

RedVector.com, LLC  
4890 W. Kennedy Blvd., Ste. 740  
Tampa, FL 33609  
813-425-7372  
[Ellen.Sakamoto@RedVector.com](mailto:Ellen.Sakamoto@RedVector.com)



## 2014 Florida Building Code Advanced 5th Edition: Mechanical Summary of Significant Changes (RV- 10782AW)

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## Introduction

### Course Description

The Florida Building Code, the 5th Edition, will be effective June 30, 2015, and there are numerous changes in the base code, as well as Florida specific amendments to the base code. We will discuss what the base code is in a moment. These changes and codes regulate the design, construction, testing, and operation of mechanical systems involved in building in Florida. This course summarizes some of the significant changes in the next edition of the Florida Building Code, Mechanical. That will be known as the 5th edition. This course is intended for those familiar with the code and desiring to update their knowledge on the changes in these important regulations. Any designer, contractor, supplier, inspector, plans examiner, or other person involved with mechanical systems, whether they be commercial or domestic systems, will benefit from keeping current with the regulations largely governing their profession

### Learning Objectives

By the end of this course, you will be able to:

- Identify the necessary requirements regarding the lengths of pipe, tubing, and pipe fittings
- Select the required elevation for equipment and appliances having a source of ignition to protect the safety of building occupants from explosion. These elevation requirements, by the way, in the past code were marked reserved and were not adopted. They are now adopted throughout Florida.
- Recall the required gasket and sealing materials on commercial kitchen hood ventilation systems to prevent/alleviate a fire hazard
- Identify the Florida specific amendment (FSA) for balanced air return in buildings and structures
- Compare and contrast the spacing of duct supports to protect building occupants from injury and to protect the ductwork system itself from overstressing
- Communicate the code approved method for locking refrigerant circuit access ports located outdoors

### The Author

The author of this course is Joe Belcher, owner of JDB Code Services, Inc.

Joe has over thirty-five years of experience in the code development and enforcement field. He has worked in the public sector. When he left he was the Building Official for the City of Gainesville, Florida. He entered the public sector as the Director of Codes and Standards for a statewide industry association establishing and directing their codes and standards program for 8 years. He left the association and started his own code consultancy, JDB Code Services, Inc, in 1993 and continues to operate the company today. Joe has been involved in code development, enforcement, and product approval and currently represent the interests of several trade associations in the code arena.

In addition to code consultancy, Joe started a company specializing in code education in 2001. He is currently the president and half owner of BRB Code Educators, Inc. BRB develops and

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provides specialized education on building codes and standards to code enforcement personnel, contractors, architects, engineers, home inspectors and others. Since formation of the company, classes have been well received and presented to thousands of attendees. Attendees have included building code enforcers, architects, engineers, all contractor disciplines, fire service personnel, and product manufacturer and producer groups throughout the United States

This course is being presented by RedVector. It is a one hour advanced module. Throughout the course, specific amendments will be identified. Changes via Florida specific amendment are identified by FSA; otherwise, changes are from 2009 to 2012 Edition of International Mechanical Code, which serves as a base code for the Florida Building Code, Mechanical.

## Overview of Significant Changes

### FBC - Mechanical 5th Ed. (2014)

We have an overview of the significant changes. We are talking about the FBC Mechanical 5th Edition, 2014. The 2012 edition of the International Mechanical Code is the base code for the Florida Building Code – Mechanical. It includes Florida-specific changes and the implementation currently scheduled for June 30, 2015. It is not very likely that implementation date will change.

## Chapter 2 - Definitions

### New or Changed Terms

We will start discussing definitions in Chapter 2. Then we go into listing a lot of definitions. Definitions are a crucial part in the application of any code. For example, when we first adopted the residential code, there was a provision in there that said you have to protect appliances in parking garages. The question came up, “Does appliance mean that the washer and dryer in the garage have to be protected from impact by motor vehicles?” When you go and look at the definition of appliance in the code, it basically said anything that uses energy. Therefore, the washer and dryer were listed as appliances and did require protection. This is why the definition is one of the most crucial parts of the code. It is the roadmap for how you apply the code. There are several that have changed. There are more that have changed that are listed on the slide.

We have a new Florida specific amendment for an air dispersion system. We have a Florida specific amendment that defines the hot water supply for a boiler.

The base code definition for a clothes dryer has changed, and has deleted types 1 and 2.

The environmental air definition in the base code changes by adding parking garage exhaust. Parking garage exhaust would not be considered environmental air.

Mechanical joint has been expanded.

Third party certification definition has added three definitions covering this subject. There are new provisions in the code covering third party certification. We will be discussing more in-depth later in the course.

Many terms are specifically defined and may have a different meaning than the meaning in common usage of the term.

## **Chapter 3 – General Regulations**

### **Section 301 - General**

There are 3 new sections in base code.

§301.3 Identification.

§301.4 Plastic pipe, fittings and components.

§ 301.5 Third-party testing and certification.

We will be discussing those shortly.

§301.3 Identification requires all lengths of pipe, tubing and each pipe fitting required to bear the identification of the manufacturer.

That is a new requirement for every piece of pipe – every fitting will have to have the manufacturer's identification on it. Each length – so if you have a length of pipe, then you have a joint, then you have another piece of pipe, each one of those lengths is going to have manufacturer's identification on it.

§301.4 Plastic pipe, fittings and components - new section in base code

Plastic pipe, fittings and components: they all have to be third-party certified. So there are two things here: the requirement for third party certification and it has to conform to NSF 14 – National Science Foundation standard.

Another new section in base code.

§301.5 Third-party testing and certification.

It requires piping, tubing and fittings to comply with standards that are specified in the code, and to be tested by an approved third-party certification agency or certified by an approved third-party certification agency. Those agencies are defined in the code/Chapter 2.

Section 301.15 has been modified to delete references to NFPA 90A and 90B, which are standards of National Fire Protection Association for the Installation of Air Conditioning and Ventilating Systems and for the Installation of Warm Air Heating and Air Conditioning Systems. The code will now contain the criteria that used to refer to these NFPA standards.

## **Section 304 - Installation**

### 304.3 Elevation of ignition source.

Section formerly reserved and now adopted. It addresses elevation of ignition sources. It requires all ignition sources to be at least 18 inches above the floor surface.

Equipment and appliances having an ignition source and located in hazardous locations and public garages, private garages, repair garages, automotive motor fuel-dispensing facilities and parking garages shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the floor surface on which the equipment or appliance rests. For the purpose of this section, rooms or spaces that are not part of the living space of a dwelling unit and that communicate directly with a private garage through openings shall be considered to be part of the private garage.

Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant

#### 304.3.1 Parking garages.

Connection of a parking garage with any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation, except that a single door is permitted where the sources of ignition in the appliance are elevated in accordance with Section 304.3.

Exception:

This section shall not apply to appliance installations complying with Section 304.6

304.7 Which was formerly reserved is now adopted. It addresses private garages. It is shown here as underlined. Typically, when we are showing code provisions, underlined means it is new.

Basically it is telling you that you have to install appliances in private garages and car parks with a minimum clearance of 6 feet above the floor. There is an exception where the requirements of this section shall not apply where the appliances are protected from motor vehicle impact and installed in accordance with Section 304.3.

Section 304.3 is the elevation of ignition provision.

This is primarily looking at appliances that fuel fire; where you might have a gas leak.

## **Section 306 - Access and Service Space**

Section 306 – Access and Service Space is modified to clarify the terms. This is where you have an air handler installed in the attic. There is formerly a FSA requirement that required the posting of “Notice to Homeowner”. It is no longer required. That was actually put in the code as part of a settlement agreement with a group that challenged a provision of the code that would have prohibited putting any air handling systems in the attic space.

There is a specific prohibition from using portable ladders where you have equipment that is more than 16 feet above grade. It adds dimensional criteria for location of uppermost rung of permanent ladders. It adds specific requirements related to permanent ladders. (new Items 2, 7, 8, and 10)

This is a pictorial of the prior section on access by ladders. This shows the permanent ladder is required when the equipment is located higher than 16 feet. Number of stories is irrelevant. For example a large one story Factory-Industrial occupancy with equipment located on a roof and located 18 feet above grade.

This is showing some of the new criteria on ladders that 24 inches max is the distance from the top rung to the opening. The ladder is permanent. You have to have a minimum 30 inches clear behind the ladder access base and there is 15 inches minimum center of rung. You have to have a minimum 30 x 30 inch landing at the bottom of the ladder.

### **Section 307 - Condensate Disposal**

307.2.5 Pipe insulation- this is a Florida Specific amendment that was carried forward from the previous code and it requires that all horizontal primary condensate drains within unconditioned areas shall be insulated to prevent condensation from forming on the exterior of the drain pipe, dripping in and causing damage.

### **Section 308 - Clearance Reduction**

Section 308.5 Labeled assemblies.

This has been the change. It used to just require an approved agency. Now it is requiring it be listed and labeled in accordance with UL Standard 1618.

This is a photo of a fireplace with a listed and labeled clearance protection assembly. That is the hearth there and the tile behind the hearth. It has to do with the clearance of combustible materials.

## **Chapter 4 - Ventilation**

### **Section 401 - General**

There are quite a few changes in the Ventilation chapter.

Ventilation is required – this section requires that it is always either natural or mechanical ventilation. If you can't provide the appropriate amount of natural ventilation as specified by the code, then you have to provide mechanical ventilation.

A new change: It has been expanded to include where mechanical ventilation is required based on the number of air changes per hour.



It basically says that when you test and the air infiltration rate of dwelling unit is less than 5 ach, you have to provide mechanical ventilation. That testing is done with blower door testing and at 0.2-inch water column per §402.4.1.2 of FBC-Energy Conservation.

401.4 Intake opening location.

Retains minimum of 10 ft. from lot lines or buildings on the same lot.

It strikes measurement to centerline of street or public way when openings face streets or public ways in Item 1.

It specifies measurement for openings facing street or public way is to closest edge of street or public way.

401.4 Intake opening location.

Relocates 10 ft. horizontal separation to Item 2.

10 ft. separation is from hazardous or noxious contaminant sources such as vents, streets, alleys, parking lots and loading docks.

Permits openings closer than 10 ft. when located not less than 25 ft. vertically above such locations.

You can see that it is not less than 25 ft vertically above a public way. 25 ft is required when closer than 10 ft horizontally to noxious source including public streets.

Where openings front on a street or public way, the distance shall be measured from the closest edge of the street or public way.

## **Section 404 - Enclosed Parking Garages**

404.1 Enclosed parking garages.

This section has been modified: it adds the option of providing detection of vehicle operation or the presence of occupants by approved automatic detection devices to activate the mechanical ventilation system.

And it adds requirement for nitrogen dioxide detectors in conjunction with the carbon monoxide detector.

Detectors installed per manufacturers' recommendations

## **Section 406 – Ventilation of Uninhabited Spaces**

Section 406 – Ventilation of uninhabited spaces. This was previously reserved in the FBC. It was in the International Mechanical code.

It requires ventilation of uninhabited spaces such as crawl spaces and attics by natural ventilation openings per FBC- Chapter 12.

May be provided with mechanical exhaust and supply system.

System exhaust rate of not less than 0.02 cfm per square foot of horizontal area.

Automatic operation required when relative humidity in that space served exceeds 60 percent.

## Chapter 5 – Exhaust Systems

### Section 501 - General

Section 501.2 – They have added a new section and it requires all mechanical exhaust systems for environmental air to be independent of all other exhaust systems. You can't combine the environmental air system with your bathroom exhaust or dryer exhaust.

Your dryer exhaust is required to be independent of all other systems.

Type I kitchen exhaust systems are required to be independent of all other systems with an exception for grease duct systems.

Single or combined Type II kitchen exhaust systems are required to be independent of all other systems. Again, Type II kitchen exhaust systems are for appliances that produce steam (e.g., dishwashers), but not smoke, related to cooking.

This a graphic indicating Type I or Type II kitchen exhaust or bathroom exhaust must be independent. This is a big change.

Section 501 General. This section has been modified considerably.

501.4 Pressure equalization.

The exhaust system required to remove quantity of air as required by code and to operate when air is required to be exhausted. This can be automatic operation or continuous operation.

When the system is operating, room or space required to be at neutral or negative pressure.

It requires makeup air under certain circumstances. When you are exhausting more than can be naturally made up, you have to provide makeup air.

501.4 Pressure equalization.

The exhaust system required to remove quantity of air as required by code and to operate when air is required to be exhausted. This can be automatic operation or continuous operation.

When the system is operating, room or space required to be at neutral or negative pressure.

It requires makeup air under certain circumstances. When you are exhausting more than can be naturally made up, you have to provide makeup air.

### Section 501.5 General

Used to require all ducts to be constructed of metal. That requirement was deleted from this section. Where exhaust duct construction is not specified in this chapter, such construction shall comply with Chapter 6.

## **Section 502 - Required Systems**

502 – Again, this is new: it requires supervision of mechanical ventilation systems in stationary storage battery systems.

### 502.4.3 Supervision.

Mechanical ventilation systems required by Section 502.4 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

These are subject to approval by the local officials.

And we have the same requirement in Section 502:

It requires supervision of mechanical ventilation systems in Valve-regulated lead-acid batteries installed in cabinets.

These last two items also have to comply with National Fire Prevention code.

Again, the supervision has to be at an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location. Whichever system is used, it requires approval by local officials.

## **Section 504 – Clothes Dryer Exhaust**

### Section 504.3 Cleanout.

There was a statement that allowed the use of an exhaust duct connecting to an individual dryer outlet as a means for cleanout. That has been deleted. There is still a requirement for a cleanout and with no specific statement permitting that you use that exhaust duct to use as a cleanout. That will be a local jurisdiction's decision, whether or not to approve such an arrangement.

## **Section 505 - Domestic Kitchen Exhaust Equipment**

Section 505.1 Domestic systems has been modified to require domestic range hoods and appliances with downdraft exhaust to be independent of all other exhaust systems. These downdraft systems are becoming more popular in some of the modern construction.

Domestic Kitchen Exhaust Equipment – Section 505.2 Makeup air required.

This section requires makeup air where exhaust hood systems is capable of exhausting in excess of 400 cfm. That is the base code provision. There is a FSA to incorporate a legislation that was passed addressing this issue. That exception for makeup air from Florida statutes says it is not required where exhaust system capable of exhausting 400 cfm or less; or

More than 400 cfm but no more than 800 cfm provided there are no gravity vent appliances within conditioned living space of the structure.

That is Florida Statute changing the Florida Building Code.

## **Section 506 Commercial Kitchen Hood Ventilation**

Section 506.1 General. Important: This has been modified to remove the reference to NFPA 96 for grease hoods and grease hood duct systems. They now have extensive provisions related to grease hoods and grease hood duct systems within the FBC Mechanical - will not be referencing NFPA.

506.3.4 Air velocity. Grease duct systems serving a Type I hood – the air velocity has been reduced from not less than 1,500 fpm and not greater than 2,500 fpm to 500 fpm

NEW Section 506.3.7.1 Grease reservoirs - Requires construction for grease duct served.

Grease reservoir is located on bottom of horizontal duct or bottommost section of duct riser.

The length and width is not less than 12 inches. If the Duct is less than 12 inches, reservoir not more than 2 inches smaller than duct.

Minimum depth of 1 inch. The bottom has to be sloped to drainage point. There is a cleanout required.

This graphic shows these provisions for a grease reservoir.

506.3.8 Grease duct cleanouts and other openings

Provisions reformatted and rewritten for clarity.

NEW provision is for Gasket and sealing materials to be rated for not less than 1500°F.

Relocates signage requirements to §506.3.12.

Limits signs to cleanouts located in ducts within fire-resistance rated enclosures only.

Section 506.3.8 – Addressing grease duct cleanouts and openings has been expanded/rewritten/reformatted for clarity.

506.3.8 Grease duct cleanouts and openings.

It limits openings to operation and maintenance.

Sections inaccessible from the hood or discharge openings require cleanout openings.

Tight-fitting steel doors of thickness not less than thickness required for the duct,

A new provision is gasket and sealing materials rated not less than 1500°F.

Another new provision is doors required to be listed and installed per manufacturer's instructions.

This is a graphic of the grease duct cleanout opening. This shows the access panel and the gasket permanently attached to the access panel. This gasket and sealing materials must be rated not less than 1500°F. The access frame is to be mounted on the inside of the duct.

506.3.9 Grease duct horizontal cleanouts again has been expanded considerably, rewritten and reformatted for clarity. Single paragraph broken into sections.

Adds requirement for cleanout not more than 10 ft. from changes in direction > 45°. Adds limit to placement on bottom only where other locations not available. Requires cleanout at grease reservoirs.

Here is a horizontal grease duct cleanout opening.

We have a new section for underground grease duct installation.

506.3.10 Underground grease duct installation.

They have to be:

- Constructed of steel min thickness 0.0575 inch.
- Tested prior to coating or placement in ground.
- Completely encased in 4 inch thick concrete.
- Required to slope toward grease reservoirs.
- Cleanout required at the base of each vertical riser.

- Access to cleanouts to allow cleaning required.
- Cleanouts on horizontal ducts installed on topside of duct.
- Cleanout location points of access from interior space have to be identified by signage.

This is a graphic of the previous provisions.

Grease duct enclosures is a new requirement.

All penetrations by grease ducts serving Type I hoods are required to be enclosed; not just penetrations of fire rated assemblies.

Enclosure is not required for grease ducts penetrating only a nonfire-resistance rated roof/ceiling assembly.

506.3.11.2 Field-applied grease duct enclosure. This is material that is applied to a grease duct to serve as an enclosure.

This section has been modified to remove reference to F and T rating of not less than one hour and to prohibit partial application of field-applied grease duct enclosure systems for the sole purpose of reducing clearances to combustibles.

Partial application of a field-applied grease duct enclosure system shall not be installed for the sole purpose of reducing clearances to combustibles at isolated sections of grease duct.

506.4 Ducts Serving Type II Hoods.

Modified to conform to new requirements for independent systems. As we said earlier, all exhaust systems have to be independent. This section has been changed to comply with that requirement.

## **Section 507 - Commercial Kitchen Hoods**

Section 507.2 – Where required- this is talking about where Type I or Type II hoods are required. Type I or Type II shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2.1 and 507.2.2. Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed. Exception: Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood is not required above them.

This is a Hibachi table with a downdraft system. It would not be required to have a hood above it.

#### 507.2.1 Type I hoods.

They modified this to add the phrase “as a result of the cooking process”.

Exception: A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with Section 17 of UL 710B.

There has been a lot of controversy in the past as to whether or not cooking appliances are actually required to have a Type I hood. This is an exception that says that basically a low-grease-laden vapor below this 5 mg/m<sup>3</sup> does not require a Type I hood.

This is an example of an electric range that would not require a hood. Again, the documentation has to be provided to the local jurisdiction.

##### 507.2.1.1 Operation.

For Type I systems adds a prohibition of interlock between exhaust hood system and appliances from shutting down pilot burners.

It prohibits any component of fire extinguishing system to be used as part of the method of interlock.

You don't really want the pilot burner shut down and have gas conveying into the room, so there is a prohibition there.

This is a graphic of the previous section.

##### New Section 507.2.1.2 Exhaust flow rate label.

This is a new provision requiring a label showing minimum exhaust flow rate in cfm per lineal foot. This is a label with the listing description showing it is tested, listed, and approved to exhaust a minimum of 200 cfm per linear foot over 600 degree cooking equipment. This basically shows where that hood is authorized for use.

#### 507.2.2 Type II hoods.

The section was modified to add the phrase “as a result of the cooking process”, specifying that the grease or smoke they are talking about is not the result of a cooking process.

There is a new requirement that adds requirements for exhausting areas that don't require a Type II hood at rate of 0.70 cfm per square foot, and then it specifies the area calculation

method. It also specifies that each additional appliance is assigned a number of 100 sq feet in this calculation method.

This graphic indicates the cooking appliance calculation. This cooking appliance does not require a type II hood.

#### 507.10 Hoods Penetrating a Ceiling.

Type I hoods or portions thereof penetrating a ceiling, wall or furred space shall comply with Section 506.3.11. The new provision here is that field-applied grease duct enclosure systems, are not permitted to be utilized to satisfy the requirement of an enclosure for a Type I hood penetrating a ceiling.

This field applied grease duct enclosure is typically a wrap that is used on the duct. This is showing the Type I hood penetrating the ceiling. There is a rated duct enclosure and a rated ceiling. You cannot use a field applied grease duct enclosure material to provide this enclosure.

### **Section 508 - Commercial Kitchen Makeup Air**

#### 508.1.1 Makeup air temperature.

The temperature differential between makeup air and the air in the conditioned space shall not exceed 10°F (6°C) except where the added heating and cooling loads of the makeup air do not exceed the capacity of the HVAC system.

### **Section 516 – Carbon Monoxide Control Systems**

Carbon Monoxide Control Systems. This is a Florida Specific Amendment. It was actually instituted as a result of statutory language after a death down in the Florida Keys. I believe it was in 2000 at Christmas time. During a hurricane there was damage to a mechanical venting system for a boiler that was located on an upper floor of a hotel. The repairs were made without permits or inspections. It turns out that the repair was incorrect and routed the exhaust from the boiler into a particular guestroom. A guest was overcome and wound up expiring. As a result, the legislature enacted a mandate that the building commission adopted provisions in the Florida Building Code requiring and amending carbon monoxide control systems. This is not new but the change has been made from section 916 to section 908.7 of the Florida Building Code.

## **Chapter 6 - Duct Systems**

### **Section 601 - General**



Section 601 General has been modified to add some exceptions. 601.4 Contamination prevention. This section was renumbered from 601.5 to 601.4 to provide the exceptions for chimneys and vents that pass through plenums where certain criteria are met.

2. This section shall not apply to chimneys and vents that pass through plenums where such venting systems comply with one of the following requirements:

2.1. The venting system shall be listed for positive pressure applications and shall be sealed in accordance with the vent manufacturer's instructions.

2.2. The venting system shall be installed such that fittings and joints between sections are not installed in the above ceiling space.

2.3. The venting system shall be installed in a conduit or enclosure with sealed joints separating the interior of the conduit or enclosure from the ceiling space.

Section 601.5 Balanced Return Air – is also carried forward from the 2010 code and that contains the Florida Specific amendments for Balanced return air. In a nut shell, it requires balanced air within rooms and areas of a structure and that can be accomplished various ways. Those are not new requirements.

This shows a chimney or vent in a plenum. On the left it shows a continuous section with no joints. That is permitted to pass through a plenum. When we are talking plenums, that means return air plenums. In the middle it shows a positive pressure vent with sealed joints. That can also pass through a plenum. On the right you see a vent that is within an enclosure that passes through a plenum. Any joints have to be sealed.

## **Section 602 – Plenums**

Plenums – this is addressing materials that are allowed in plenums. This adds the requirement for listing and labeling for combustible materials within plenums. It adds Provisions addressing semiconductor fabrication areas previously located in Section 602.2.1.6 and have been relocated to Section 602.2.1 as Exception 6.

It deletes former Exceptions 6 and 7:

6. Condensate pump units.

7. Loudspeakers and accessories.

Pictorial of last referenced section

5. Combustible materials fully enclosed within one of the following:

5.1. Continuous noncombustible raceways or enclosures.

5.2. Approved gypsum board assemblies.

These combustible materials have to be listed and labeled.

Here it is shown with the pipe insulation listed and labeled as having a 25-50 flame and smoke rating. All material within a plenum shall be noncombustible or shall be listed and labeled as having a flame spread rating of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E-84 or UL 728.

### **Section 603 - Duct Construction and Installation**

Duct Construction and Installation - There are a number of items that were in this chapter previously that are relocated to the FBC-EC.

There are a number of changes in the FBC-EC that would be of interest to those taking this course. For example, all replacing windows have to meet the energy code. There will no longer be that 30% rule in effect. Those things are beyond the realm of this course. I suggest that you look into the FBC-EC 5th edition for those changes that will effect your profession.

The Former FSA Table 603 Duct System Construction and Sealing deleted. That is an extensive table that talks about all kinds of duct material, how to construct them, how to seal them, etc. It has been deleted but it has not gone away. That table is now found in the FBC-EC. It is Table C403.2.7.2. The "C" stands for Commercial. Just because it is Commercial does not mean it doesn't apply to Residential, because Section R403.2.2 refers to C403.2.7.2, which refers you to Table C403.2.7.2. In other words, the duct system construction and sealing table has been relocated but it is still in the code and in the FSA and it is very specific in the duct construction and sealing method.

Section 603 Duct Construction and Installation has been reworded in base code for clarity. FSA were deleted because base code adequately addresses the issues..

603.7 Rigid duct penetrations requires protection per §607.

Section 607 addresses penetrations by duct between a private garage and a dwelling to be unprotected sheet metal not less than 0.0187 inch thick.

Fire and smoke dampers not required in duct penetration between private garage and dwelling. For specific detail requirements, you will find that in Section 603.7.

This is a graphic of duct penetrations of a garage/dwelling separation.

Ducts A – 0.019 inch – Galvanized steel with no openings into the garage.

Ducts B – Will penetrate the floor – any duct approved by the Mechanical code.

You can see the dwelling on the B side. When you actually penetrate into the garage it has to be steel. When you get into it, you can convert to another material. That applies for supply air and return air.

Section 603 – Duct Construction and Installation has modified to §603.9 to prohibit the use of unlisted duct tape as a sealant on any duct. Any duct tape used in these systems has to be listed according to UL 181A-P.

The modification to §603.10:

It increases spacing of supports from 10 feet to 12 ft.

It deletes a FSA providing detailed support requirements based on type of duct. The rationale is that the base code is adequately addressing these issues.

It adds requirement to comply with SMACNA HVAC Duct Construction Standards—Metal and Flexible.

Flexible and other factory-made ducts required to be supported in accordance with the manufacturer's instructions.

This image shows the listed duct tape. This is the only duct tape that is permitted to be used in ceiling and mechanical systems.

NEW 603.17 Air Dispersion systems:

Air dispersion systems shall:

1. Be installed entirely in exposed locations.
2. Be utilized in systems under positive pressure.
3. Not pass through or penetrate fire-resistant rated construction.
4. Be listed and labeled in compliance with UL 2518.

## **Chapter 8 - Chimneys and Vents**

### **Sections 804 and 805 - Direct-Vent, Integral Vent and Mechanical Draft Systems**

Section §804 and §805 Direct-Vent, Integral Vent and Mechanical Draft Systems: We have modified §804.3 to require listing and labeling of mechanical draft systems of forced or induced draft design per UL 378.

We have a new §805.3 which limits offset angle to 30° for factory-built chimneys and it limits factory built chimneys to no more than four elbows.

## **Chapter 9 - Specific Appliances, Fireplaces and Solid Fuel-Burning Equipment**

Chapter 9 – There were a number of Florida Specific Amendments that were not carried forward in Chapter 9 in the 5th edition.

Careful review and comparison to FBCM 2010 is recommended for anyone working with fireplaces and these specific appliances.

### **Section 901 - General**

901.4 was modified to require that fireplace accessories, in addition to being listed, be labeled and they have to be installed in accordance with the conditions of the listing and the manufacturer's installation instructions. Fireplace accessories shall comply with UL 907. I have had the question, "Does that mean that my tools (poker, log stirrer) has to be listed and labeled?" No. We are not talking about those kinds of accessories.

We are talking about screens, air intake regulators, like the type shown in this graphic.

### **Section 908 - Cooling Towers, Evaporative Condensers and Fluid Coolers**

Section 908.1 General: We have two changes here. We have deleted the provision that says: The design of such cooling tower shall be in accordance with the requirements of the Florida Building Code, Building for a structure. Unless otherwise stated in this code, water cooling towers shall comply with NFPA 214.

That is all stricken. We now say Factory-built cooling towers shall be listed in accordance with UL 1995. They still have to be installed in accordance with Air condition/appliance manufacturer's installation instructions.

### **Section 911 - Duct Furnaces**

Section 911.1 General

Duct furnaces – we have changed the requirement for electric furnaces. They are no longer tested in accordance with UL 1995. They now shall be tested in accordance with UL 1996.

### **Section 928 Evaporative Cooling Equipment**

NEW Section 928.1 Evaporative cooling equipment shall:

1. Be installed in accordance with the manufacturer's instructions.

2. Be installed on level platforms in accordance with Section 304.10.
3. Have openings in exterior walls or roofs flashed in accordance with the Florida Building Code.
4. Be provided with potable water backflow protection in accordance with Section 608 of the FBC, Plumbing and
5. Have air intake opening locations in accordance with Section 401.4.

This is a graphic of an Evaporative Cooler.

## Chapter 10 – Boilers, Water Heaters and Pressure Vessels

### Table 1004.3.1

New table:

Table 1004.3.1 Boiler Top Clearances. The provisions were formerly contained in text – were reformatted and placed into a table to make them more easily applied.

## Chapter 11 - Refrigeration

### Section 1101 - General

#### 1101.10 Locking Access Port Caps.

We modified this to say that caps shall be otherwise secured to prevent unauthorized access.

This was leading to a situation where you had access caps on the roof of a building where there was no access from the ground or you had to get into a locked building to access them. We had jurisdiction requiring the ports to be locked. Now if you have another method other than locking the port itself, like a secured enclosure, which is shown on the bottom, it is a locked/fenced area or something of that nature, you don't have to have a lock on the specific cap.

## Chapter 15 Referenced Standards

## **Important Updated and Added Standards**

This is another one of those very important chapters. All of the standards are listed in Chapter 15 that are referenced in the code and it also shows the section where they are referenced. It also shows the edition that is adopted by the code. This is critical/crucial.

I can tell you a story in a southern county where a builder was required to go into a subdivision after over 1000 houses had been issued certificate of occupancy – they had to change the windows because they did not meet the reference standards for impact rated windows. They met the standard for the updated standard, but the code had not adopted that updated standard and it was still an older edition. You need to be very, very cognizant of what edition of any standard you are using is adopted by the code.

Now, if there is a newer standard and you want to use it, you can go to the local jurisdiction and request that they accept that as an alternate method. But you need that approval up front, otherwise you face the danger like the story I told you about that builder in that southern county.

There have been numerous standards updated or added. Again, you have to carefully review all the allowable editions as an essential function in getting up to speed on the new edition.

## **Conclusion**

### **Summary and Implications**

As a summary, there are numerous changes in the next edition of the Florida Building Code, in all of the volumes, actually. We have been discussing the Mechanical volume. The course highlighted some of the significant changes to the Florida Building Code – Mechanical which will go into effect June 30, 2015. Note that I said “some” of the significant changes. The length of time does not allow us to go into each and every change. I tried to pick the ones with the most impact. In your business, it may be that something else might have a major impact, so you need to carefully review this new edition. The course also included some of the Florida specific amendments to the base code. There is a trend/effort to do away with the FSA. In some cases we are not able to get what we need from the base code itself, so there are the FSA. Sometimes those occur due to legislative mandates. Changes occur across the entire breadth of the code and careful analysis by any practitioner is necessary to make certain designs are code compliant.

## Author Biography

### Joe Belcher

Joe has more than thirty-five years in the code development and enforcement field. He spent 10 years in the public sector starting in fire inspection and ending in building code enforcement. When he left the public sector he was the Director of Public Safety Inspections for the City of Gainesville, Florida. As the director, he also served as the building official for the city.

Mr. Belcher entered the public sector as the Director of Codes and Standards for a statewide industry association establishing and directing their codes and standards program for 8 years. He left the association and started his own code consultancy, JDB Code Services, Inc., in 1993 and continues to operate the company today. He has been involved in code development, enforcement, and product approval and currently represents the interests of several trade associations in the code arena.

In addition to his code consultancy, Joe started a company specializing in code education in 2001. He is currently the president and half owner of BRB Code Educators, Inc. BRB develops and provides specialized education on building codes and standards to code enforcement personnel, contractors, architects, engineers, home inspectors and others. Since formation of the company classes have been well received and presented to thousands of attendees. Attendees have included building code enforcers, architects, engineers, all contractor disciplines, fire service personnel, and product manufacturer and producer groups throughout the United States