 liters/kWh if the total dehumidifier capacity for the house is greater than or equal to 75 pints/day.
2. The dehumidifier shall be controlled by a sensor that is installed in a location where it is exposed to mixed house air.
3. Any dehumidifier unit located in unconditioned space that treats air from conditioned space shall be insulated to a minimum of R-2.
4. Condensate disposal shall be in accordance with Section M1411.3.1 of the Florida Building Code, Residential.

**R403.13.1 Ducted dehumidifiers.** Ducted dehumidifiers shall, in addition to conforming to the requirements of Section R403.13, conform to the following requirements:

1. If a ducted dehumidifier is configured with return and supply ducts both connected into the supply side of the cooling system, a backdraft damper shall be installed in the supply air duct between the dehumidifier inlet and outlet duct.
2. If a ducted dehumidifier is configured with only its supply duct connected into the supply side of the central heating and cooling system, a backdraft damper shall be installed in the dehumidifier supply duct between the dehumidifier and central supply duct.
3. A ducted dehumidifier shall not be ducted to or from a central ducted cooling system on the return duct side upstream from the central cooling evaporator coil.
4. Ductwork associated with a dehumidifier located in unconditioned space shall be insulated to a minimum of R-6.

## SECTION R404

### ELECTRICAL POWER AND LIGHTING SYSTEMS

**R404.1 Lighting equipment (Mandatory).** Not less than 90 percent of the lamps in permanently installed luminaires shall have an efficacy of at least 45 lumens-per-watt or shall utilize lamps with an efficacy of not less than 65 lumens-per-watt.

**R404.1.1 Lighting equipment (Mandatory).** Fuel gas lighting systems shall not have continuously burning pilot lights.



# 2020 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

**TABLE 402.4.1.1**  
**AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA**<sup>a</sup>

Project Name:	Example_2020_Florida_Code_R405_Reports	Builder Name:	John Q. Hammer	CHECK
Street:	Anyplace	Permit Office:		
City, State, Zip:	Tampa , FL , 34345	Permit Number:		
Owner:	Energy Gauge	Jurisdiction:		
Design Location:	FL, Tampa			
COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA		
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.		
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.		
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.		
Windows, skylights and doors	The space between window/door jambs and framing, and skylights and framing shall be sealed.			
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.		
Floors (including above-garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.		
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.		
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.			
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity spaces.		
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.			
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.		
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.		
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.		
Electrical/phone box or exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.			
HVAC register boots	HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the sub-floor, wall covering or			
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.			

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

# Envelope Leakage Test Report (Blower Door Test)

## Residential Prescriptive, Performance or ERI Method Compliance

### 2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:
<b>Job Information</b>	
Builder: John Q. Hammer	Community: _____ Lot: 1A
Address: Anyplace	
City: Tampa	State: FL Zip: 34845
<b>Air Leakage Test Results</b> <i>Passing results must meet either the Performance, Prescriptive, or ERI Method</i>	
<input type="radio"/> <b>PRESCRIPTIVE METHOD</b> -The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 7 air changes per hour at a pressure of 0.2 inch w.g. (50 Pascals) in Climate Zones 1 and 2.	
<input type="radio"/> <b>PERFORMANCE or ERI METHOD</b> -The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding the selected ACH(50) value, as shown on Form R405-2020 (Performance) or R406-2020 (ERI), section labeled as infiltration, sub-section ACH50. ACH(50) specified on Form R405-2020-Energy Calc (Performance) or R406-2020 (ERI): <input style="width: 100px;" type="text" value="7.000"/>	
$\frac{\text{CFM}(50) \times 60 \div 18000}{\text{Building Volume}} = \text{ACH}(50)$ <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> <b>PASS</b>  <input type="checkbox"/> When ACH(50) is less than 3, Mechanical Ventilation installation must be verified by building department.         </div> <div style="width: 45%;"> <u>Method for calculating building volume:</u>  <input type="radio"/> Retrieved from architectural plans  <input checked="" type="radio"/> Code software calculated  <input type="radio"/> Field measured and calculated         </div> </div>	
<p><b>R402.4.1.2 Testing.</b> Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), <i>Florida Statutes</i> or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the <i>building thermal envelope</i>.</p> <p>During testing:</p> <ol style="list-style-type: none"> <li>1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.</li> <li>2. Dampers including exhaust, intake, makeup air, back draft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.</li> <li>3. Interior doors, if installed at the time of the test, shall be open.</li> <li>4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.</li> <li>5. Heating and cooling systems, if installed at the time of the test, shall be turned off.</li> <li>6. Supply and return registers, if installed at the time of the test, shall be fully open.</li> </ol>	
<b>Testing Company</b>	
Company Name: _____ Phone: _____	
I hereby verify that the above Air Leakage results are in accordance with the 2020 7th Edition Florida Building Code Energy Conservation requirements according to the compliance method selected above.	
Signature of Tester: _____ Date of Test: _____	
Printed Name of Tester: _____	
License/Certification #: _____ Issuing Authority: _____	

DEMONSTRATION PURPOSES ONLY

# Duct Leakage Test Report

## Residential Prescriptive, Performance or ERI Method Compliance 2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:
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### Job Information

Builder: John Q. Hammer	Community:	Lot: NA
Address: Anyplace		
City: Tampa	State: FL	Zip: 34345

### Duct Leakage Test Results

System 1	_____ cfm25
System 2	_____ cfm25
System 3	_____ cfm25
Sum of others	_____ cfm25
Total of all	_____ cfm25

**Prescriptive Method** cfm25 (Total)

To qualify as "substantially leak free" Qn Total must be less than or equal to 0.04 if air handler unit is installed. If air handler unit is not installed, Qn Total must be less than or equal to 0.03. This testing method meets the requirements in accordance with Section R403.3.3.

Is the air handler unit installed during testing?  YES ( $= \frac{0.04}{Qn}$ )  NO ( $= \frac{0.03}{Qn}$ )

**Performance/ERI Method** cfm25 (Out or Total)

To qualify using this method, Qn must not be greater than the proposed duct leakage Qn specified on Form R405-2020 or R406-2020.

Leakage Type selected on Form R405-2020 (EnergyCalc) or R406-2020	Qn specified on Form R405-2020 (EnergyCalc) or R406-2020
Proposed Leak Free	0.03

\_\_\_\_\_ ÷  $\frac{2000}{\text{Total Conditioned Square Footage}}$  = \_\_\_\_\_ Qn

**PASS**       **FAIL**

Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC380 by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i), Florida Statutes.

### Testing Company

Company Name: \_\_\_\_\_ Phone: \_\_\_\_\_

I hereby verify that the above duct leakage testing results are in accordance with the Florida Building Code requirements with the selected compliance path as stated above, either the Prescriptive Method or Performance Method.

Signature of Tester: \_\_\_\_\_ Date of Test: \_\_\_\_\_

Printed Name of Tester: \_\_\_\_\_

License/Certification #: \_\_\_\_\_ Issuing Authority: \_\_\_\_\_

**Item 3c:**

Envelope Leakage Report Summary

## 2020 Florida Energy Conservation Code Changes

### R405.2.2 Building air leakage testing

Building or dwelling air leakage testing shall be in accordance with Sections R402.4 through R402.4.1.2.

If an air leakage rate below seven air changes per hour (a) is specified for the proposed design,

Testing shall verify the air leakage rate does not exceed the air leakage rate of the proposed design instead of seven air changes per hour.

(a) *at a pressure of 0.2 inch w.g. (50 pascals)*

### R405.2.3 Duct air leakage testing

In cases where duct air leakage lower than the default (a) is specified for the proposed design, testing in accordance with Section R403.3.2 shall verify a duct air leakage rate not exceeding the leakage rate of the proposed design.

Otherwise, in accordance with Section R403.3.3, duct testing is not mandatory for buildings complying by Section R405.

(a) *( $Q_n$  to outside of 0.080 (where  $Q_n$  = duct leakage to the outside in cfm per 100 square feet of conditioned floor area tested at 25 Pascals)*

### Summary

- The designer of record determines the energy compliance path per R401.2 and provides a compliance report that is either Performance, Prescriptive or ERI method.
- When filling out the Envelope Leakage Test report, the method which the designer chose must be selected. The testing agency or contractor cannot choose a different method of compliance than the designer.
- The statement on the form giving these options do not apply to the tester or the contractor to select. It applies to the designer who prepared the compliance document. This selection by the designer also applies to the duct testing leakage rate.
- The code was changed in this 2020 cycle to make sure that if the designer chose the performance method of compliance, the leakage rate that he/she chose was not exceeded.
- The software places the rate in the box provided and the software is being updated to select the correct method of compliance.
- The code official is responsible to review both the Envelope Leakage Test Report and the Duct Leakage Test Report to make sure the proposed design is met and that the reports are accurate and without errors.

# Envelope Leakage Test Report (Blower Door Test)

## Residential Prescriptive, Performance or ERI Method Compliance

### 2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:
<b>Job Information</b>	
Builder: John Q. Hammer	Community: _____ Lot: 784
Address: Anyplace	
City: Tampa	State: FL Zip: 34645
<b>Air Leakage Test Results</b> <i>Passing results must meet either the Performance, Prescriptive, or ERI Method</i>	
<input type="radio"/> <b>PRESCRIPTIVE METHOD</b> -The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 7 air changes per hour at a pressure of 0.2 inch w.g. (50 Pascals) in Climate Zones 1 and 2.	
<input checked="" type="radio"/> <b>PERFORMANCE or ERI METHOD</b> -The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding the selected ACH(50) value, as shown on Form R405-2020 (Performance) or R406-2020 (ERI), section labeled as infiltration, sub-section ACH50. ACH(50) specified on Form R405-2020-Energy Calc (Performance) or R406-2020 (ERI) <span style="border: 1px solid black; padding: 2px;">7.000</span>	
$\frac{\text{CFM}(50) \times 60 \div 18000}{\text{Building Volume}} = \frac{\text{ACH}(50)}$ <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">PASS</div> <div style="text-align: right;"> <p><u>Method for calculating building volume:</u></p> <input type="radio"/> Retrieved from architectural plans  <input checked="" type="radio"/> Code software calculated  <input type="radio"/> Field measured and calculated         </div> </div> <p><input type="checkbox"/> When ACH(50) is less than 3, Mechanical Ventilation installation must be verified by building department.</p>	
<p><b>R402.4.1.2 Testing.</b> Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), <i>Florida Statutes</i> or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the <i>building thermal envelope</i>.</p> <p>During testing:</p> <ol style="list-style-type: none"> <li>Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.</li> <li>Dampers including exhaust, intake, makeup air, back draft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.</li> <li>Interior doors, if installed at the time of the test, shall be open.</li> <li>Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.</li> <li>Heating and cooling systems, if installed at the time of the test, shall be turned off.</li> <li>Supply and return registers, if installed at the time of the test, shall be fully open.</li> </ol>	
<b>Testing Company</b>	
Company Name: _____	Phone: _____
I hereby verify that the above Air Leakage results are in accordance with the 2020 7th Edition Florida Building Code Energy Conservation requirements according to the compliance method selected above.	
Signature of Tester: _____	Date of Test: _____
Printed Name of Tester: _____	
License/Certification #: _____	Issuing Authority: _____

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# Duct Leakage Test Report

## Residential Prescriptive, Performance or ERI Method Compliance 2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:															
<b>Job Information</b>																
Builder: John Q. Hammer	Community: _____ Lot: NA															
Address: Anyplace																
City: Tampa	State: FL Zip: 34345															
<b>Duct Leakage Test Results</b>																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>System 1</td><td>_____</td><td>cfm25</td></tr> <tr><td>System 2</td><td>_____</td><td>cfm25</td></tr> <tr><td>System 3</td><td>_____</td><td>cfm25</td></tr> <tr><td>Sum of others</td><td>_____</td><td>cfm25</td></tr> <tr><td>Total of all</td><td>_____</td><td>cfm25</td></tr> </table>	System 1	_____	cfm25	System 2	_____	cfm25	System 3	_____	cfm25	Sum of others	_____	cfm25	Total of all	_____	cfm25	<p><input checked="" type="radio"/> <b>Prescriptive Method</b> cfm25 (Total)</p> <p>To qualify as "substantially leak free" Qn Total must be less than or equal to 0.04 if air handler unit is installed. If air handler unit is not installed, Qn Total must be less than or equal to 0.03. This testing method meets the requirements in accordance with Section R403.3.3.</p> <p style="text-align: center;">Is the air handler unit installed during testing? <input type="checkbox"/> YES ("25") <input type="checkbox"/> NO ("25")</p>
System 1	_____	cfm25														
System 2	_____	cfm25														
System 3	_____	cfm25														
Sum of others	_____	cfm25														
Total of all	_____	cfm25														
<p><math>\frac{\text{Total of all systems}}{\text{Total Conditioned Square Footage}} + \frac{2000}{\text{Total Conditioned Square Footage}} = \text{_____} \text{ Qn}</math></p>	<p><input checked="" type="radio"/> <b>Performance/ERI Method</b> cfm25 (Out or Total)</p> <p>To qualify using this method, Qn must not be greater than the proposed duct leakage Qn specified on Form R405-2020 or R406-2020</p> <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Leakage Type selected on Form R405-2020 (EnergyCalc) or R406-2020</td> <td style="width: 50%; text-align: center;">Qn specified on Form R405-2020 (EnergyCalc) or R406-2020</td> </tr> </table>	Leakage Type selected on Form R405-2020 (EnergyCalc) or R406-2020	Qn specified on Form R405-2020 (EnergyCalc) or R406-2020													
Leakage Type selected on Form R405-2020 (EnergyCalc) or R406-2020	Qn specified on Form R405-2020 (EnergyCalc) or R406-2020															
<input type="checkbox"/> <b>PASS</b> <input type="checkbox"/> <b>FAIL</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Proposed Leak Free</td> <td style="width: 50%; text-align: center;">0.03</td> </tr> </table>	Proposed Leak Free	0.03													
Proposed Leak Free	0.03															
<p>Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC380 by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i), Florida Statutes.</p>																
<b>Testing Company</b>																
Company Name: _____ Phone: _____																
I hereby verify that the above duct leakage testing results are in accordance with the Florida Building Code requirements with the selected compliance path as stated above, either the Prescriptive Method or Performance Method.																
Signature of Tester: _____	Date of Test: _____															
Printed Name of Tester: _____																
License/Certification #: _____	Issuing Authority: _____															

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