

PETITION FOR DECLARATORY STATEMENT  
BEFORE THE FLORIDA BUILDING COMMISSION

Company: Miami-Dade County  
Building Code Administration  
Address: 11865 SW 24<sup>th</sup> Street  
Miami, Florida 33175

**DS 2021-023**

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Statute(s), Agency Rule(s), Agency Order(s) and/or Code Section(s) on which Declaratory Statement is sought:

7<sup>th</sup> Edition (2020) Florida Energy Conservations Code, Building Thermal Envelope, Section C402 and 2020 Florida Mechanical Code, Natural Ventilation, Section 402.

**BACKGROUND**

The Miami-Dade County, Regulatory and Economic Resources (RER), Building Code Administration Division (BCAD), is charged with the uniform enforcement of the Florida Building Codes throughout all municipalities within the County.

A tight building thermal envelope to keep conditioned air in and hot, humid air out is critical in South Florida (Climate Zone 1A). The Energy Conservation Code defines the **Building Thermal Envelope** as a boundary between conditioned space and any unconditioned space.

The Florida Mechanical Code (FMC) 401.3, requires that building spaces must be ventilated during the periods the space is occupied. Additionally, (FMC) 401.2, requires that the ventilation to these spaces must be achieved by either **natural or mechanical** means.

During our visits to the municipalities, we often encounter construction plans for **air-conditioned apartment buildings (R-2) greater than 3 stories**, and the required outdoor air for the occupants is provided by natural ventilation (openable windows).

## **ENERGY CONSERVATION CODE**

### **DEFINITIONS:**

**AIR CONDITIONING.** The treatment of air so as to control simultaneously the temperature, humidity, cleanness and distribution of the air to meet the requirements of a conditioned space.

**BUILDING THERMAL ENVELOPE.** The basement walls, exterior walls, floors, ceilings, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space.

**CONTINUOUS AIR BARRIER.** A combination of materials and assemblies that restrict or prevent the passage of air through the building thermal envelope.

**VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**VENTILATION AIR.** That portion of supply air that comes from outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

**C101.3 Intent.** This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

**C402.5 Air leakage—thermal envelope (Mandatory).** The *thermal envelope* of buildings shall comply with Sections C402.5.1 through C402.5.8, or the building *thermal envelope* shall be tested in accordance with ASTM E779 at a pressure differential of 0.3 inch water gauge (75 Pa) or an equivalent method approved by the code official and deemed to comply with the provisions of this section when the tested air leakage rate of the building thermal envelope is not greater than 0.40 cfm/ft<sup>2</sup> (2.0 L/s · m<sup>2</sup>). Where compliance is based on such testing, the building shall also comply with Sections C402.5.5, C402.5.6 and C402.5.7.

**C402.5.1 Air barriers.** A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination thereof.

**C403.2.6 Ventilation.** Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the *Florida Building Code, Mechanical*. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the *Florida Building Code, Mechanical*.

## **MECHANICAL CODE**

**401.2 Ventilation required.** Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Where the air infiltration rate in a dwelling unit is less than 3 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section R402.4.1.2 of the *Florida Building Code, Energy Conservation*, the dwelling unit shall be ventilated **by** mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

401.3 ~~When Required.~~ Ventilation shall be provided during the periods that the room or space is occupied.

**402.1 Natural ventilation.** Natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants.

**402.2 Ventilation area required.** The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated.

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## **BUILDING CODE**

**102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

## **QUESTION**

Can natural ventilation (via openable windows) be used to provide outdoor air for an occupied space while it is mechanically cooled and still meet the sealed building thermal envelope requirements of the Energy Conservation Code, Section C402.5?

## **SUMMARY POSITION**

It is RER-BCAD's contention that the requirements for natural ventilation in Section 402 are intended for just that, the natural ventilation of a space. Depending on the weather and shifts in the driving forces of air at the time, ventilation will take place, "*air in and air out.*"

The use of openable windows as the source of outdoor air will bring uncontrolled volumes of hot and humid outdoor air to mechanically cooled space resulting in a waste of energy, unwanted condensation in the building's wall cavities and is totally in conflict with Building Thermal Envelope requirements.

## **ADDITIONAL BACKUP INFORMATION OF CURRENTLY PUBLISHED STANDARDS**

**(Not part of FBC at this time)**

### **2021 ICC, Energy Conservation and Mechanical**

#### **Energy Conservation R403.6**

**Buildings and dwelling units** shall be provided with **mechanical** ventilation that complies with the requirements of the International Mechanical Code, as applicable, or with other approved means of ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation is not operating.

#### **Energy Conservation C402.5.11**

**Operable openings interlocking**. Where occupancies utilize operable openings to the outdoors that are larger than 40 square feet (3.7 m) in area, such openings shall be interlocked with the heating and cooling system so as to raise the cooling setpoint to 90°F (32°C) and lower the heating setpoint to 55°F (13°C) whenever the operable opening is open. The change in heating and cooling setpoints shall occur within 10 minutes of opening the operable opening.

#### **Exceptions:**

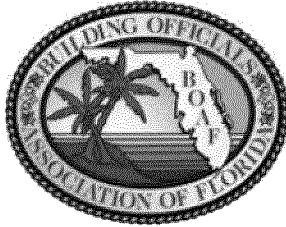
1. Separately zoned areas associated with the preparation of food that contain appliances that contribute to the HVAC loads of a restaurant or similar type of occupancy.
2. Warehouses that utilize overhead doors for the function of the occupancy, where approved by the code official.
3. The first entrance doors where located in the exterior wall and are part of a vestibule system

#### **Mechanical Code 401.2 Ventilation required**

Dwelling units complying with the air leakage requirements of the International Energy Conservation Code or ASHRAE 90.1 **shall be ventilated by mechanical means** in accordance with Section 403

#### **ASHRAE 62.1 2019**

**6.4 Natural Ventilation Procedure.** Natural ventilation systems shall comply with the requirements of either Section 6.4.1 or 6.4.2. Designers shall provide interior air barriers, insulation, or other means that separate naturally ventilated spaces from mechanically cooled spaces to prevent high-dew-point outdoor air from coming into contact with mechanically cooled surfaces.



**Informal Interpretation Report  
Number 7947**



**Date** 04/12/2017  
**Report** 7947  
**Edition:** 2014  
**Section** 401.2

**Question:**

Is the intent of section 401.2 to permit only mechanical ventilation in accordance with Section 403 as the means for compliance in the dwelling units of a multifamily building greater than three stories?

**Answer:**

To the question, Yes.

FMC 401.2 indicates that an occupied space must be ventilated by (402) natural or (403) mechanical means. Natural ventilation may not be suited for all situations, such as climates with very high humidities, or sites with excessive levels of outside noise or pollution. Unlike natural ventilation, mechanical ventilation does not depend on unpredictable air pressure differentials between the indoors and outdoors to create a flow. Mechanical ventilation must be activated whenever conditions preclude operation of the natural ventilation system. FMC, Table 403 indicates occupancies where mechanical ventilation must be provided. Additionally, FMC 405 which applies to both natural, or mechanical ventilation systems requires that ventilation be provided whenever spaces are occupied. ASHRAE 62.1, which is the base document for Table 403 reinforces the concept that the minimum outdoor air flow must be maintained whenever a space is occupied under any load condition

On 07/11/2017 at 1:32 PM

**Commentary:**

See previous report # 7222

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