Florida Building Code
Electrical Advanced Module

The Florida building commission updates the Florida Building Code based on the IBC.

Florida Building Code
Electrical Advanced Module

- Let's review some of the Electrical Components of the 2014 Florida Building Code compared with the 2011 Editions of the NEC ®

The 2014 Revision to the FBC

- It was adopted in November 2014 and goes into effect June 30th 2015

Florida Department of Business & Professional Regulation

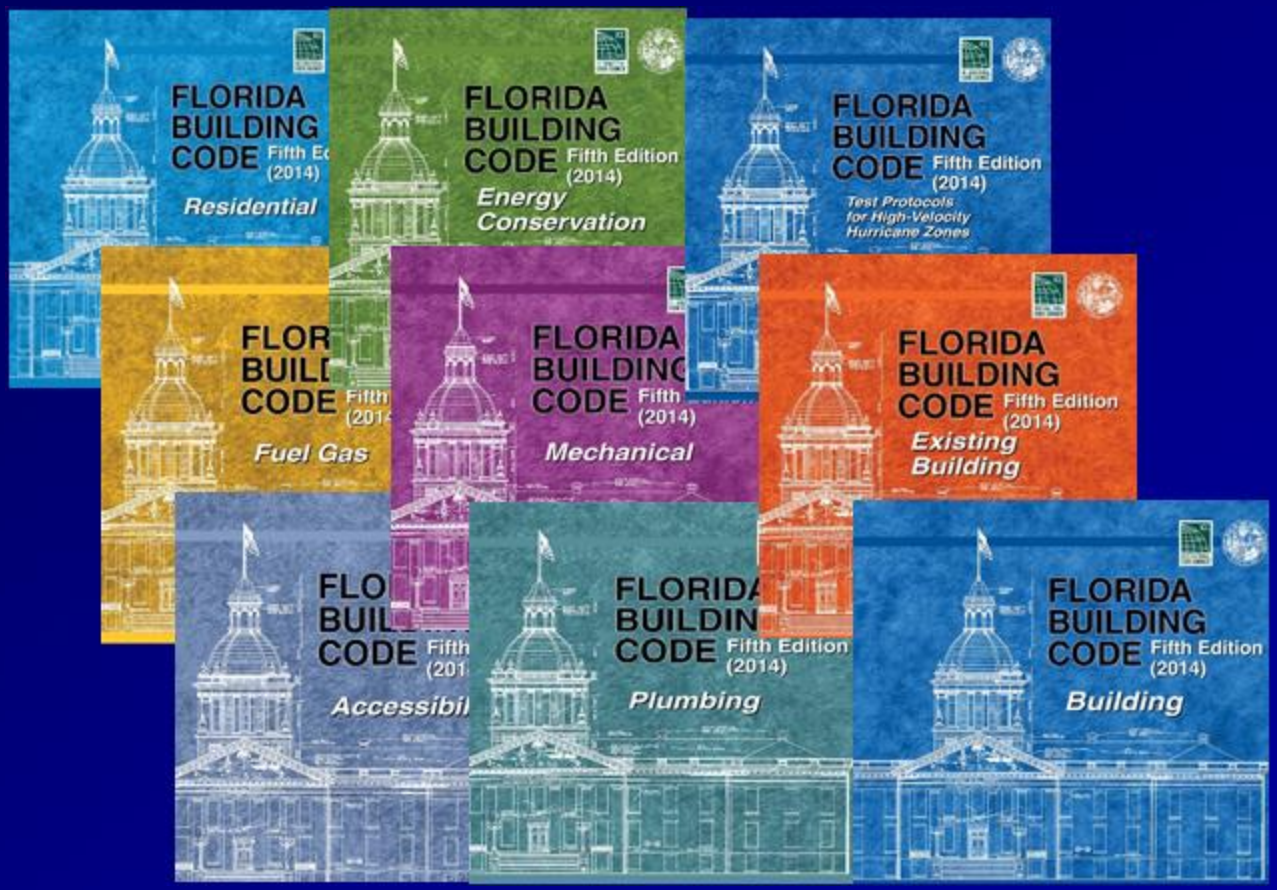
Florida Building Commission
Florida Building Code
Product Approval
Manufactured (Modular) Buildings
Proposed Code Modifications
Education and Accreditation
Binding Interpretations
Surcharge
Commission Meeting Streaming Video
Accessibility

The Effective Date for the Florida Building Code 5th Edition (2014) is June 30, 2015.

FLORIDA BUILDING COMMISSION

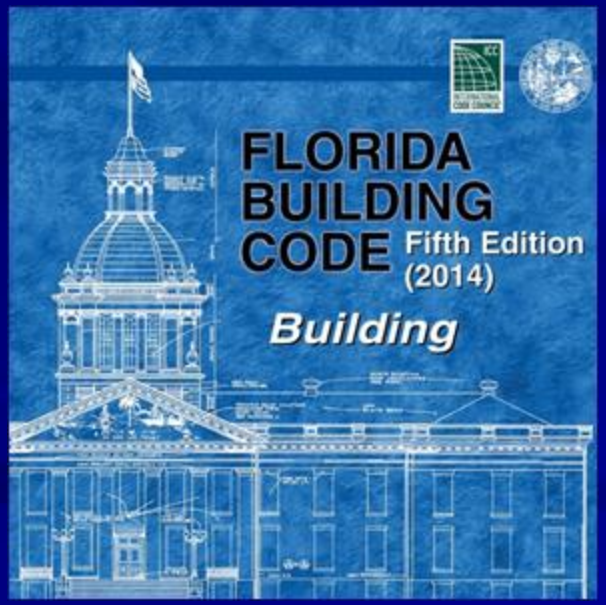
"Stronger Codes Through Science and Consensus"

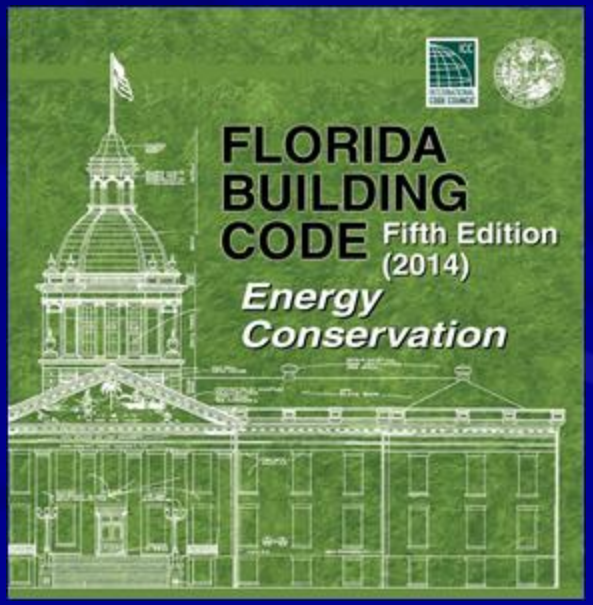
2014 FBC is 9 Volumes



Florida Building Code and Electrical Installations

The Building & Energy Volumes Have Most of the Requirements Related to Electrical Installations





FBC Administration

Chapter 1 provisions address

- Application
- Administration
- Enforcement
- Scope

FBC Administration

Application

- Since it is a legal document it is adopted in its entirety statewide.
- Local municipalities may apply for a more stringent codes. Miami/Dade, Broward, Pinellas, and Pasco have at this time.

FBC Administration

Chapter 1 provisions address

- Administration-
- Enforcement – The 2011 NEC is the adopted electrical standard in the 2014 FBC

Florida Building Code Section 102.4

"…..Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply."

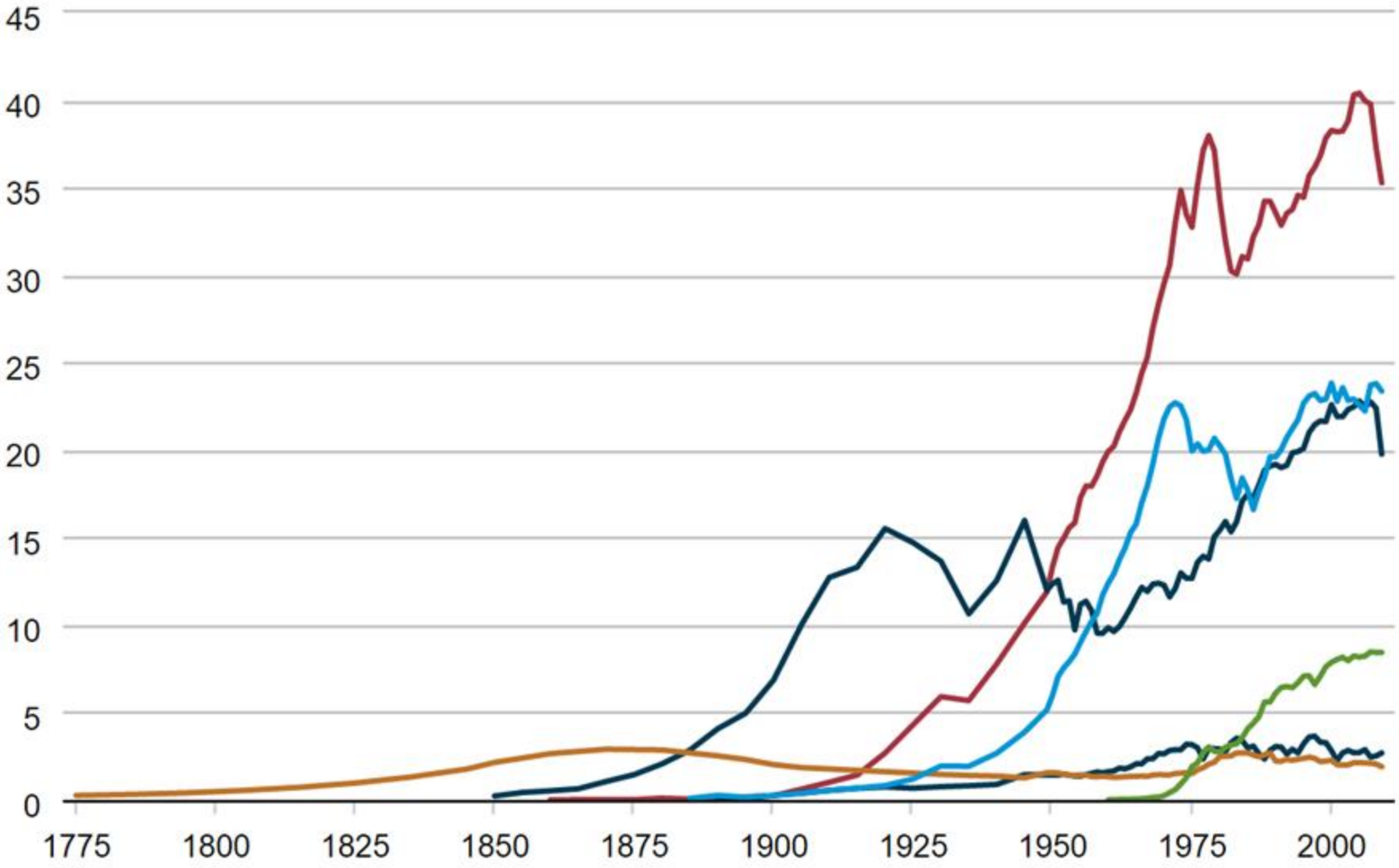
This means the Florida Building Code overrides the NEC if there are additional requirements.

Energy Conservation Code - Review

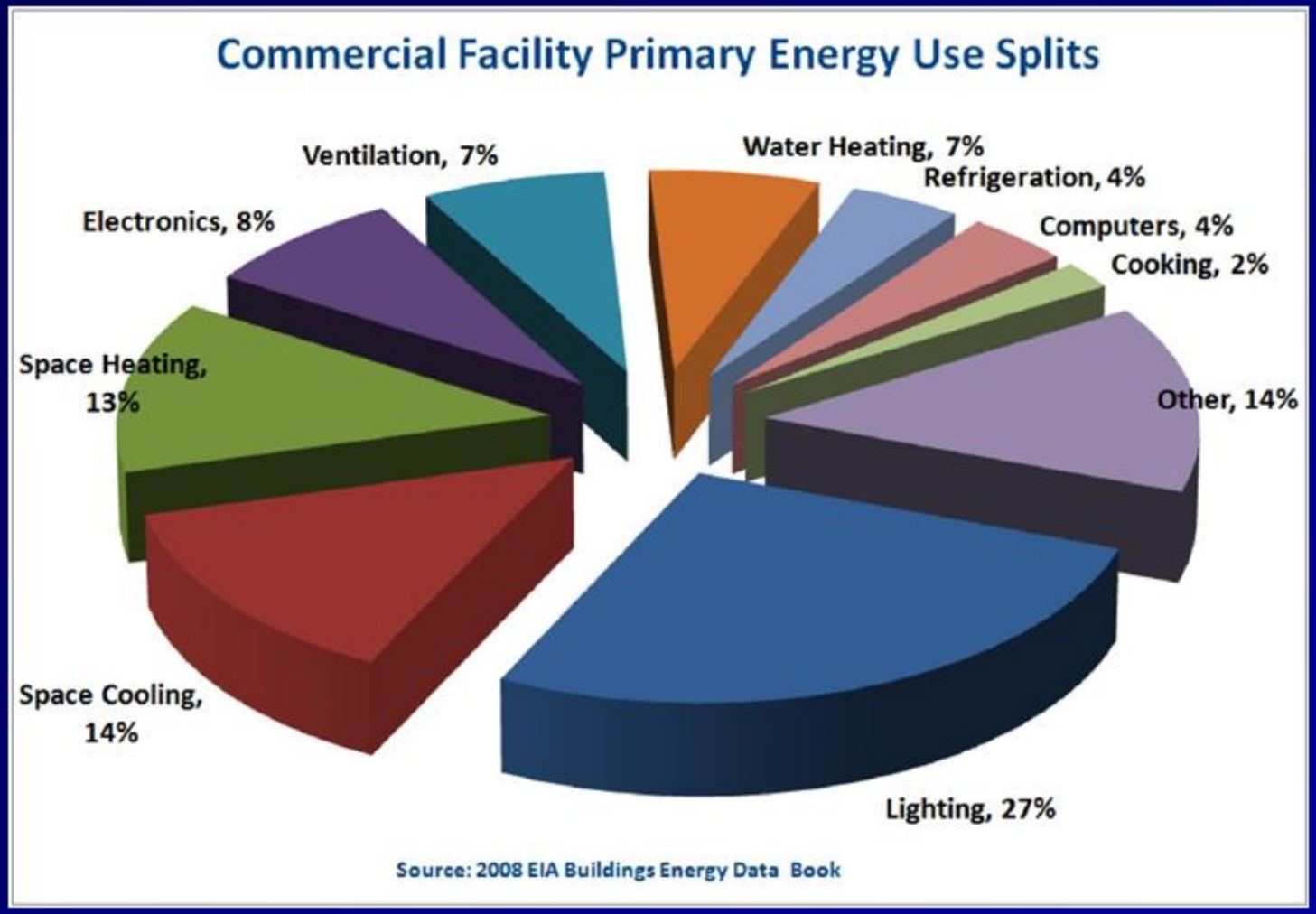
Why do we need an energy conservation code?

Our national energy usage is now measured in Quadrillion Btu per year!

History of energy consumption in the United States, 1775-2009



Source: U.S. Energy Information Administration - Annual Energy Review 2009



Total kwh = 890,056,837,900

Lighting = 240,315,346,233 x .10/kwh

Over $24 billion a year

In Commercial Facilities…

- Lighting is the largest consumer
- Building electrical consumption can be reduced by up to 12% just by managing lighting loads.
- Florida Energy Conservation code requires active management of lighting loads in many applications.

FBC – Energy Code

The Energy Code has been split into two sections.*

- Residential designated by [RE] before the section
  - Chapter 4 is Residential Energy Efficiency
- Commercial designated by [CE] before the section
  - Chapter 4 is Commercial Energy Efficiency

*Many sections have similar titles and language so be careful as you search for code sections.

FBC – Energy Code Review

- **[R/C]101.2 – Scope.** The Energy Conservation Code applies to *residential* and *commercial buildings*.
- It is a statewide uniform code that shall not be made more stringent or lenient by local government.
- **[R/C]101.3 – Intent.** This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve the effective use of energy.

This Means-

Just about any alteration, addition, renovation or repair will have to abide by the FBC-EC requirements, unless they qualify as one of the exemptions.

FBC – Energy Code Review

- **[R/C]101.4 – Applicability.** Where different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.
- Where there is a conflict between general requirements and a specific requirement, the specific requirement shall govern.

Chapter 4 [RE] – Residential Energy Efficiency

- Section R401 – General
- Section R402 Building Thermal Envelope
- Section R403 Systems
- Section R404 – Electrical Power and Lighting Systems (Mandatory)
- Section R405 – Simulated Performance Alternative

– Recessed Lighting.

R402.4.4/C402.4.8

- 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 (insulation contact).
- All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

– Recessed Lighting.

It is also required in Commercial C402.4.8

- 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 (insulation contact).
- All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

R403.9.1 Pool & Spa Heaters

- All pool and spa heaters shall be equipped with a readily *accessible* on-off switch that is mounted outside the heater to allow shutting off the heater without adjusting the thermostat setting.

R403.9.2 Time Switches

- Time switches shall be installed on swimming pool heaters and pumps that can automatically turn the heaters and pumps off and on according to a preset schedule.
- Exceptions: Where public health standards require 24 hour operation; where pumps are required to operate solar and waste heat recovery systems; or where pumps are powered from on-site renewable energy generation.

Section R404 Electrical Power and Lighting Systems (Mandatory)

- **404.1 Lighting Equipment.** A minimum of 75% of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

  Exception: Low-voltage lighting shall not be required to utilize high-efficiency lamps

Section R404 Electrical Power and Lighting Systems (Mandatory)

High-Efficacy Lamps include –

- Compact fluorescent lamps,
- T-8 or smaller diameter linear fluorescent lamps,
- Or lamps with a minimum efficacy of:
  - 60 lumens per watt for lamps over 40 watts,
  - 50 lumens per watt for lamps over 15 watts to 40 watts, and
  - 40 lumens per watt for lamps 15 watts or less.

Industry Examples: Compact Fluorescent

- Pin Based Compact Fluorescents
- Triple or Quad Tube
- Multiple Wattages 18, 26, 32, and 42 watts
- Non Permanent, Self Ballasted Edison solutions available

Industry Examples: Linear Fluorescent

- Linear Fluorescents
- High Efficacy
- T8 and T5 lamp sizes
- Common Wattages 32, 28, and 54
- Economical & Widely available

Industry Examples: Metal Halide

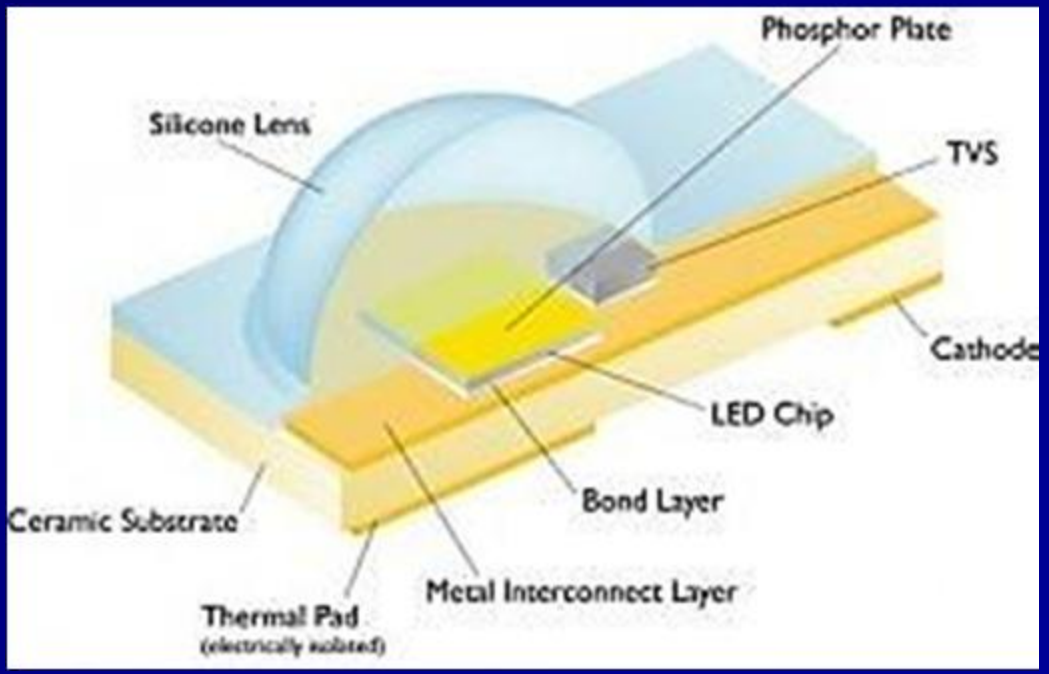
- High Wattage up to 1500W
- High Efficacy
- No Instant-On
- No Dimming
- Long Life

Industry Examples: Induction Lamps

- Ultra Long Life
- Choice of Color Temperature
- High Reliability
- High Efficacy

Industry Examples: LED

- Long Life
- Still maintains 70% light output at 50,000 hours
- Many different wattages
- Long warranties: 5-10 years



– Commercial Energy Conservation

Section C405 – Electrical Power and Lighting Systems (Mandatory)

- C405.2 Lighting Controls (Mandatory)- Lighting Systems shall be provided with controls as specified in Sections C405.2.1, C405.2.2 C405.2.3 and C405.2.4.
- C405.2.1 Manual Lighting Controls – All buildings shall include manual lighting controls that meet the requirements of Sections C405.2.1.1 and C405.2.1.2..

C405.2 Lighting Controls

- Lighting systems shall be provided with controls as follows:
- **C405.2.1.1 Interior Lighting Controls.** Each area enclosed by walls or floor-to-ceiling partitions shall have at least one manual control for the lighting serving the area. The required Controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status.

C405.2 Lighting Controls

- **C405.2.1.1 Interior Lighting Controls.**

Exception:

1.) Areas Designated as security or emergency areas that need to be continuously lighted.

2.) Lighting in stairways or corridors that are elements of the means of egress.

C405.2 Lighting Controls

C405.2.1.2 Light Reduction Controls

Each area that is required to have manual controls shall also allow the occupant to reduce the connected lighting load in a reasonably uniform pattern by at least 50% by … Dual Switching fixtures, rows, lamps, or other approved method.

C405.2 Lighting Controls

C405.2.1.2 Light Reduction Controls

Exception: Light Reduction controls need not be provided in the following areas and spaces:

1.) Areas that have only one luminaire, with rated power less than 100 watts.

2.) Areas that are controlled by an occupant-sensing device.

3.) Corridors, equipment rooms, storerooms, restrooms, public lobbies, electrical or mechanical rooms.

*See this section for other exceptions.

-Additional Requirements

- *While these represent some of the changes there are many other application specific changes that affect almost every lighting installation. Reference the 2014 Florida Energy Conservation Code for more details.*

C405.2.2 Additional Lighting controls

C405.2.2.2 Occupancy Sensors shall be installed in:

- All classrooms
- Conference/Meeting Rooms
- Employee Break Rooms
- Private offices
- Restrooms
- Storage Closets
- Other spaces 300 ft^2 or less

C405.2.2 Additional Lighting controls

C405.2.2.2 Occupancy Sensors

- Shall be installed to turn lighting off within 30 minutes of all occupants leaving a space, and
- Shall be either manual on or shall be controlled to automatically turn the lighting on to not more than 50 percent power.

Lighting Control Devices

Occupancy Sensor

Time Clock

C405.2.4 Exterior Lighting Controls

Lighting not designated for dusk-to-dawn operation.

- Shall be controlled by either a combination photo sensor and a time switch* or an astronomical time switch*.

C405.2.4 Exterior Lighting Controls

Lighting designated for dusk-to-dawn operation

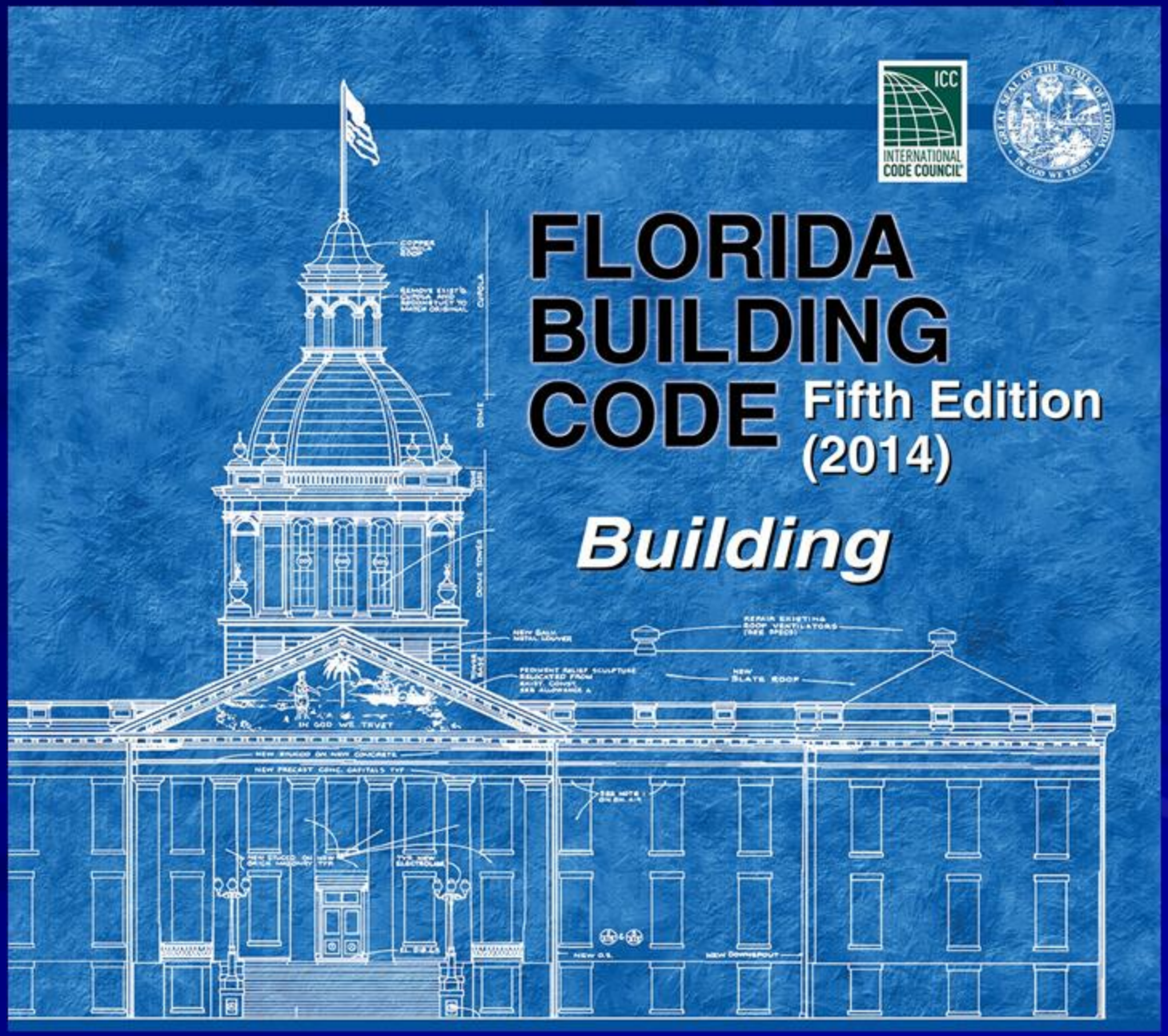
- shall be controlled by an astronomical time switch* or photo sensor.

*All time switches must be capable of retaining settings for 10 hours during power loss.

Exterior Lighting Control

Photoelectric Sensor

Time Clock


ICC
INTERNATIONAL CODE COUNCIL
FLORIDA BUILDING CODE
Fifth Edition (2014)
Building

FLORIDA BUILDING CODE, BUILDING

CHAPTER 27 ELECTRICAL

- Adopts NFPA 70 (The National Electrical Code)
- In Florida, NFPA 70-2011 was adopted in November of 2014.
- NEC adoption will always lag behind it's publication date because FL Bldg Code is revised 1 year ahead of NEC Releases.

Section 703.7 – Marking and Identification of Fire /Smoke Barriers

Section 703.7 – Marking and Identification

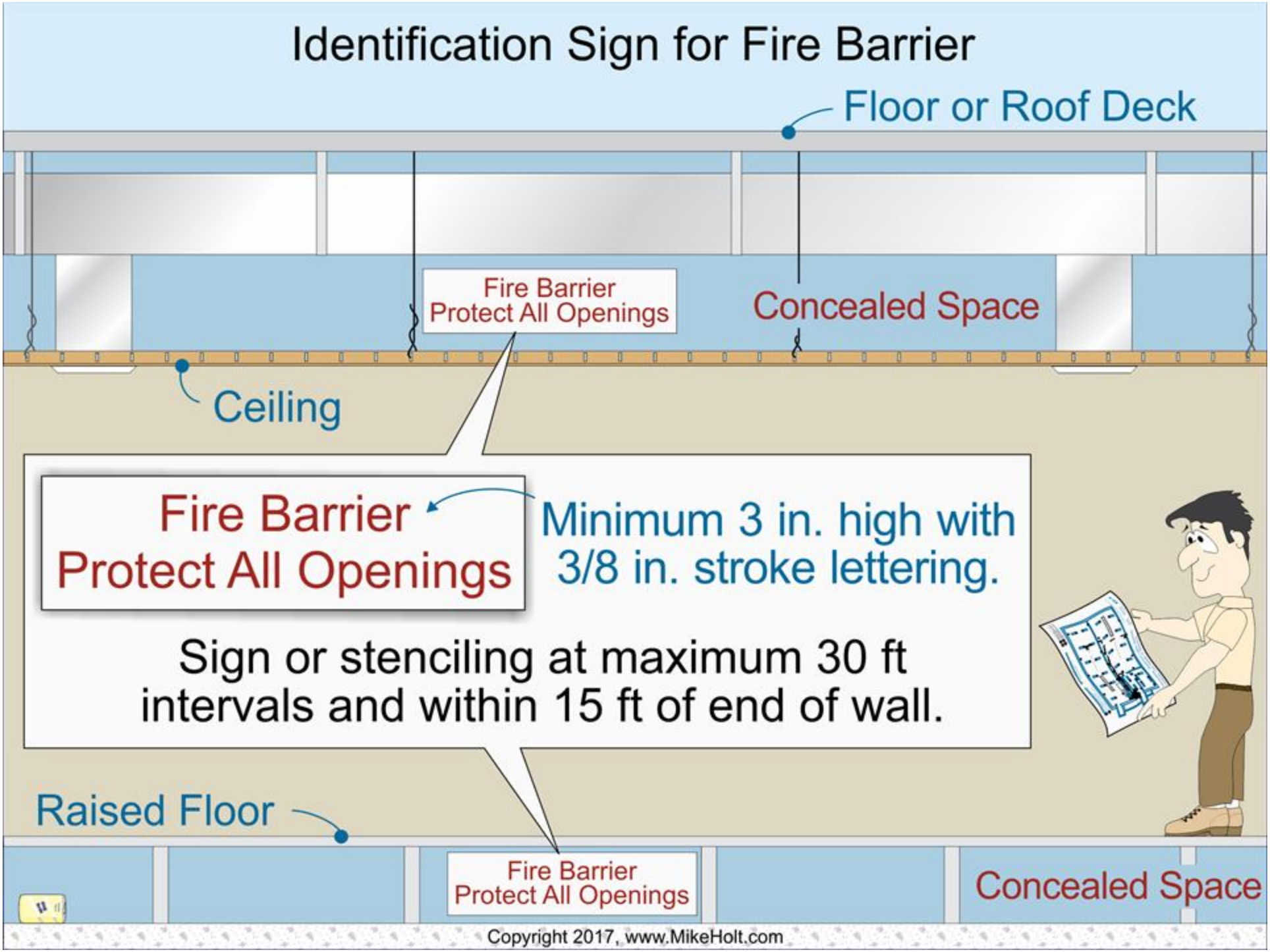
- Fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions or any other wall required to have protected openings or penetrations shall be permanently identified with signs or stenciling.

Section 703.7 – Marking and Identification

Such identification shall:

- 1. Be located in accessible concealed floor, floor-ceiling, attic spaces.

Identification Sign for Fire Barrier



Section 703.7 – Marking and Identification

Such identification shall:

- 2. Be marked within 15’ of the end of each wall and at intervals not exceeding 30’ measured horizontally along the wall or partition; and

Section 703.7 – Marking and Identification

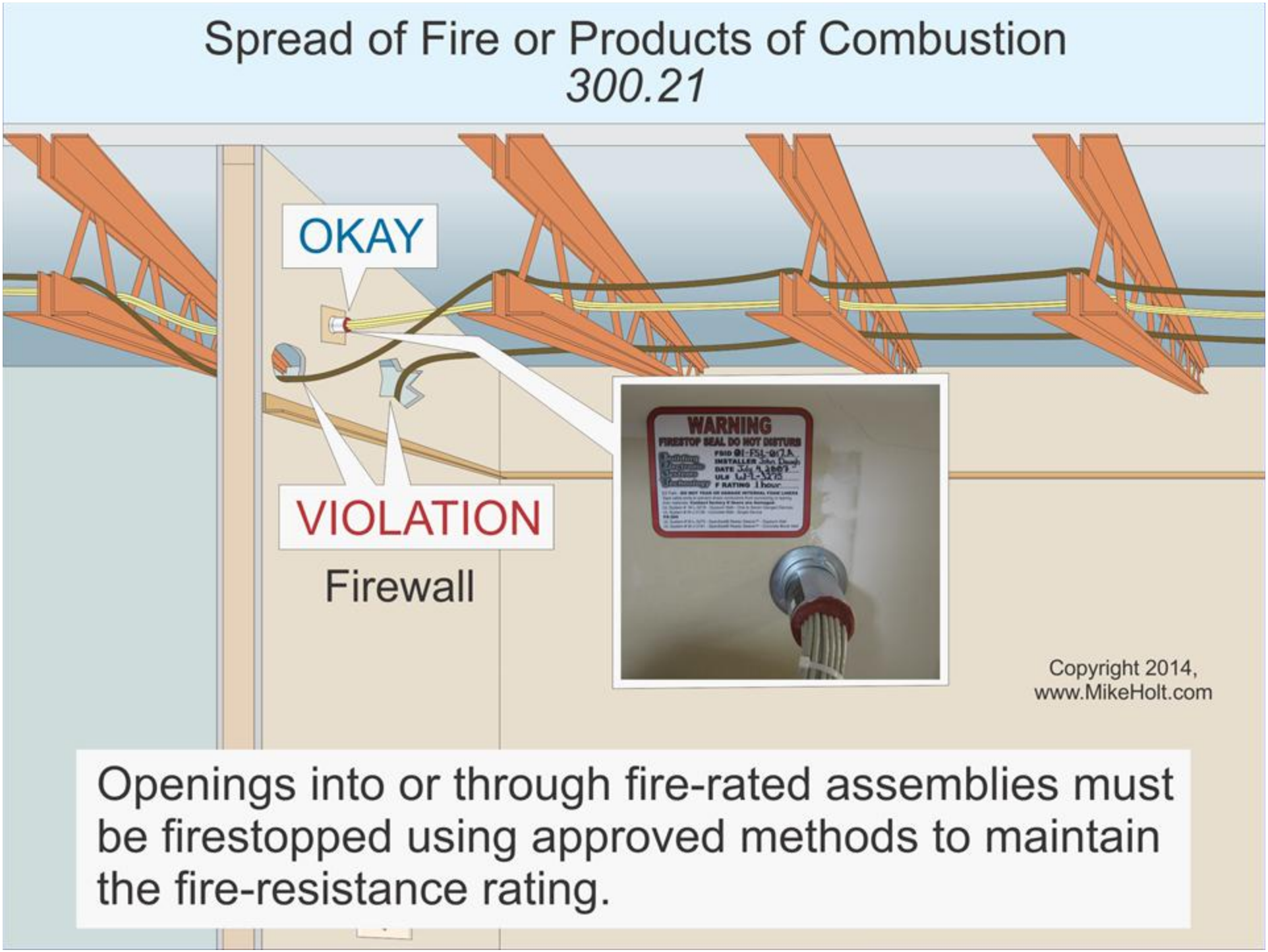
Such identification shall:

- 3. Include lettering not less than 3” in height and with a minimum of 3/8” stroke.

Section 714 – Penetrations of *Fire/Smoke Barriers*

- 714.3.1 – Through penetrations of fire-resistance-rated walls shall comply with Section 714.3.1.1 or 714.3.1.2
- To ensure the safety of building occupants during a fire precautions must be taken to prevent the spread of fire and smoke. NFPA 70 also covers this in rule 300.21

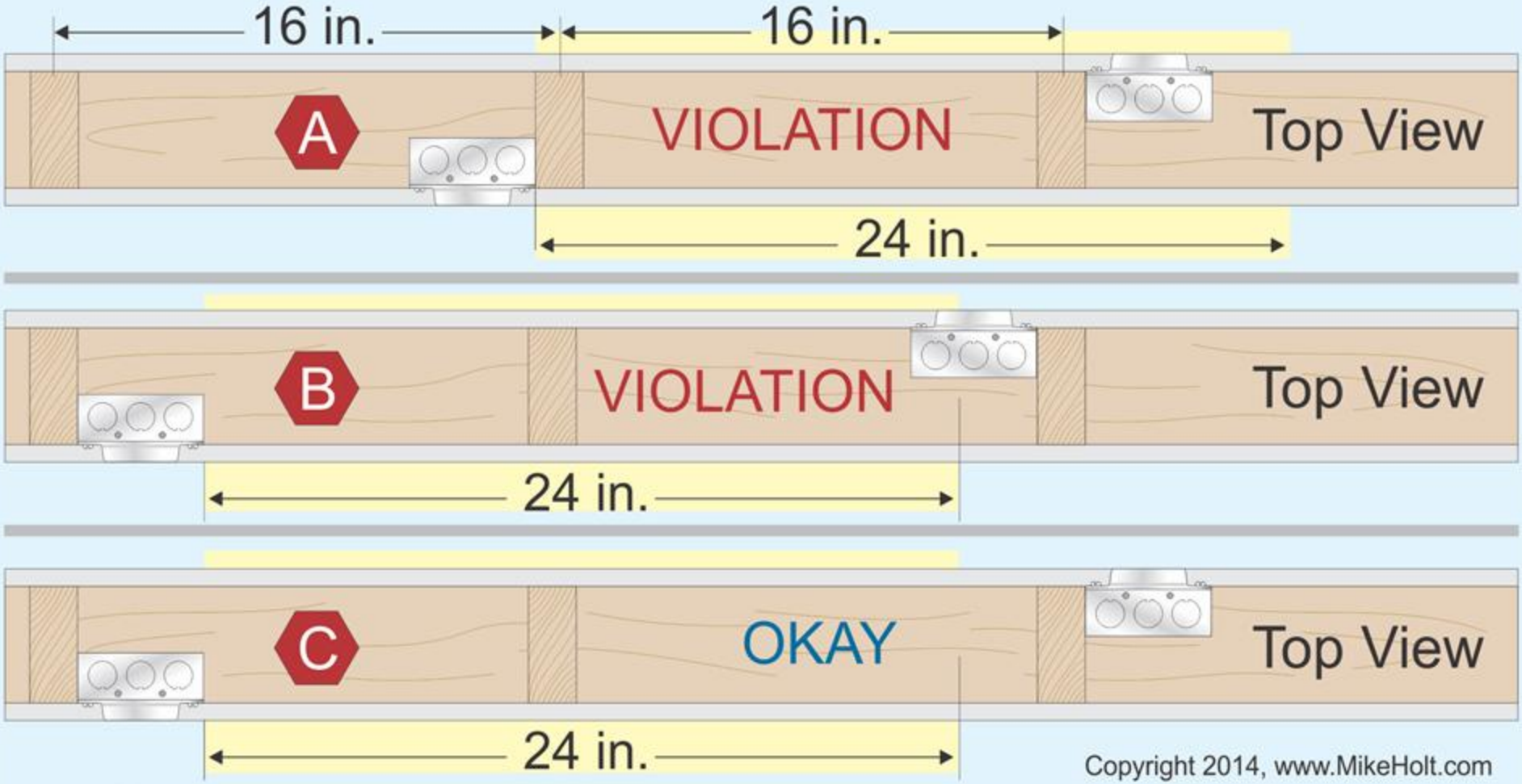
Spread of Fire or Products of Combustion
300.21



Openings into or through fire-rated assemblies must be firestopped using approved methods to maintain the fire-resistance rating.

Spread of Fire or Products of Combustion

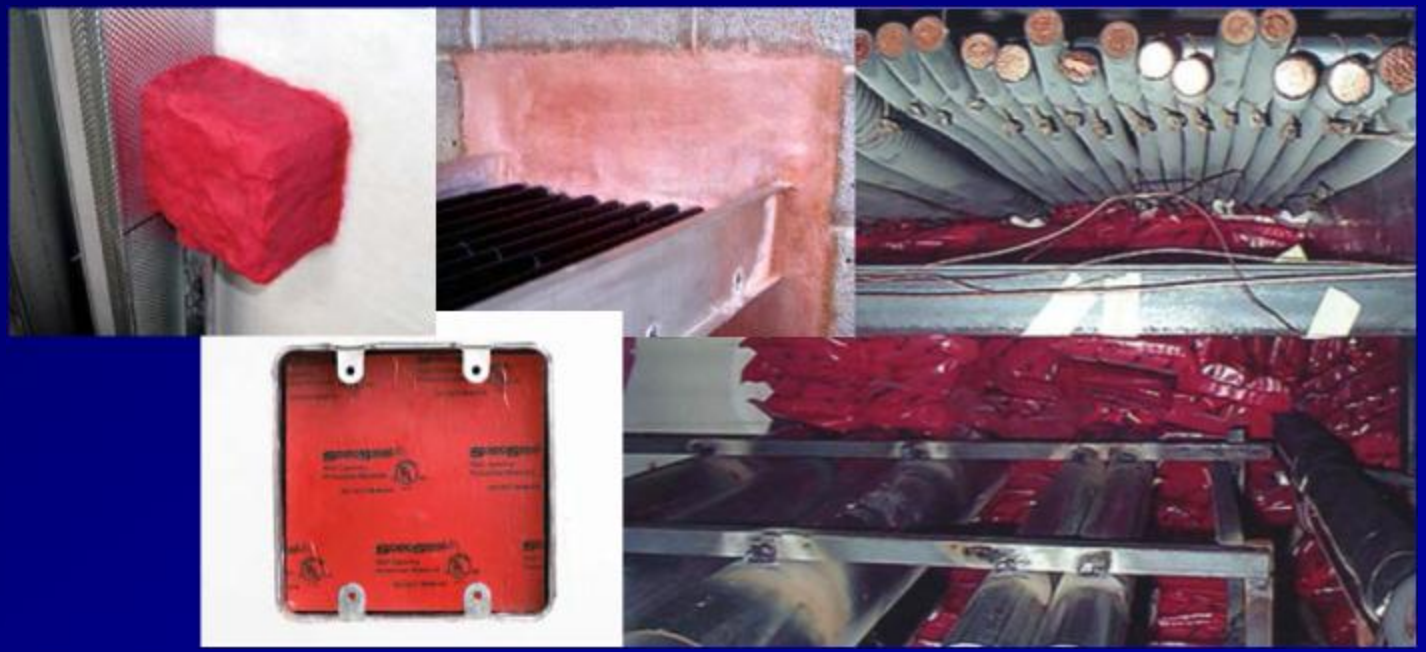
300.21 Note



Outlet boxes installed on opposite sides of a fire-rated assembly must have a horizontal separation not less than 24 in. unless listed for closer spacing or protected by fire-resistant "putty pads."

714.3.1.2 Through Penetration Fire Stop System

- Through penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479



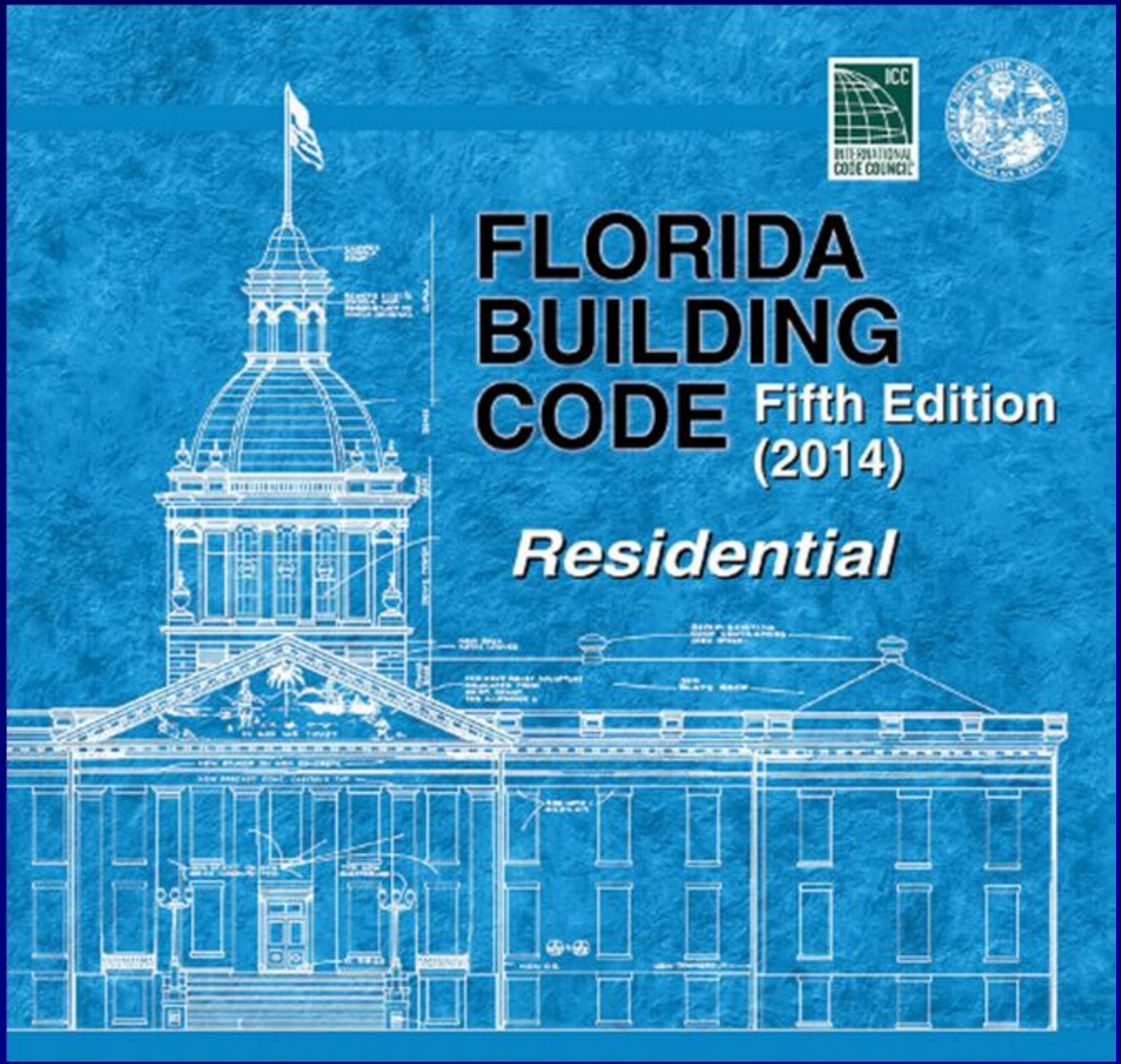
FBC Chapter 9: Fire Protection Systems

CHANGE!!!!!

- 907.2.11.3 – Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

FBC Chapter 9: Fire Protection Systems

- 907.2.11.4 – In new construction the master or host device "shall receive it's primary power from a commercial source" the guest devices may be battery powered per UL 217


ICC
INTERNATIONAL CODE COUNCIL
FLORIDA
BUILDING
CODE
Fifth Edition
(2014)
Residential

R314.4 Alterations, Repairs, and Additions

314.4 Has similar language as 907.2.11 but has the following exception

- 3. One-family and two family dwellings and townhomes undergoing a repair or a Level 1 alteration as defined in the Florida Building Code, may use smoke alarms powered by 10-year nonremovable, nonreplaceable batteries in lieu of retrofitting such dwelling with smoke alarms powered by the dwellings electrical system.

Local Amendments to the Florida Building Code

Local municipalities such as Miami/Dade, Broward, Pinellas, and Pasco have applied for modifications and been approved.

- Subscribe to your county or city newsletter.
- Engage your inspectors in discussion of local changes
- Visit https://www.floridabuilding.org

2014 Florida Building Code, Building Electrical Summary

End of Session