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## **SFD Fire Separation Distances Under the 5<sup>th</sup> Edition FBC, Residential Code**

In the last few months, I have had many conversations with builders and design professionals regarding the provisions of the 5<sup>th</sup> Edition *Florida Building Code* and I find that there is some confusion regarding the fire separation requirements under the residential volume of the code.

In an attempt to clarify the requirements and the intent of the code, I offer the following comments:

It is appropriate to first review the fire separation requirements contained in the current (2010 Edition) code. The following is taken from the 2010 Edition of the *Florida Building Code, Residential Volume*:

### ***SECTION R302 FIRE-RESISTANT CONSTRUCTION***

***R302.1 Exterior walls.*** *Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1.*

#### ***Exceptions:***

1. *Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.*
2. *Walls of dwellings and accessory structures located on the same lot.*
3. *Detached tool sheds and storage sheds, playhouses and similar structures are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.*
4. *Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).*
5. *Foundation vents installed in compliance with this code are permitted.*
6. *Openings and roof overhang projections shall be permitted on the exterior wall of a building located on a zero lot line when the building exterior wall is separated from an adjacent building exterior wall by a distance of 6 feet or more, and the roof overhang projection is separated from an adjacent building projection by a distance of 4 feet or more, with 1 hour fire resistive construction on the underside of the overhang required, unless the separation between projections is 6 feet or more.*
7. *Screen enclosure walls of insect screening with a maximum of 25 percent solid flexible finishes.*

Note that exceptions #6 and #7 are *Florida Specific Amendments* (FSA) to the 2009 IRC base code. The base code only contains Exceptions 1 through 5.

The Following Table was also modified as *Florida Specific Amendments* (FSA) to the base code.

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	(Fire-resistance rated)	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	0 feet
	(Not fire-resistance rated)	0 hours	3 feet
Projections	(Fire-resistance rated)	1 hour on the underside	2 feet
	(Not fire-resistance rated)	0 hours	3 feet
Openings in walls	Not allowed	N/A	N/A
	Unlimited	0 hours	3 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet

For SI: 1 foot = 304.8 mm.  
N/A = Not Applicable.

For comparison purposes, the following is the same table contained in the 2009 IRC base code; note the differences in the minimum fire separation distances:

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	(Fire-resistance rated)	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	(Not fire-resistance rated)	0 hours	≥ 5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	≥ 2 feet to 5 feet
	(Not fire-resistance rated)	0 hours	5 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For SI: 1 foot = 304.8 mm.  
N/A = Not Applicable.

It is clear that the provisions allowing the current method of zero lot-line home construction is permitted due to *Florida Specific Amendments* (FSA) to the 2009 IRC base code.

The following is taken from the 5<sup>th</sup> Edition *Florida Building Code, Residential Volume*:

#### SECTION R302 FIRE-RESISTANT CONSTRUCTION

##### R302.1 Exterior walls.

Construction, projections, openings and penetrations of *exterior walls* of *dwellings* and accessory buildings shall comply with Table R302.1(1); or *dwellings* equipped throughout with an *automatic sprinkler system* installed in accordance with Section P2904 shall comply with Table R302.1(2).

##### Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the *fire separation distance*.
2. Walls of *dwellings* and *accessory structures* located on the same *lot*.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the *lot*. Projections beyond the *exterior wall* shall not extend over the *lot line*.
4. Detached garages accessory to a *dwelling* located within 2 feet (610 mm) of a *lot line* are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.
6. Screen enclosure walls of insect screening with a maximum of 25-percent solid flexible finishes.

Note that previous Exception #7 was carried forward from the 2010 code while previous exception #6 was not.

Two tables are now referenced for determining fire separation ratings. Table R302.1(1) is used when the dwellings are not equipped with an automatic fire sprinkler system and Table R302.1(2) is used when the dwellings are equipped with an automatic fire sprinkler system.

TABLE R302.1(1) EXTERIOR WALLS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Fire-resistance rated	1 hour on the underside	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For SI: 1 foot = 304.8 mm.  
N/A = Not Applicable.

Note that the above table is the same as the table contained in the 2009 IRC. Therefore, it is important to understand that the change in fire separation distances is the result of the 2010 *Florida Specific Amendments* (FSA) to the 2009 IRC base code not being carried forward into the 5<sup>th</sup> Edition.

TABLE R302.1(2) EXTERIOR WALLS—DWELLINGS WITH FIRE SPRINKLERS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E 119 or UL 263 with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet <sup>a</sup>
Projections	Fire-resistance rated	1 hour on the underside	2 feet <sup>a</sup>
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet <sup>a</sup>
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet <sup>a</sup>

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable.

a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler systems installed in accordance with Section P2904, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

Note that dwellings equipped with automatic fire sprinkler systems are permitted reduced fire separation distances. Additionally, note that fire separation distances are allowed to be further reduced when all dwellings in the entire subdivision are equipped with automatic fire sprinkler systems.

In order to assist in understanding the intent of the code in revising the fire separation requirements, I have taken some information from an *International Code Council (ICC)* publication titled “*Significant Changes to the 2012 IRC*” that may assist in clarifying the reasoning behind the revisions, as follows:

### **R302.1 Exterior Walls:**

**CHANGE SUMMARY:** *The minimum clearances to lot lines have been reduced from 5 feet to 3 feet for unrated exterior walls when the dwelling is protected with a fire sprinkler system. The code now permits construction of unrated exterior walls on the lot line when all dwellings in the subdivision are protected with automatic fire sprinkler systems and the opposing lot maintains a minimum 6-foot clearance from the common lot line.*

**2012 CODE: R302.1 Exterior Walls.** *Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or for dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2).* (underlined text indicates the actual change to the code section)

**CHANGE SIGNIFICANCE:** *Provisions that regulate the construction of exterior walls in proximity to lot lines have long been recognized as effective in preventing the spread of fire from a building on one property to a building on another property.*

*Unless the exterior wall is constructed to provide a fire-resistance rating of 1 hour with exposure from both sides in accordance with either ASTM E-119 or UL 263, a minimum fire separation distance is required from the lot line.*

*The consensus as to the minimum distance necessary to provide a sufficient buffer against the spread of fire has changed somewhat over the years. For example, the 2000 and 2003 editions of the IRC required a minimum 3-foot separation from lot lines for unrated exterior walls. In the 2006 edition, that distance was increased to 5 feet to provide a higher level of safety and to correlate with the provisions for residential occupancies regulated by the IBC. The 2009 IRC introduced requirements for automatic fire sprinkler systems in all new one and two family dwellings and townhouses.*

*When a sprinkler system is installed, the 2012 IRC permits non-rated walls that are not less than 3 feet from the lot line, a dimension previously prescribed in earlier editions of the code. This 3-foot dimension is the new threshold for exterior wall construction, projections, openings, and penetrations. For dwellings without sprinkler systems, the 5-foot separation distance still applies.*

*Although the IRC requires automatic sprinkler systems for all new dwellings, a reduction in the minimum fire separation distance is now in place as an additional incentive for installing dwelling sprinkler systems. This provision recognizes that some state or local jurisdictions may not have enacted the sprinkler requirements and offers an alternative for builders choosing to install automatic sprinkler systems. The reduced clearances intend to provide design flexibility and reduce costs associated with fire-resistant construction, while maintaining a reasonable level of safety based on past performance of dwelling fire sprinkler systems. A dwelling automatic sprinkler system installed in accordance with Section P2904 or NFPA 13D aids in the detection and control of fires in residential occupancies regulated by the IRC. The design criteria of these sprinkler systems are for life safety to buy time for occupants to escape a fire; dwelling fire sprinklers are not designed for property protection. Sprinklers in accordance with Section P2904 or NFPA 13D are not required throughout the dwelling - they generally may be omitted in concealed spaces, closets, bathrooms, garages, and attics and crawlspaces without gas-fired appliances, for example. However, the automatic sprinkler system is expected to prevent total fire involvement (flashover) in the room of fire origin if the room is sprinklered. In addition to increasing the likelihood of occupants escaping or being evacuated, dwelling sprinklers often provide some measure of property protection as well.*

*A footnote to the new table allows unrated exterior walls of dwellings equipped with sprinkler systems to be placed on the lot line if all dwellings in the subdivision are equipped with a sprinkler system and the adjacent lot maintains a 6-foot setback for buildings on the opposite side of the lot line. Under these conditions, openings and penetrations are unrestricted, but projections that are less than 2 feet from the lot line still require 1-hour protection on the underside. This provision allows flexibility in placing buildings on the lot for maximum effective use of the buildable area while still maintaining a minimum 6 feet of clearance between buildings.*



I have researched the options for construction of rated exterior walls and soffit projections and offer the following methods for review:

**Underwriters Laboratory (UL) Listed Masonry Assemblies:**

Company Name	Category Name	Link to File
Design No. U901	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U901</a>
Design No. U902	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U902</a>
Design No. U904	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U904</a>
Design No. U905	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U905</a>
Design No. U906	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U906</a>
Design No. U907	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U907</a>
Design No. U910	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U910</a>
Design No. U912	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U912</a>
Design No. U914	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U914</a>
Design No. U916	Fire-resistance Ratings - ANSI/UL 263	<a href="#">BXUV.U916</a>

**Gypsum Association GA-600 Fire Resistance Design Manual (Exterior Walls):**

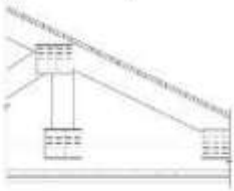
GA FILE NO. WP 8105 (Wood Studs 1.0 hr.)

GA FILE NO. WP 8006 (Metal Studs 1.0 hr.)

GA FILE NO. WP 8105 (Load Bearing, Wood Studs, 1.0 hr.)

GA FILE NO. WP 8109 (Load Bearing, Wood Studs, Fiber-Cement Siding, 1.0 hr.)

**Gypsum Association GA-600 Fire Resistance Design Manual (Soffit Projection):**

ROOF-CEILING SYSTEMS		
GA FILE NO. RC 2602	GENERIC	1 HOUR FIRE
WOOD TRUSSES, GYPSUM WALLBOARD		
<p>Base layer 5/8" type X gypsum wallboard applied at right angles to wood roof trusses 24" o.c. with 1 1/4" Type W or S drywall screws 24" o.c. Face layer 5/8" type X gypsum wallboard or gypsum venter base applied at right angles to trusses with 1 1/4" Type W or S drywall screws 12" o.c. at joints and intermediate trusses and 1 1/2" Type G drywall screws 12" o.c. placed 2" back on either side of end joints. Joints offset 24" from base layer joints. Wood trusses supporting 1/2" wood structural panels applied at right angles to trusses with 8d nails. Appropriate roof covering. Ceiling provides one hour fire resistance protection for trusses.</p>		
		
		<p>Approx. Ceiling Weight: 5 psf Fire Test: FM FC 172, 2-25-T2; ITS, 8-9-98</p>

The above listings are only a sample of those available and it is recommended that builders consult with their design professional for assistance in determining the appropriate wall and / or soffit assembly.

I hope this helps to clarify the intent of the changes to the 2012 IRC and the inclusion of the provisions into the 5<sup>th</sup> Edition of the *Florida Building Code, Residential Volume*.

Please do not hesitate to contact me if I can be of further assistance.

In Building Safety,

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Vice President