



**VIRGINIA**  
**DHCD**

**VIRGINIA DEPARTMENT OF HOUSING  
AND COMMUNITY DEVELOPMENT**

Partners for Better Communities<sup>1</sup>

# Residential Sprinklers Study Group

December 15, 2021 Meeting

2021 Code Development Cycle



**Cindy Davis**, Deputy Director of Building and Fire Regulations

**Jeff Brown**, State Building Codes Office Director

**Richard Potts**, Code Development and Technical Support Administrator

**Florin Moldovan**, Code & Regulation Specialist

**Paul Messplay**, Code & Regulation Specialist

**Jeanette Campbell**, Administrative Assistant

- Mike Eutsey - VBCOA
- Ellis McKinney - VPMIA
- Jimmy Csizmadia - VFPA
- Garrett Dyer - VDFP
- Mike Poole - AIA Virginia
- Overton McGehee - Habitat for Humanity
- Reid Walters - Town of Independence
- Robbie McCraw - Carroll County
- Mike Nannery - Chesterfield County
- Meredith Raetz - American Water
- Andrew Clark - HBAV

# 2021 code development cycle (tentative dates)



**October 1st** cdpVA was opened for submission on code change proposals for the 2021 Code Development Cycle

**November 2021:** Notices of Intended Regulatory Action (NOIRAs) Published

**December 2021:** Study Groups begin meeting

**February 2022:** Sub-Workgroups begin meeting

**March-June 2022:** Stakeholder Workgroup meetings

**September 2022:** BHCD meets to consider proposals

**December 2022:** BHCD considers proposed regulations

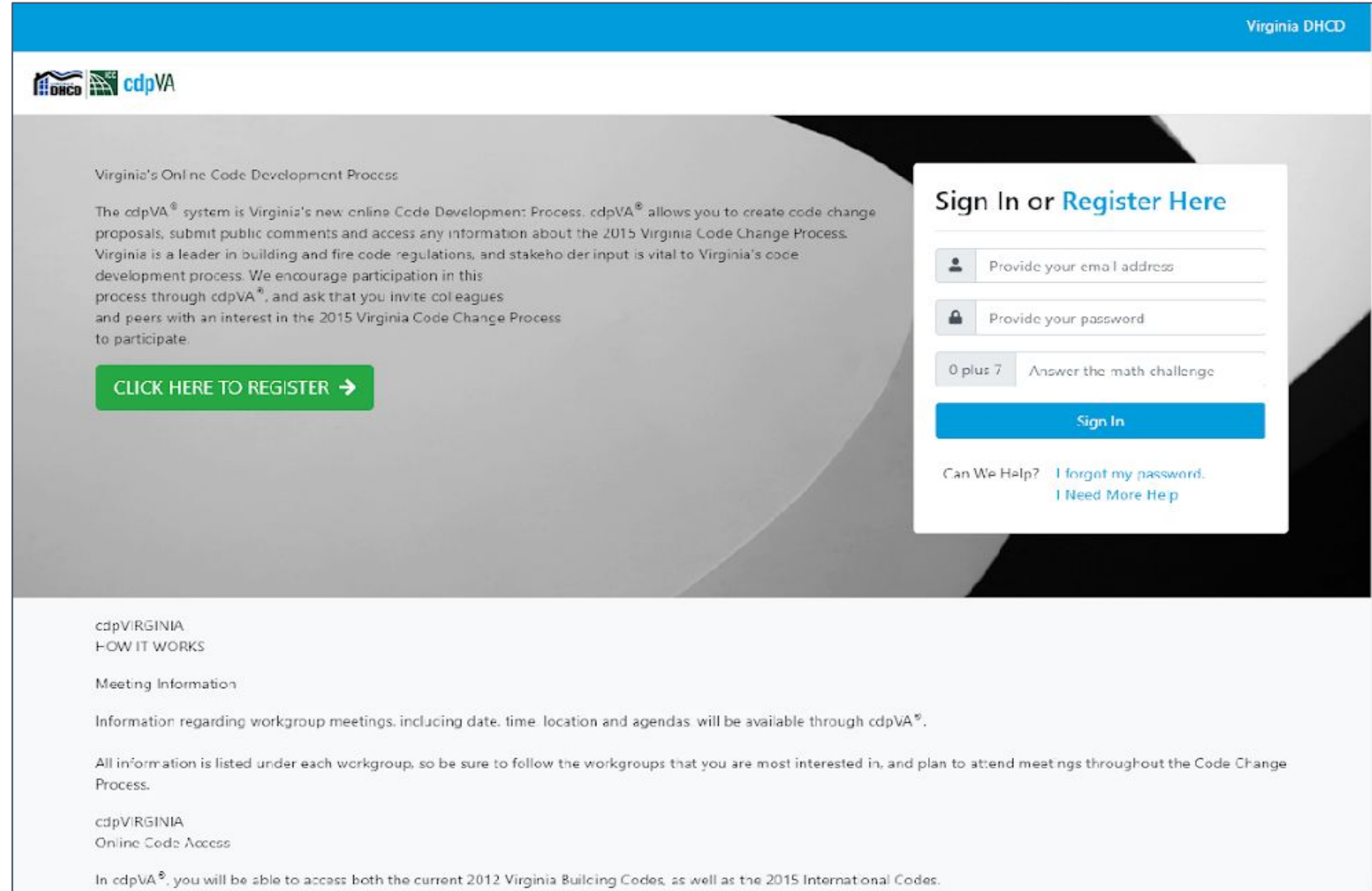
**Fall/Winter 2023 = 2021 Virginia Codes Effective (Tentative)**





[va.cdpass.com](http://va.cdpass.com)

## Virginia's online code development System (cdpVA)



The screenshot shows the Virginia DHCD cdpVA website. At the top right, it says "Virginia DHCD". Below that is the DHCD and cdpVA logo. The main heading is "Virginia's Online Code Development Process". The text describes the cdpVA system as Virginia's new online Code Development Process, allowing users to create code change proposals, submit public comments, and access information about the 2015 Virginia Code Change Process. It encourages participation and mentions that users can invite colleagues and peers. A green button labeled "CLICK HERE TO REGISTER →" is prominent. On the right side, there is a "Sign In or Register Here" box with input fields for email address and password, a math challenge "0 plus 7" with the answer "Answer the math challenge", and a "Sign In" button. Below the sign-in box, there are links for "Can We Help?", "I forgot my password.", and "I Need More Help". At the bottom, there are sections for "cdpVIRGINIA HOW IT WORKS", "Meeting Information", and "cdpVIRGINIA Online Code Access".

Virginia DHCD

cdpVA

### Virginia's Online Code Development Process

The cdpVA<sup>®</sup> system is Virginia's new online Code Development Process. cdpVA<sup>®</sup> allows you to create code change proposals, submit public comments and access any information about the 2015 Virginia Code Change Process. Virginia is a leader in building and fire code regulations, and stakeholder input is vital to Virginia's code development process. We encourage participation in this process through cdpVA<sup>®</sup>, and ask that you invite colleagues and peers with an interest in the 2015 Virginia Code Change Process to participate.

[CLICK HERE TO REGISTER →](#)

### Sign In or Register Here

Provide your email address

Provide your password

0 plus 7 Answer the math challenge

[Sign In](#)

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cdpVIRGINIA  
HOW IT WORKS

Meeting Information

Information regarding workgroup meetings, including date, time, location and agendas, will be available through cdpVA<sup>®</sup>.

All information is listed under each workgroup, so be sure to follow the workgroups that you are most interested in, and plan to attend meetings throughout the Code Change Process.

cdpVIRGINIA  
Online Code Access

In cdpVA<sup>®</sup>, you will be able to access both the current 2012 Virginia Building Codes, as well as the 2015 International Codes.

- Study specific topics that require additional review and discussion
- Identify areas of consensus and disagreement
- Determine if code change proposals or other solutions are appropriate
- May review proposals, provide analysis, make recommendations, and/or develop code change proposals
- Proposals and recommendations of Study Groups are reviewed by the General Workgroups prior to BHCD consideration

- Review all code change proposals within their subject topics, prior to the proposals being considered by the General Workgroups
- Make recommendations on each proposal, including negotiating compromises where appropriate
- May also develop new code change proposals, or support proposals submitted by others by joining the proposal as a proponent



- All meetings are open to attendance and participation by anyone
- Review and discuss all submitted code change proposals, including all proposals and recommendations from Study Groups and Sub-Workgroups
- A workgroup recommendation is determined for each proposal and the recommendation is provided to the Board of Housing and Community Development
- Workgroup recommendations are classified as follows:

**Consensus for Approval:** No workgroup participant expressed opposition to the proposal

**Consensus for Disapproval:** Any workgroup participant expressed opposition to the proposal and no workgroup participant, other than the proponent, expressed support for the proposal.

**Non-Consensus:** Any workgroup participant expressed opposition to the proposal

[codes.iccsafe.org/codes/virginia](https://codes.iccsafe.org/codes/virginia)

**Free Online Access to  
Virginia and ICC Code books!**



## International Residential Code

**2006:** Appendix P “Fire Sprinkler System” contains provisions for the installation of fire sprinkler systems in dwellings covered by the IRC. The Appendix is not mandatory unless specifically referenced in the adopting ordinance.

**2009:** Section 313 “Automatic Fire Sprinkler Systems” mandates the installation of an automatic fire sprinkler system in townhouses and one and two-family dwellings. The system is to be designed and installed in accordance with Section P2904 or NFPA 13D.

## Virginia Residential Code

**2006:** No significant changes (IRC appendix not incorporated)

**2009:** Amends Section R313 of the 2009 IRC to make the installation of sprinkler systems optional. Section R329 “Fire Extinguishers” is added, which mandates the installation of a fire extinguisher with a rating of 2-A:10-B:C in the kitchen area, if the dwelling is not equipped with an automatic fire sprinkler system.

## International Residential Code

**2012:** No significant changes

**2015:** Allows NFPA 13D standard to be complied with for the design and installation of systems in townhouses (Section 2904 remains one of the options available). This change brings the townhouse requirements in line with those for one- and two-family dwellings.

**2018:** No significant changes

## Virginia Residential Code

**2012:** No significant changes

**2015:** No significant changes

**2018:** No significant changes

During the 2018 Code Development Cycle, the Board of Housing and Community Development (BHCD) approved the following proposals, related to sprinkler systems, for inclusion in the 2018 VRC:

- **RB302.2.2-18** – allows water-filled fire sprinkler piping in cavity of common walls shared by townhouses.
- **RB302.2.6-18** – exempts townhouses protected by a fire sprinkler system complying with Section P2904, NFPA 13, NFPA 13R or NFPA 13D, from the structural independence requirement.

The BHCD also considered the following proposals, to require sprinkler system installation in both townhouses and one- and two-family dwellings.

- **RB310.11-18** Disapproved
- **RB313.1-18** Disapproved

The BHCD also determined that additional discussions were needed and directed DHCD staff to convene a group of interested stakeholders to continue the discussions during the 2021 Code Development Cycle.



## **Townhouses and One- and Two-family Dwellings**

Automatic fire sprinkler systems are optional

Where installed, automatic fire sprinkler systems can be designed and installed in accordance with:

- NFPA 13
- NFPA 13R
- NFPA 13D or
- VRC Section P2904

Sprinklers required in all new townhouses and one- and two-family dwellings:

- California
- Maryland
- Washington DC

Sprinklers required in some (based on size /height) townhouses and one- and two-family dwellings:

- New York
- Massachusetts

Approximately 20 states allow local jurisdictions to mandate the installation of sprinklers in townhouses and one- and two-family dwellings

- Gather information and data for review and discussion
- Identify areas of agreement and/or disagreement
- Summarize findings or recommendations
- Review any related proposals submitted during the 2021 cycle

## Important discussion topics (future meetings):

- Safety impact of residential sprinklers
- Cost(s) of residential sprinklers
- Cost impact of residential sprinklers
- Other?



Prior to the next meeting, please:

- **Reach out to other members and/or DHCD staff with any questions related to information discussed today**
- **Identify areas of interest or concern that you would like to discuss at the next meeting** (Provide to DHCD by December 27th)
- **Identify and provide helpful/relevant information (reports, data, etc.) for the group to review** (Provide to DHCD by December 27th)

**Note:** If any member wants to share information with the group between meetings, please send it to DHCD staff and we will distribute it to our email list to make sure we do not miss any interested parties that might be added to our list as we go along.



## **Next Meeting (Virtual)**

**January 11, 2021**

**9:00 am - 3:00 pm**

**(lunch break 12:00 pm -1:00 pm)**

Link: <https://vadhcd.adobeconnect.com/va2021cdc/>



**Division of Building and Fire Regulations**

State Building Codes Office

[sbco@dhcd.virginia.gov](mailto:sbco@dhcd.virginia.gov)

804-371-7150



**cdpVA**  
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# RB302.2.2-18

IRC@: R302.2.2, R302.4.1, R302.4.2

Proponents: Jeffrey Shapiro (jeff.shapiro@intlcodeconsultants.com)

## 2018 International Residential Code

### Revise as follows:

**R302.2.2 Common walls.** Common walls separating *townhouses* shall be assigned a fire-resistance rating in accordance with Item 1 or 2. The common wall shared by two *townhouses* shall be constructed without plumbing or mechanical equipment, ducts or vents ~~in~~, other than water-filled fire sprinkler piping, in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be in accordance with Chapters 34 through 43. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4.

1. Where a fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.3 of the International Building Code.
2. Where a fire sprinkler system in accordance with Section P2904 is not provided, the common wall shall be not less than a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.3 of the International Building Code.

**R302.4.1 Through penetrations.** Through penetrations of fire-resistance-rated wall or floor assemblies shall comply with Section R302.4.1.1 or R302.4.1.2.

### ~~Exception-~~ Exceptions:

1. Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space shall be protected as follows:

~~1.1~~ In concrete or masonry wall or floor assemblies, concrete, grout or mortar shall be permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating, provided that both of the following are complied with:

~~1.1.~~

1.1.1. The nominal diameter of the penetrating item is not more than 6 inches (152 mm).

~~1.2~~ 1.1.2. The area of the opening through the wall does not exceed 144 square inches (92 900 mm<sup>2</sup>).

~~1.2.~~ The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time temperature fire conditions under a positive pressure differential of not less than 0.01 inch of water (3 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

2. The annular space created by the penetration of water-filled fire sprinkler piping, provided the annular space is filled using a material complying with Exception 1.2 above.

**R302.4.2 Membrane penetrations.** Membrane penetrations shall comply with Section R302.4.1. Where walls are required to have a fire-resistance rating, recessed fixtures shall be installed so that the required fire-resistance rating will not be reduced.

### **Exceptions:**

1. Membrane penetrations of not more than 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m<sup>2</sup>) in area provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m<sup>2</sup>) in any 100 square feet (9.29 m<sup>2</sup>) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall shall be separated by one of the following:

- 1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities.
- 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation.
- 1.3. By solid fireblocking in accordance with Section R302.11.
- 1.4. By protecting both boxes with listed putty pads.
- 1.5. By other listed materials and methods.

2. Membrane penetrations by listed electrical boxes of any materials provided that the boxes have been tested for use in fire-resistance-rated

assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise. Such boxes on opposite sides of the wall shall be separated by one of the following:

- 2.1. By the horizontal distance specified in the listing of the electrical boxes.
- 2.2. By solid fireblocking in accordance with Section R302.11.
- 2.3. By protecting both boxes with listed putty pads.
- 2.4. By other listed materials and methods.

3. The annular space created by the penetration of a fire sprinkler or water-filled fire sprinkler piping, provided that the annular space is covered by a metal escutcheon plate.
4. Ceiling membrane penetrations by listed luminaires or by luminaires protected with listed materials that have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

**Reason Statement:** Allowing common fire sprinkler piping to protect multiple units in a townhouse can significantly reduce installation costs, and the IBC now allows penetration of townhouse separation walls in any townhouse that does not exceed the height and area limits. For reference, IBC Section 706.1.1, Exception 2 states: *Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. For the code official's review and approval, he or she shall be provided with copies of dedicated access easements and contractual agreements that permit the owners of portions of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building.* It makes no sense for the IRC to be more restrictive than the IBC with respect to allowing penetration of sprinkler piping through townhouse separation walls.

This proposal limits application of the proposed sprinkler penetration allowance to water-filled pipes. Although plastic pipe has been listed for dry residential sprinkler applications, use of those systems is not common enough to warrant arguing the point and missing this opportunity for progress with wet-pipe systems. Use of this allowance will require following the already recognized/tested method (in the current exception) for protecting annular spaces surrounding through penetrations. With that increased level of protection, a fire could only pass the membrane by melting the pipe and causing water to leak, which would inherently protect the opening. Flame would be stopped at the barrier.

Additionally, water-filled sprinkler pipes will be allowed in common walls. This option provides for improved sprinkler designs for townhouses by allowing sidewall sprinklers to be deployed from common walls, which unlike exterior walls, are not exposed to freezing exterior conditions. By using sidewall sprinklers to protect the top floor instead of pendent sprinklers in the ceiling, sprinkler piping can be kept out of attics, which are subject to freezing.

This change was processed as Item RB67-19 and has been approved by ICC for inclusion in the 2021 IRC. It was Approved as Modified by PC1 by the ICC membership.

**Resiliency Impact Statement:** This proposal will increase Resiliency

The reduced cost of installing fire sprinkler systems associated with this proposal and the allowance to run piping through and in interior walls separating townhouses will increase system reliability and performance.

**Cost Impact:** The code change proposal will decrease the cost of construction

The allowance for sprinkler piping to penetrate townhouse separation walls will reduce the infrastructure required to install a fire sprinkler system in some cases by allowing a shared feed for multiple units.

# RB302.2.6-18

IRC@: R302.2.6

Proponents: Jeffrey Shapiro (jeff.shapiro@intlcodeconsultants.com)

## 2018 International Residential Code

Revise as follows:

**R302.2.6 Structural independence.** Each individual *townhouse* shall be structurally independent.

**Exceptions:**

1. Foundations supporting *exterior walls* or common walls.
2. Structural roof and wall sheathing from each unit fastened to the common wall framing.
3. Nonstructural wall and roof coverings.
4. Flashing at termination of roof covering over common wall.
5. *Townhouses* separated by a common wall as provided in Section R302.2.2, Item 1 or 2.
6. Townhouses protected by a fire sprinkler system complying with Section P2904, NFPA 13, NFPA 13R or NFPA 13D.

**Reason Statement:** The IBC now allows townhouses to be built without structural independence provided that height and area limits for the overall townhouse building are not exceeded. This is true because the firewall requirement to separate units is no longer applicable in such cases. Therefore, only the 1-hour dwelling unit requirement applies, and that assembly is a fire barrier, which has no structural independence requirement. For reference IBC Section 706.1.1, Exception 2 states: Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. For the code official's review and approval, he or she shall be provided with copies of dedicated access easements and contractual agreements that permit the owners of portions of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building. It makes no sense for the IRC to be more restrictive than the IBC with respect to requiring structural independence when townhouses are sprinklered.

This change was processed as Item RB60-19 and has been approved by ICC for inclusion in the 2021 IRC. It was Approved as Submitted by the code development committee and that action was sustained by the ICC membership.

**Resiliency Impact Statement:** This proposal will neither increase nor decrease Resiliency

**Cost Impact:** The code change proposal will decrease the cost of construction  
Construction costs are reduced, consistent with the IBC, based on the allowance to not require structural independence of townhouse units.

# RB302.3(1)-18

IRC@: R302.3, NFPA Chapter 44

Proponents: Jeffrey Shapiro (jeff.shapiro@intlcodeconsultants.com)

## 2018 International Residential Code

Revise as follows:

**R302.3 Two-family dwellings..** *Dwelling units* in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119, UL 263 or Section 703.3 of the International Building Code. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the *exterior wall*, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

### Exceptions:

1. A fire-resistance rating of 1/2 hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13, NFPA 13R or Section P2904.
2. Wall assemblies need not extend through attic spaces where the ceiling is protected by not less than 5/8-inch (15.9 mm) Type X gypsum board, an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings and the structural framing supporting the ceiling is protected by not less than 1/2-inch (12.7 mm) gypsum board or equivalent.

## NFPA

National Fire Protection Association  
1 Batterymarch Park  
Quincy, MA 02169-7471

13—16

### Standard for Installation of Sprinkler Systems

**Reason Statement:** The current exception will never be used because the cost of installing a full NFPA 13 system (typically associated with commercial structures) in a duplex will far outweigh savings associated with reducing the separation wall rating from one-hour to 30 minutes. From a parity perspective, it makes no sense to allow Section P2904 (equivalent of NFPA 13D) protection as a basis for reducing townhouse separations but require NFPA 13 for duplexes.

Perhaps the logic associated with the current provision was intending to gain sprinkler protection in the attic (which would typically be required by NFPA 13) as a basis of qualifying for the reduced fire rating. But, townhouse separations are allowed to be reduced in unsprinklered attics of sprinklered townhouses, recognizing that the vast majority of residential fires start in occupied spaces, where sprinklers are present to control a fire before extension into the attic. True, a reduced townhouse separation maintains a one-hour rating, versus 30 minutes in a duplex, but 30 minutes is still a sufficient separation rating to accommodate fire department response and setup at a duplex.

Note that IRC Section R313 only requires NFPA 13D for duplexes, so this change will align with Section R313. Also, the reference to NFPA 13 is proposed for deletion since this is the only place in the IRC where that standard is referenced.

This change was processed as Item RB64-19 and has been approved by ICC for inclusion in the 2021 IRC. It was Approved as Modified by the code development committee (as reflected in this proposal) and no public comments were submitted.

**Resiliency Impact Statement:** This proposal will neither increase nor decrease Resiliency

**Cost Impact:** The code change proposal will decrease the cost of construction

This change will allow a reduction from an NFPA 13 sprinkler system to an residential sprinkler system as a basis for reducing the fire rating of duplex separation walls.



# RB310.11-18

VCC: 310.11

Proponents: Glenn Dean (gad.pompier@gmail.com)

## 2015 Virginia Construction Code

Revise as follows:

**310.11 Amendments to the IRC.** The following changes shall be made to the IRC for its use as part of this code:

(DHCD Note: The changes to the IRC are available in the Virginia Residential Code published by ICC, or the pamphlet form of the VCC published by DHCD. They are not included in this printing of the VCC.)

### Section R313

#### Automatic Fire Sprinkler Systems

**R313.1 Townhouse automatic fire sprinkler systems.** ~~Notwithstanding the requirements of Section 103.3, where installed, an automatic residential fire sprinkler system for townhouses shall be designed and installed in accordance with NFPA 13D or Section P2904. An automatic residential fire sprinkler system shall be installed in townhouses.~~

**Exception:** ~~An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.~~

**R313.1.1 Design and installation.** ~~Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~

**R313.2 One-family and two-family dwellings automatic fire sprinkler systems.** ~~Notwithstanding the requirements of Section 103.3, where installed, an automatic residential fire sprinkler system shall be designed and installed in accordance with NFPA 13D or Section P2904. An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.~~

**Exception:** ~~An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential fire sprinkler system.~~

**R313.2.1 Design and installation.** ~~Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~

**Reason Statement:** The facts supporting the requirement to install automatic fire sprinkler systems in townhouses and 1&2 family dwellings have not fundamentally changed over the past decade although they are stronger now than before. By the same token, the argument against requiring sprinklers is fundamentally the same, just somewhat weaker given the national expansion of them being required along with technical improvements, consumer, builder and local official's increased knowledge.

Attached is an article published online by Forbes dated August 3, 2019. It provides a concise overview of why fire sprinklers should be required in all newly constructed housing. (I've hi-lited a few important points.) In concert with the attachment, I urge watching a 10-minute video on YouTube (<https://www.youtube.com/watch?v=OiHqRJVChIQ>) that expands the article's cited example of Scottsdale, AZ, a locality with one of the oldest ordinances in the country requiring fire sprinklers. (There are other localities with similar requirements for fire sprinklers but their requirement is younger and thus don't have the more reliant record as Scottsdale, AZ does --- yet.) A fire sprinkler opponent in Virginia might say that Arizona is not Virginia and Arizona's fire experience is not the same as Virginia's. Really, about the only significant difference between Arizona and Virginia is the climate. People are people. Fire is fire. Construction is construction. They essentially use the same materials in Arizona as are used in Virginia. The only difference may be the appearance (architecture) once assembled.

One of the oldest arguments against fire sprinklers has been "cost". To require fire sprinklers will increase the cost of housing. Fire sprinklers will price people out housing. Fire sprinklers will hurt the economy. (Think *Chicken Little*.) These same tired arguments have been levied against other housing elements over the years. They've been used to argue against handrail geometry, stair geometry, GFIs, smoke detectors, window sizing, energy efficiencies, and the list goes on. The cost of installing fire sprinklers is LESS than the cost of most kitchen counter upgrades. They do not require a sprinkler contractor to install them. Under current DPOR licensing requirements, a plumber can install them. The plumbing loops in the house are lengthened in order to have a sprinkler head high on a wall in the middle of a ceiling. Maintenance is less than the amount of maintenance given to replacing worn washers in a faucet. (Other than someone physically damaging a fire sprinkler head, there's no maintenance.) The tap fee is a non-issue used for distraction. The same is true for the meter size because it does not need to be different from what is currently required or needed. The same is for houses on wells. Nor is there a need for a "stand by fee". In the event of a fire, the amount of water flow (GPM) needed to operate a sprinkler head is no more than what would be needed to take a shower or refill a toilet. If there is sufficient potable water to supply the

house for domestic use, then by default there is enough water to supply the fire sprinkler system.

Probably the most ludicrous statement ever made against fire sprinklers was, in a public forum no less, "only OLD houses burn". Really? If that were true, at what age does a newly construction house become "old"? (Please return to the attached article wherein it states that there have been NO fire deaths in any house constructed in Scottsdale, AZ since 1986.)

The technical merits and costs of requiring the installation of fire sprinklers in townhouses and 1&2 family dwellings are well known and have been for years. The argument against them hasn't changed much either. So it simply comes down to politics and which argument, for or against, do you wish to subscribe to. As quoted in the attached article, it can be, "A puddle of water or a pile of ashes." To that end, be mindful of the statutory charge that the USBC and its provisions "...**shall** be such as to protect the health, safety and welfare of the residents of the Commonwealth, provided that buildings and structures **should** be permitted to be constructed, rehabilitated and maintained at the least possible cost consistent with recognized standards of health, safety, energy conservation and water conservation, including provisions necessary to prevent overcrowding, rodent or insect infestation, and garbage accumulation; and barrier-free provisions for the physically handicapped and aged." (§ 36-99 of the Code of Virginia) (Emphasis added to denote the order of placement and the hierarchy of the words "shall" and "should".)

**Resiliency Impact Statement:** This proposal will increase Resiliency

COV Executive Order Twenty-four speaks to increasing Virginia's resilience to sea level rise and natural hazards. The Executive Order goes further in saying, "We must act now to protect lives and property from multiple threats and reduce taxpayer exposure through fiscally responsible planning." According to the **Resilient** Design Institute, **resilient** design is defined as "the intentional design of buildings, landscapes, communities, and regions in response to vulnerabilities to disaster and disruption of normal life". Fire is a natural hazard to a community whether it is a single house or an entire neighborhood. I submit this proposal provides resilience but it is targeted only to the hazards of fire on a scale smaller than what may be intended or described in Executive Order 24.

**Cost Impact:** The code change proposal will increase the cost of construction

Not including the cost of land, I estimate the cost of incorporating fire sprinkler systems into newly constructed townhouses and 1&2 family dwellings at 1% of the construction costs above the structure's foundation.

# RB313.1-18

VRC: SECTION R313, R313.1, R313.2

Proponents: Glenn Dean (gad.pompier@gmail.com)

## 2015 Virginia Residential Code

### SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS

**R313.1 Townhouse automatic fire sprinkler systems.** ~~Notwithstanding the requirements of Section 103.3, where installed, an~~ An automatic residential fire sprinkler system for townhouses shall be designed and installed in accordance with NFPA 13D or Section P2904, installed in townhouses.

**Exception:** An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

#### **R313.1.1 Design and installation.**

Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904 or NFPA 13D.

**R313.2 One- and two-family dwellings automatic fire sprinkler systems.** ~~Notwithstanding the requirements of Section 103.3, where installed, an~~ An automatic residential fire sprinkler system shall be designed and installed in accordance with NFPA 13D or Section P2904, one- and two-family dwellings.

**Exception:** An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential fire sprinkler system.

#### **R313.2.1 Design and installation.**

Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.

**Reason Statement:** In part, the purpose of this proposal is to elevate Virginia's residential building code from one being sub-par to being equal to the national standard/model as it relates to fire safety and sustainability through preservation. The cost of residential sprinkler systems keeps dropping to where it may well be less than a typical kitchen counter upgrade. This statement is based on the attached 2017 study by the University of Nevada, Las Vegas. Beyond that, the facts supporting the requirement to install automatic fire sprinkler systems in townhouses and 1&2 family dwellings have not fundamentally changed over the past decade although they are stronger now than before. By the same token, the argument against requiring sprinklers is fundamentally the same, just somewhat weaker given the national expansion of them being required along with technical improvements, consumer, builder and local official's increased knowledge.

Attached is an article published online by Forbes dated August 3, 2019. It provides a concise overview of why fire sprinklers should be required in all newly constructed housing. (I've hi-lited a few important points.) In concert with the attachment, I urge watching a 10-minute video on YouTube (<https://www.youtube.com/watch?v=OiHqRJVChIQ>) that expands the article's cited example of Scottsdale, AZ, a locality with one of the oldest ordinances in the country requiring fire sprinklers. (There are other localities with similar requirements for fire sprinklers but their requirement is younger and thus don't have the more reliant record as Scottsdale, AZ does --- yet.) A fire sprinkler opponent in Virginia might say that Arizona is not Virginia and Arizona's fire experience is not the same as Virginia's. Really, about the only significant difference between Arizona and Virginia is the climate. People are people. Fire is fire. Construction is construction. They essentially use the same materials in Arizona as are used in Virginia with the only difference being the appearance (architecture) once assembled.

One of the oldest arguments against fire sprinklers has been "cost". It's been repeatedly stated that to require fire sprinklers will increase the cost of housing; fire sprinklers will price people out housing; fire sprinklers will hurt the economy. These same tired arguments have been levied against other housing elements over the years. They've been used to argue against handrail geometry, stair geometry, GFIs, smoke detectors, window sizing, energy efficiencies, and the list goes on. To repeat - the cost of installing fire sprinklers is LESS than the cost of most kitchen counter upgrades. They do not require a "sprinkler contractor" to install them. Under current DPOR licensing requirements, a plumber can install them. The plumbing loops in the house are lengthened in order to have a sprinkler head high on a wall in the middle of a ceiling. Maintenance is less than the amount of maintenance given to replacing worn washers in a faucet. (Other than someone physically damaging a fire sprinkler head, there's no maintenance.) The "tap fee" is a non-issue used for distraction. The same is true for the meter size because it does not need to be different from what is currently required or needed. The same is for houses on wells. Nor is there a need for a "stand by fee". In the event of a fire, the amount of water flow (GPM) needed to operate a sprinkler head is no more than what would be needed to take a shower or refill a toilet. If there is sufficient potable water to supply the house for domestic use, then by default there is enough water to supply the fire sprinkler system.

Probably the most ludicrous statement ever made against fire sprinklers was, in a public forum no less, "only OLD houses burn". If that were true, the question becomes at what age does a newly construction house become "old"? **(Please return to the attached article wherein it states that there have been NO - I repeat - NO fire deaths in any house constructed in Scottsdale, AZ since 1986 - 34 years ago.)**

The technical merits and costs of requiring the installation of fire sprinklers in townhouses and 1&2 family dwellings are well known and have been for years. The argument against them hasn't changed much either. So it simply comes down to politics and which argument, for or against, do you wish to subscribe to. As quoted in the attached article, it can be, "A puddle of water or a pile of ashes." To that end, be mindful of the statutory charge that the USBC and its provisions "...**shall** be such as to protect the health, safety and welfare of the residents of the Commonwealth, provided that buildings and structures **should** be permitted to be constructed, rehabilitated and maintained at the least possible cost consistent with recognized standards of health, safety, energy conservation and water conservation, including provisions necessary to prevent overcrowding, rodent or insect infestation, and garbage accumulation; and barrier-free provisions for the physically handicapped and aged." (§ 36-99 of the Code of Virginia) (Emphasis added to denote the order of placement and the importance of the words "shall" and "should".)

**Resiliency Impact Statement:**

COV Executive Order Twenty-four speaks to increasing Virginia's resilience to sea level rise and natural hazards. The Executive Order goes further in saying, "We must act now to protect lives and property from multiple threats and reduce taxpayer exposure through fiscally responsible planning." According to the Resilient Design Institute, resilient design is defined as "the intentional design of buildings, landscapes, communities, and regions in response to vulnerabilities to disaster and disruption of normal life". Fire is a natural hazard to a community whether it is a single house or an entire neighborhood. I submit this proposal provides resilience but it is targeted only to the hazards of fire on a scale smaller than what may be intended or described in Executive Order 24.

**Cost Impact:**

Not including the cost of land, I estimate the cost of incorporating fire sprinkler systems into newly constructed townhouses and 1 & 2 family dwellings at 1% or less of the construction costs above the structure's foundation.