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BROWARD COUNTY
BOARD OF RULES AND APPEALS

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To: Members of the Ad Hoc Energy Conservation Committee

D. Rice, P.E.	M. Charnin	T. Fallon	W. Haygood
E. Jenison	A. Kamm, P.E.	C. Kirby	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 18, 2022 (1:30PM – 3:30PM)

Subj: Energy Conservation Committee to Discuss Agenda Items

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

AGENDA

Roll Call

New Member: **Mr. Carlton Kirby**, Broward County Environmental Protection and Growth Management Division

Approval of Minutes – December 14, 2021

Chairman's Opening Remarks

Chief Energy Code Compliance Officer Opening Remarks

Regular Meeting

General Discussion

Schedule Next Meeting

Adjournment

Reference Documents for Committee Use

1) #9845-C402.5 Air Leakage (Pg. 5)
2) #9972-C405.1 Lighting (Pg. 8)
3) #10151-R402.4.1.2 – #7 Testing Procedures (Pg. 10)
4) #10193-R402.4.1.2 Testing (Pg. 12)
5) BORA Commercial Energy Guidelines (Pg. 14)

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.*

Energy Conservation Committee Minutes
December 14, 2021

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DRAFT

MEETING OF THE ENERGY CONSERVATION COMMITTEE

Minutes
December 14, 2021

Call to Order:

Chair David Rice, P.E., R.C. Engineering, Inc., called a published meeting of the Broward County Board of Rules and Appeals Energy Conservation Committee to order at 1:32 PM.

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

Present:

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

Staff: Timothy de Carion, Chief Energy Code Compliance Officer

Chair Rice introduced Mr. James DiPietro, Administrative Director, Broward County Board of Rules and Appeals and Mr. Daniel Lavrich, Board Chair, Broward County Board of Rules and Appeals to the committee.

He went on to share that the Residential Energy Guidelines were passed at the October 14, 2021, Board Meeting. The next task for the committee will be to create Commercial Energy Guidelines. Chair Rice believes that the commercial guidelines will be more difficult to create and take a longer prepare them. He also added that he would like more guests to attend the Energy Conservation Committee meetings. He would like to invite members of the community to the upcoming committee meetings.

A MOTION WAS MADE BY MR. HAYGOOD AND SECONDED BY MR. JENISON TO APPROVE THE JULY 29, 2021, ENERGY CONSERVATION COMMITTEE MEETING MINUTES AS SUBMITTED. THE MOTION PASSED BY UNANIMOUS VOTE.

Item 1: Education Update

Mr. Timothy de Carion, Broward County Board of Rules and Appeals, informed the committee that "Energy Compliance Report Review" code class that he developed was approved by the Building Code Administrators and Inspectors Board (BCAIB), the Construction Industry Licensing Board (CILB) and the Electrical Contractors'

Licensing Board (ECLB). The class is conducted in as a webinar out of an abundance of caution due to COVID-19. The course will be based on compliance and compliance forms because so much of the energy code is based on compliance reports. Mr. de Carion requested that the committee share their suggestions for more classes that believed should be developed. He added that Mr. Brian Lomel, P.E., TLC Engineering, volunteered to teach a class. Mr. Lomel shared that the class that he will be involved with will review energy code changes.

NO MOTION.

Item 2: Miami-Date/Broward BORA Commercial Cool Roof Code Modification

Mr. de Carion shared his screen to display the Miami-Dade/Broward BORA Commercial Cool Roof code modification. He explained that he worked with Mr. Pete Quintela, Miami-Dade County, to prepare the code modification for the 2023 code cycle. The modification will increase the requirements for climate zone 1A. Climate zone 1A includes Broward County, Collier County, Henry County, Lee County, Miami-Dade County, Monroe County and Palm Beach County. Mr. de Carion explained that a cool roof is a product that reduces the heat transfer to a building by reflecting the solar rays off the roof's surface. It has the potential to extend the life of the roof.

Bob Volin joined the meeting at 2:04 PM.

He continued to explain each of the modifications to Chapter 3 of the code. The draft of the modifications has been shared with several departments in the area for feedback. Mr. Michael Rada, Building Official, City of Pompano Beach responded with a letter about the energy code modification how he believes the code modifications will positively affect overall energy consumption.

Mr. Art Kamm, P.E., Kamm Consulting, asked for clarification about the cost of a standard roof. Chair Rice interjected that finding the cost will be relatively easy to figure out, but the more complex question would be what the savings or return on investment will be. Mr. DiPietro added that the Miami-Dade and Broward County sustainability departments are contributing advice and suggestions to the code modifications. Mr. Wyatt T. Haygood, City of Parkland, asked if there will be a certification for cool roofs. Mr. de Carion answered that there is currently a testing laboratory based in California called the Cool Roof Council. He added that many of the new roofing products bare the Cool Roof Council insignia. Test results for products can be requested.

Chair Rice shared that he and Mr. de Carion discussed that they believe that after a bit more research, the commercial energy guidelines should be pursued and moved forward. Mr. Lavrich asked if single-ply roofs are durable structurally from puncture and debris. He shared that in his experience, the popular single-ply roofs do not fare well under duress. Mr. de Carion said that believes that a lot of products have already product approval, but he will do more research about them. Mr. DiPietro suggested sending the questions to the Miami-Dade and Broward work group.

Mr. Haygood reiterated that he believes that standard has to be in place to legitimize cool roofs throughout plan reviews. Mr. DiPietro said that they are working to create the strongest guidelines.

A MOTION WAS MADE BY MR. LOMEL AND SECONDED BY MR. TRAVERS TO MOVE FORWARD WITH THE CODE MODIFICATIONS INCLUDING THE COMMITTEE MEMBER'S COMMENTS. THE MOTION PASSED BY UNANIMOUS VOTE.

Item 3: BORA Commercial Compliance Path Form

Mr. de Carion shared the BORA Commercial Energy Code Pathway Form that he has been working on. Plans come through the building department, but the code sections that apply to the repairs are difficult to deduce. The BORA Commercial Compliance Path Form intends to clarify the energy code compliance paths that is followed during the permitting process.

Chair Rice reminded the committee that code changes cannot be made. This form will provide plan reviewers with additional guidance.

Mr. John Travers, City of Fort Lauderdale, asked if the standard Broward County permit application form that contains an interpretation from the Board attorney, stating that the owner's signature is not required, would an additional form requiring the owner's signature be a conflict.

Mr. Lavrich asked Mr. de Carion who the form is intended for. Mr. de Carion said that the information is a part of the design of the building and the information is intended for the plan reviewer. Mr. Lavrich said that he believes that the term "agent" should be replaced with a more specific description of who the form is intended for. Mr. Lomel responded that he believes that the whoever is the design professional for the project should be who signs the form. Mr. Lavrich reminded the committee that the term "agent" has the potential to be an unlicensed person.

Chair Rice asked the committee to send their suggestions to Mr. de Carion about the form in its current state.

NO MOTION.

Chair Rice said that he intends to schedule the next Energy Conservation Committee meeting in four weeks. He shared that he doesn't have a deadline to get the commercial energy guidelines passed. He stressed that he would like to take the time to get them right.

Mr. Mike Charnin, City of Plantation, asked who Chair Rice would like the committee members to reach out to for the upcoming the Energy Conservation Committee meetings. Chair Rice said that he would like the building departments to have the opportunity to see the changes as they are happening, rather than being blindsided after the changes are made. Mr. Charnin suggested that the meeting information be sent to the building officials, who can suggest which members of their staff that they believe would benefit most from attending the meetings.

A MOTION WAS MADE BY MR. CHARNIN AND SECONDED BY MR. LOMEL TO ADJOURN THE MEETING. THE MOTION PASSED BY UNANIMOUS VOTE.

Adjournment

Having no further business to go before the Committee, the meeting adjourned at 2:50 PM.

Item 1a:
#9845-C402.5 Air Leakage

Modification #9845

Summary of Modification

Mod. clarifies mandatory sections referenced in C402.5. Previous section C402.5 included up to section C402.8 as mandatory provisions. C402.5 updates language to include "C402.5.1 through C402.5.10"

Text of Modification

C402.5 Air leakage—thermal envelope (Mandatory). The building thermal envelope shall comply with Sections C402.5.1 through C402.5.~~8~~ 10. or the building thermal envelope shall be tested in accordance with Section C402.5.1.2.3. Where compliance is based on such testing, the building shall also comply with Sections C402.5.5, C402.5.6 and C402.5.7.

C402.5.10 Building cavities.

C402.5.10.1 Vented dropped ceiling cavities. Where vented dropped ceiling cavities occur over conditioned spaces, the ceiling shall be considered to be both the upper thermal envelope and pressure envelope of the building and shall contain a continuous air barrier between the conditioned space and the vented unconditioned space that is also sealed to the air barrier of the walls. See the definition of air barrier in Section C202.

C402.5.10.2 Unvented dropped ceiling cavities. Where unvented dropped ceiling cavities occur over conditioned spaces that do not have an air barrier between the conditioned and unconditioned space (such as T-bar ceilings), they shall be completely sealed from the exterior environment (at the roof plane) and adjacent spaces by a continuous air barrier that is also sealed to the air barrier of the walls. In that case, the roof assembly shall constitute both the upper thermal envelope and pressure envelope of the building.

C402.5.10.3 Separate tenancies. Unconditioned spaces above separate tenancies shall contain dividing partitions between the tenancies to form a continuous air barrier that is sealed at the ceiling and roof to prevent airflow between them.

C402.5.10.4 Air distribution system components.

Building cavities designed to be air distribution system components shall be sealed according to the criteria for air ducts, plenums, etc., in Section C403.2.9

Rationale

Section C402.5.9 from current 2020 Energy code should remain as a mandatory provision of the building thermal envelope. Many designers assume an acoustical tile ceiling is an air barrier. This code section will address this violation and this section refers to the definition of air barrier.

Without new section C402.10 as mandatory requirement, significant energy is wasted. Florida specific humidity and condensation problems occur around grills when vented or unvented cavities are not sealed airtight from the conditioned space. Drop ceilings shall not be used as an air barrier to vented and unvented cavities

Without including section C402.5.9 from the current 2020 code, the drop ceiling cavities over T-bar ceilings would not be specifically addressed in the code.

1) Vented Cavities above drop ceilings with loose leaky tiles should not be used as an air barrier with an open ventilated or unventilated cavity to the outside of the building. (See air barrier definition.)

2) 402.5.10.2 addresses unvented Cavities above drop ceilings and the need to seal this area above a drop ceiling.

3) 402.5.10.3 addresses the free flow of air between tenants and the required air barrier.

4) 402.5.10.4 addresses cavities used as plenums that must be sealed airtight.

Item 1b:
#9972-C405.1 Lighting

Proposed Code Change #9972

Summary

Modification corrects a glitch in the 2020 code for missing lighting requirements for walk-in coolers. Section C403.2.14 has no lighting requirements for walk-in coolers. Section of C403.10.1 of the 2018 IECC was not adopted. Adding item #11 from Section C403.10.1 fixes this glitch

Text of Modification

SECTION C405
ELECTRICAL POWER AND LIGHTING SYSTEMS

C405.1 General (Mandatory). This section covers lighting system controls, the maximum lighting power for interior and exterior applications and electrical energy consumption. Dwelling units within multifamily buildings shall comply with Section R404.1. All other dwelling units shall comply with Section R404.1, or with Sections C405.2.4 and C405.3. Sleeping units shall comply with Section C405.2.4, and with Section R404.1 or C405.3. ~~Lighting installed in walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with the lighting requirements of Section C403.2.14.~~

Add
C405.1.1 Walk-in cooler lighting
Lights in walk-in coolers, walk-in freezers, refrigerated warehouse
Coolers and refrigerated warehouse freezers shall either use light sources with an efficacy of not less than 40 lumens per watt, including ballast losses, or shall use light sources with an efficacy of not less than 40 lumens per watt, including ballast losses, in conjunction with a device that turns off the lights within 15 minutes when the space is not occupied.

Rationale

By deleting the wording in C405.1 about walk-in cooler/freezer lighting that sends you looking for lighting requirements that do not exist in the code, this fixes that glitch. By adding Section C405.1.1 (from IECC) for mandatory efficient lighting and the option of an occupancy sensor for non-efficient lighting, it will fix this glitch, makes it easy to find, gives options, saves energy.

Cost

Energy efficient lighting has a proven long term pay back to the added initial cost. Options of a possible occupancy sensor will add to the long-term savings. No need to have the lights remain on inside a walk-in cooler when it's not occupied and waste energy.

Item 1c:
#10151-R402.4.1.2 #7 Testing Procedures

Code Modification #10151

Summary of Modification

Testing shall locate leaks in the thermal envelope. When the thermal envelope is insulated and located at the underside of the roof deck, this sealed building cavity becomes part of the building thermal envelope. This added volume must be tested and included in the test with the hatch off.

Text of Modification

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.
7. If an attic is both air sealed and insulated at the roof deck, interior access doors and hatches between the conditioned space volume and the attic shall be opened during the test and the volume of the attic shall be added to the conditioned space volume for purposes of reporting an infiltration volume and calculating the air leakage of the home.

Rationale

Many certified blower door testers are unaware that the upper building cavity area must be included for testing air leakage. If this unvented attic cavity area has excessive air leakage, humidity will infiltrate into this area and become trapped. This trapped humid air could cause condensation to occur. The air volume of building cavities under the thermal envelope must be included in the air leakage test and attic hatches must remain open for the test.

Item 1d:
#10193-R402.4.1.2 Testing

Proposed Code Modification #10193

Summary of Modification

FECC does not mention that blower door that tests results under 3 (ach) requires mechanical ventilation. Code references in the energy code are needed for clarity and ease to find all the code requirements. Efficacy requirements of whole-house mechanical ventilation in R403.6.1 are also referenced.

Text of Modification

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. **Dwelling units with an air leakage rate less than three air changes per hour shall be provided with whole-house mechanical ventilation in accordance with Section R403.6.1 of this code and M1507.3 of the *Florida Building Code, Residential.*** 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 individual 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*.

Rationale

This modification is not a change in intent and practice. It only provides clarity. It is very difficult to find the corresponding code sections that apply to the required mechanical ventilation based on the test results. The code sections that apply should be easy to find from this code section.

Item 2:
BORA Commercial Energy Guidelines

BORA Commercial Energy Guidelines

Broward County Board of Rules and Appeals

Energy Conservation
Seventh Edition (2020)

FBC Seventh Edition (2020),
Effective xxxxxxxxxxxxxxxx
For Energy Conservation
Committee approval
Draft #1

Table of Contents

Overview

To obtain uniform energy code enforcement in commercial 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 from 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.

***This is a minimum checklist. The local AHJ may have additional checklist items. ***

BORA ENERGY GUIDELINES

Building Code Administrators Checklist

Plan Review	**Code Section**
☐ **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. The building department may use "***Appendix C"*** as a compliance tool.	C103.3 C103.3.1 FS. 553.908 *4.2.2
☐ **2.** The building official shall ascertain the commercial energy compliance pathway chosen by the designer and the energy credits taken upon application for permit. The ***"BORA Energy Compliance Pathway Form"*** found in "***Appendix A"*** may be used for compliance.	C401.2 *4.2.1.1
☐ **3.** The building official shall provide all plan reviewers access to "***ASHRAE Standard 90.1-2016"*** if the designer chooses the ASHRAE 90.1 pathway for code compliance. Code references with an *asterisk correspond with like code references in ASHRAE 90.1-2016.	C401.2 #1

Certificate of Occupancy	**Code Section**
☐ **1.** Buildings which require commissioning according to section C408.2 shall not be considered acceptable for final inspection pursuant to Section C104.3 until the code official has received a letter of transmittal from the building owner acknowledging that the building owner or owner's authorized agent has received the preliminary commissioning report." "The code official may review a copy of the preliminary commissioning report before final.	C408.2.4.1 *4.2.5 *4.2.5.1 C408.2.4.2
☐ **2.** Construction documents shall specify that documents required by Section C408 be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy.	C408.2.5 *4.2.2.3

BORA ENERGY GUIDELINES

BORA Structural Checklist

Plan Review (General)	**Code Section**
☐ **1.** Existing buildings shall be classified as exempt, except those buildings defined as ***"renovated buildings",*** in which the total work exceeds 30% of the value of structure. Buildings which have a change of occupancy type or unconditioned buildings to which comfort cooling is added are not exempt. Buildings specified in Sections C101.4.2.1 thru C101.4.2.4 are exempt.	C101.4.2 *4.2.1.3
☐ **2.** An existing building or portion thereof shall not be altered to become less energy efficient.	EBC701.2
☐ **3.** The ***designer of record*** shall provide a complete energy compliance report from specific computer software approved by the Florida Building Commission and show "Pass" for . envelope, interior lighting, exterior lighting, mechanical and plumbing.	C101.5.1 *4.2.2
☐ **4.** The ***input data report*** from the approved software shall be generated simultaneously. with the compliance report to verify each entry into the software.	C407.4.2.2 *4.2.2
☐ **5.** The ***code official*** shall have the authority to approve a permit for part of the entire energy conservation system ***(such as a shell permit).*** Adequate information and detailed statements listing all code requirements must be submitted with this permit. The permit holder shall proceed at their own risk without assurance that the permit to complete will be granted. All spaces inside buildings shall be considered as "***conditioned spaces"*** at time of construction regardless of equipment installed unless approved by building official.	C103.3.3 *4.2.2 *5.1.2.3
☐ **6.** The designer of record shall specify the compliance pathways. ***"Appendix A"*** may be utilized.	C103.2 *4.2.1
☐ **7.** Climate zone 1a shall be used for the Broward County area.	C301.1
☐ **8**. The ***design professional*** responsible under Florida law for the design of the building shell shall certify compliance with the code by signing the energy code compliance form.	C103.1.1.1.2
☐ **9.** The plans shall show in detail all the pertinent energy data and features of the building including but not limited to: a) Insulation materials and their R-values b) Fenestration U-factor, solar heat gain coefficient, (SHGC) and visible transmittance (VT) c) Air leakage sealing details	C103.2 *4.2.2.1 *5.4.1 *5.4.2 *5.4.3
☐ **10.** The entire ***building thermal envelope*** shall be designed and constructed with a continuous air barrier and shall be ***clearly identified*** on the construction documents.	C402.5.1 *5.4.3
☐ **11**. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by a laboratory accredited by a nationally recognized accreditation organization, such as the National Fenestration Rating Council or given default table values.	C303.1.3 *5.4.2
☐ **12.** ***Roof insulation*** (as part of the envelope) shall not be located on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of envelope is allowed.)	C402.2.3 *5.8.1.8
☐ **13.** Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings (T-bar) may not. (See air barrier definition)	C402.5.9 C202 *5.4.3
☐ **14.** Blown or loose fill insulation shall not be used in attic roof spaces in slopes greater than three (3) in twelve (12). Baffling of eave vents are required to deflect incoming air.	*5.8.1.3 *5.8.1.4
☐ **15**. Weatherseals shall be installed on all loading dock/cargo doors for separating conditioned space from unconditioned space. See Table C402.5.2	C402.5.4 C402.5.6

BORA ENERGY GUIDELINES

BORA Structural Checklist

Plan Review (Prescriptive)	**Code Section**
☐ **1.** ***"Cool Roofs"*** Low-sloped roofs directly above cooled conditioned spaces in Climate Zones 1 shall have a minimum three-year solar reflectance of .55 and thermal emittance of 0.75 or a three-year solar-reflectance index (SRI) of 64.	C402.3 *5.5.3.1.1
☐ **2**. The maximum ***U-factor*** and solar heat gain coefficient ***(SHGC)*** for fenestration shall be as specified in Table C402.4. The Projection Factors ***(Overhangs)*** shall be calculated.	C402.4 *Table 5.5-1
☐ **3**. The vertical fenestration area shall not be greater than ***30%*** of the gross above grade wall. area. Vertical fenestration may be increased to ***40%*** per requirements of C402.4.1.1	C402.4.1 *5.5.4.2
☐ **4.** ***Maximum*** skylight areas shall be ***3%*** of the gross roof area and can increase to ***6%*** when daylight responsive controls are provided in daylight zones that are under skylights that comply with C405.2.3.1	C402.4.1 C402.4.1.2. *5.5.4.2.2
☐ **5.** ***Minimum*** skylight areas shall apply to specified conditioned and unconditioned spaces greater than 2500 sq. ft. when ceiling heights are greater than 15ft. (See exceptions)	C402.4.2 *5.5.4.2.
☐ **6.** Skylight curbs shall be insulated to the level of roofs with insulation above deck or **R-5** except when tested per NFRC 100	C402.2.2 *5.5.3.1
☐ **7.** The ***minimum R-value*** of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table C402.1.3	C402.2.2 *5.5.3.1
☐ **8.** ***Opaque doors*** shall meet the thermal requirements specified in the tables.	*5.5.3.6 or C402.4.5
☐ **9.** Plans, specifications, and /or calculations provide all information with which compliance can be determined for the mandatory selection of **one** (1) of the ***efficiency package options***.	C406

Plan Review (Performance)	**Code Section**
☐ **1**. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily Residential roof/ceilings shall be insulated to a minimum of R-19 space permitting	C407.2.1
☐ **2**. Building types and thermal blocks shall be accurately identified on the compliance report and shall not be combined unless they share the same features. The code official shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.5.2 C405.3.2 (1) C407.4.2.1
☐ **3**. Multifamily residential spaces (dwelling unit) may be combined into one thermal block if they share the same orientation, wall, roof and floor loads that share the same features.	C407.5.2.3 *App.G3.1(9)

Rough Inspection	**Code Section**
☐ **1.** Insulation shall be installed to manufacturers recommendations in a manner as to achieve the rated R-value. Insulation shall be labeled with R-value or a certificate providing R-value shall be provided.	C303.2 *5.8.1.2
☐ **2**. A label shall be affixed to the window showing the tested U-Value, SHGC, and VT. Products lacking such a label shall be given the default values in tables C303.1.3. Installed vertical fenestration values shall be consistent with the specifications submitted with the plans.	C104.2.2 C303.1.3 *5.9.1.4
☐ **3**. The entire building thermal envelope shall be constructed with a continuous air barrier.	C402.5.1 ***5.9.1**

Final Inspection	**Code Section**
☐ **1**. The building envelope components and assemblies shall be inspected for air leakage. When testing is specified, an independent third party shall test air leakage to <=0.40 cfm/ft2.	C402.5 *5.4.3.1.3

APPENDIX A

PROJECT ADDRESS _____ **PERMIT NUMBER** _____

TYPE OF CONST. ☐ **NEW CONST.** ☐ ***ADDITION** ☐ ***RENOVATED BLDG.** ☐ ***CHANGE OF OCCUPANCY**

**Additions, alterations, repairs, and changes in occupancy to existing buildings shall comply with Chapter 5*

Florida Energy Conservation Code Compliance Options	**Code Section**
Select One pathway below:	C401.2
☐ **Option 1)** ***ANSI/ASHRAE/IESNA 90.1*** excluding Section 9.4.1(g), 8.4.2, & 8.4.3 (2016 Version)	C401.2 #1
☐ **Option 2)** ***Prescriptive Method*** complying with Sections C402 thru C406 & C408. Tenant spaces shall also comply with C406.1.1	C401.2 #2
☐ **Option 3)** ***Performance Method*** complying with Section C407 and the mandatory provisions listed in C407.2 including C402.5, C403.2, C404, C405.2, C405.4, C405.5, and C408.	C401.2 #3

Option #1 ANSI/ASHRAE/IESNA 90.1 (2016 Version)	**Code Section**
Select One pathway below:	4.2.1
☐ **1)** ****Prescriptive Method*** complying with Section 5 thru Section 9	4.2.1.1a
☐ ***2) Energy Cost Budget Method*** complying with Section 11	4.2.1.1b
☐ ***3) Performance Rating Method*** complying with Appendix G	4.2.1.1c
****Envelope Path*** ☐ **1)** ***Prescriptive Building Envelope Option*** ☐ **2)** ***Building Envelope Trade-Off Option***	*5.2.1 a or b*

Option #2 Prescriptive Method	**Code Section**
Select One from each section below:	
Envelope Select One	C402.1 #1
☐ **1.** ***Insulation Component R-Value method***. (Table C402.1.3)	C402.1.3
☐ **2.** ***Assembly U-Factor, C-Factor, or F factor-based method*** (Table C402.1.4)	C402.1.4
☐ **3.** ***Component performance alternative*** in leu of Table C402.1.4 above.	C402.1.5
Mandatory Lighting Controls Select One	C405.2
☐ **1.** ***Lighting Controls*** per C405.2.1 through C405.2.6	C405.2 #1
☐ **2.** ***Luminaire Level Lighting Controls*** and compliance with C405.2.1; C405.2.4 and C405.2.5	C405.2 #2
Interior Power Lighting Allowance Select One	C405.3.2
☐ **1.** ***Building Area Method*** per C405.3.2.1 ☐ **2.** ***Space by Space Method*** per C405.3.2.2	
Efficiency Package Select One	C406.1
☐ More efficient HVAC performance	C406.2
☐ Reduced lighting power density	C406.3
☐ Enhanced digital lighting controls	C406.4
☐ Onsite renewable energy	C406.5
☐ Dedicated outdoor air system	C406.6
☐ Reduced energy use in service water heating	C406.7

Option #3 Performance Method*	**Code Section**
Mandatory Lighting Controls Select One	C405.2
☐ **1.** ***Lighting Controls*** per C405.2.1 through C405.2.6	C405.2 #1
☐ **2.** ***Luminaire Level Lighting Controls*** and compliance with C405.2.1; C405.2.4 and C405.2.5	C405.2 #2
Exterior Lighting Zone Area Type Select One	C405.4.2
☐ **#1 Park & Rural** ☐ **#2 Residential** ☐ **#3 Other than 1, 2, 4** ☐ **#4 High Activity Commercial**	
Optional Credits	C407.5.2.4
☐ Vegetative Roofs	C407.5.2.4.1
☐ Enthalpy Recovery Ventilation	C407.5.2.4.2

**The building energy cost shall be equal to or less than 85% of the standard reference design of the building.*

DESIGN PROFESSIONAL NAME _____

SIGNATURE _____

Appendix B

COMMERCIAL ENERGY CODE COMPLIANCE REVIEW FORM

PERMIT # _____ ADDRESS _____

A review of the plans and specifications covered by this compliance report indicates compliance with the _____Florida Energy Conservation Code.

DISCIPLINE	NAME	SIGNATURE	DATE
STRUCTURAL			
MECHANICAL			
PLUMBING			
ELECTRICAL			