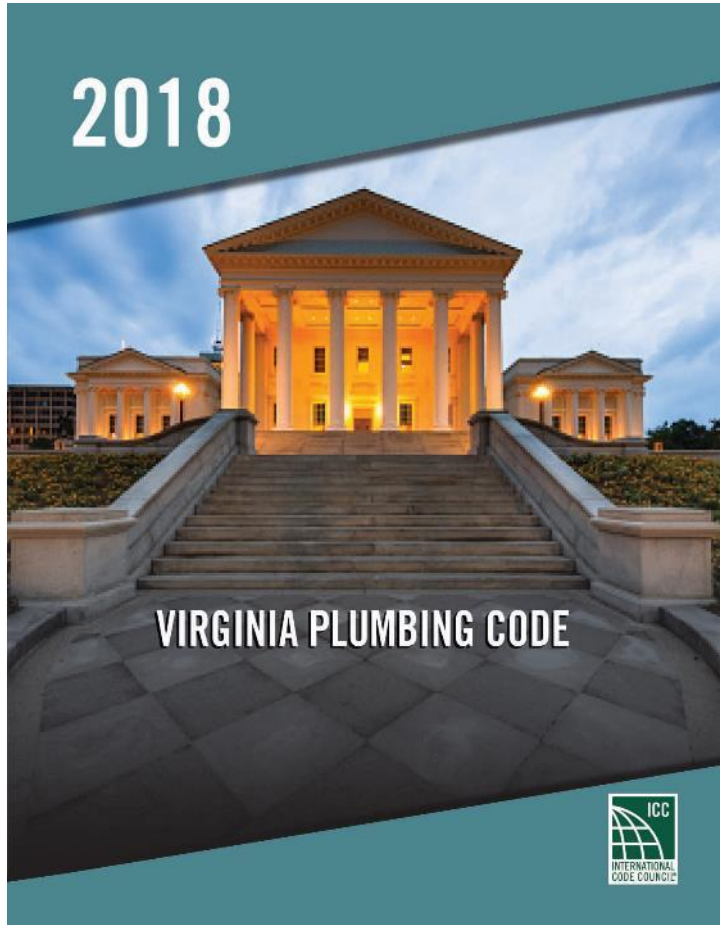


# 2018 Code Change Training

## 2018 Virginia Plumbing Code (VPC)

**Significant** International Changes and  
State Amendments





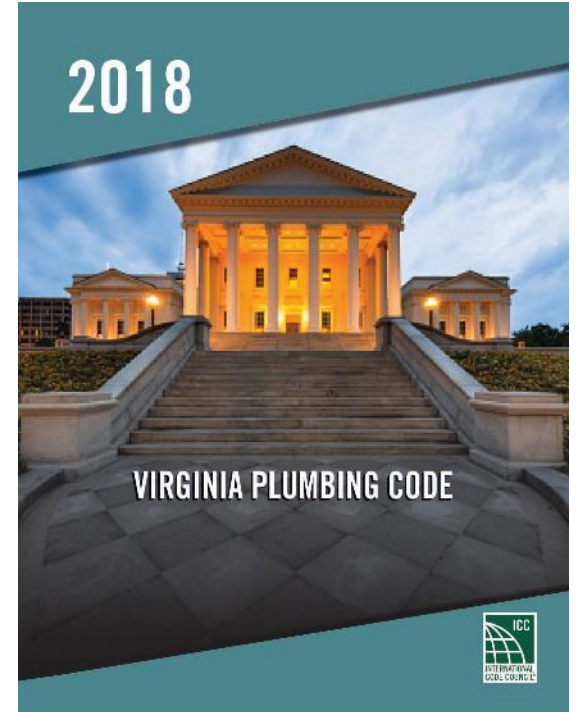
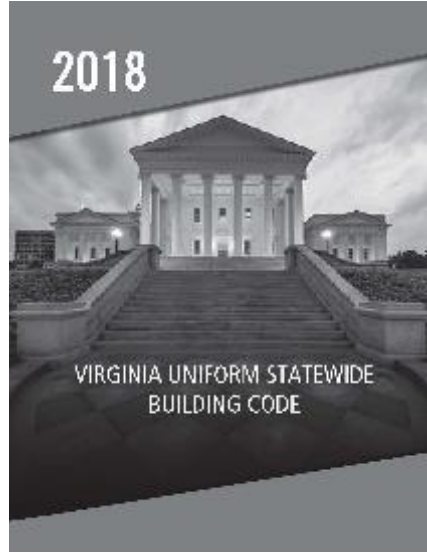
# Agenda

## Significant 2018 Plumbing Code Changes

- International Plumbing Code (IPC) and Virginia amendments in chapter order
- VA Amendments marked with the



# Virginia USBC and the IPC



# Types of Code Changes

## Addition

- A new code section or sections are added

## Deletion

- A code section is deleted completely

## Modification

- A code section is changed to include new or different requirements or exceptions
- This is the most common change type

## Clarification

- A code section has changed to clarify existing requirements

2018

## Chapter 2

# Definitions

VIRGINIA PLUMBING CODE



## **Added definition of “Accessible”**

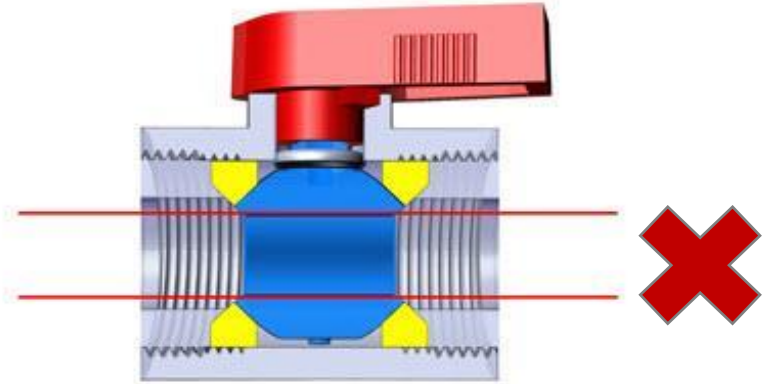
- This term was not previously included in the Plumbing Code
  - “A site, building, facility or portion thereof that complies with Chapter 11 of the International Building Code...”



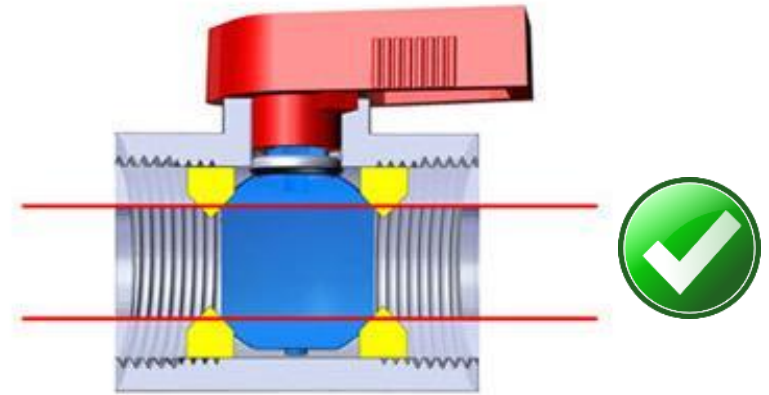
# New definition for “Full-open Valve”

- There was no definition of this term in prior code editions

“...the flow path through the component’s closure member **is not a restriction** in the component’s through-flow area.”



NOT a full-open valve – Flow Restricted



Flow unrestricted



## **New Definition: *Press-connect Joint***

- “A permanent mechanical joint incorporating an elastomeric seal or an elastomeric seal and corrosion-resistant grip ring. The joint is made with a pressing tool and jaw or ring approved by the fitting manufacturer.”





## **Updated Definition: *Public Swimming Pool***

“A pool, other than a residential pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use.”



## Updated Definition: *Swimming Pool*

- The 2 feet in depth requirement has been removed, and the definition has changed.

# New Definition for Service Sink



- “A general purpose sink exclusively intended to be used for facilitating the cleaning of a building or tenant space.”
- A service sink is a required fixture in many use types per Section 403/Table 403.1





2018

## Chapter 3

# General Regulations

VIRGINIA PLUMBING CODE



# 303.5

## Addition - Third-party Certification for Cast-iron Pipe

- Cast-iron soil pipes, fittings, and couplings shall be third-party **listed and labeled**.
- Third-party certifiers or inspectors shall comply with specific minimum inspection requirements.



# 305.1

## Clarification - Corrosion Protection for Metallic Piping

- This change clarifies where and what type of metallic piping is required to be protected from corrosion.

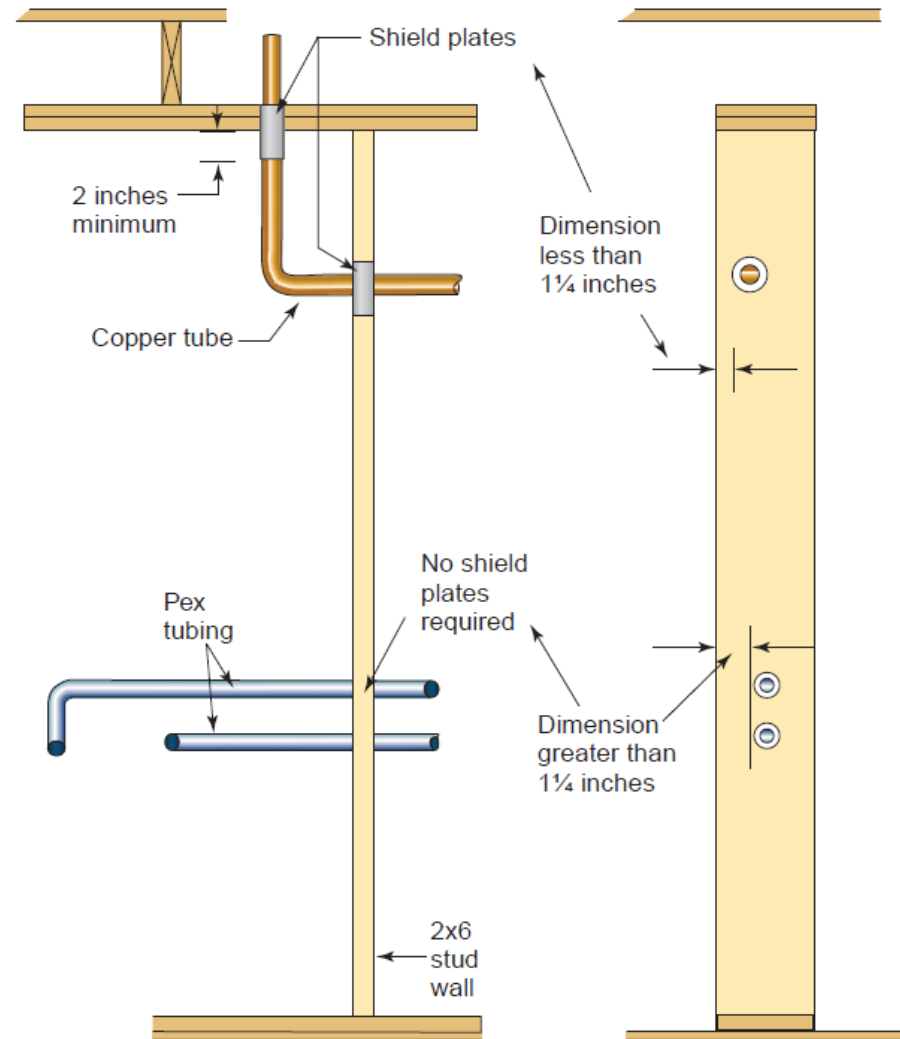




# 305.6

## Protection against Physical Damage - Modification

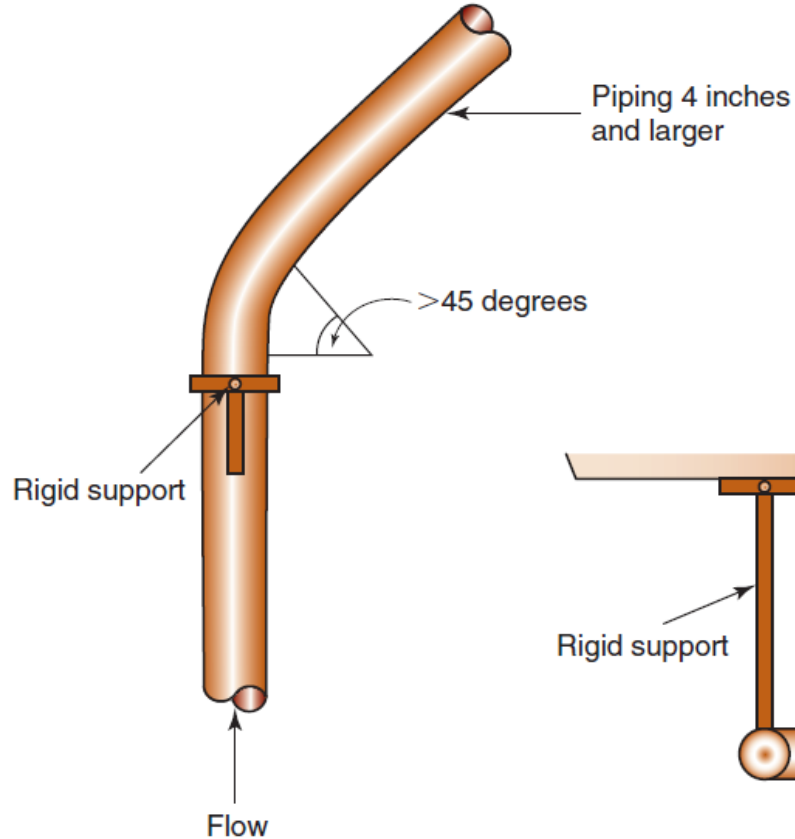
- For concealed piping installed through holes or notches, the minimum distance to the face of the framing member without protection has been reduced.



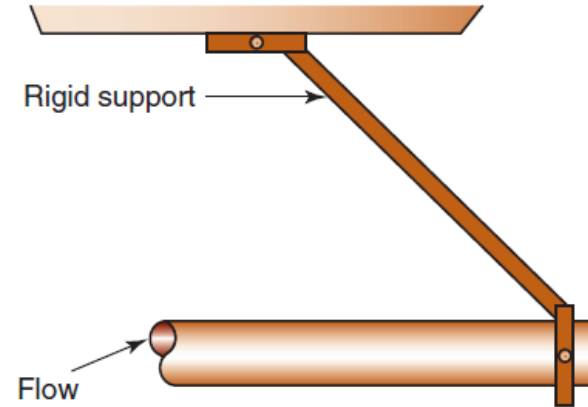
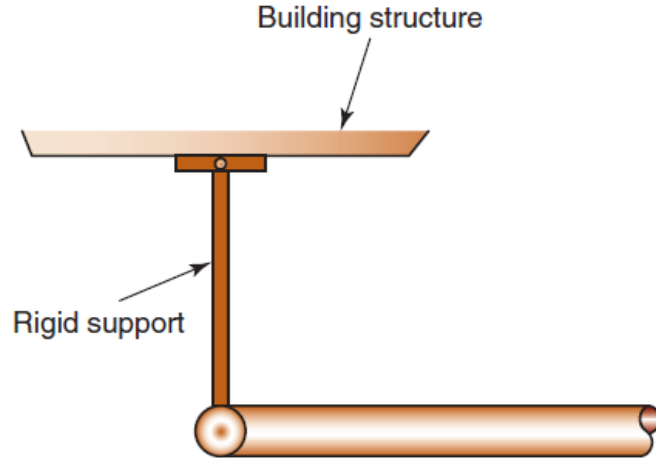
# 308.6 / P2605

## Sway Bracing for Drainage Piping

- Expanded text clarifies that the sway bracing provisions only apply to horizontal drainage piping.



Plan view



Elevation views

# 308.10

## Addition - Thermal Expansion Tank Support

- A thermal expansion tank cannot be supported by the piping connected to the tank.



Questions?

## Skill Check 1

2018

VIRGINIA PLUMBING CODE



## Chapter 4


# Fixtures, Faucets, and Fixture Fittings

2018

**VIRGINIA PLUMBING CODE**

# Table 403.1 – Occupancy Column Deleted

TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES <sup>a</sup> (See Sections 403.1.1 and 403.2)									
NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			



- Per 403.1, the number of occupants shall be determined by the *International Building Code*.



## Table 403.1 – New Section for Casino Gaming Areas

- Assembly areas used for gaming (gambling) now have specific ratios for plumbing fixture requirements.
- New table and ratios on next slide



TABLE 403.1

MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
	MALE	FEMALE	MALE	FEMALE			
Casino gaming areas	<u>1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400</u>	<u>1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400</u>	<u>1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750</u>		—	<u>1 per 1,000</u>	<u>1 service sink</u>
	<i>We'll discuss this new area later</i>						



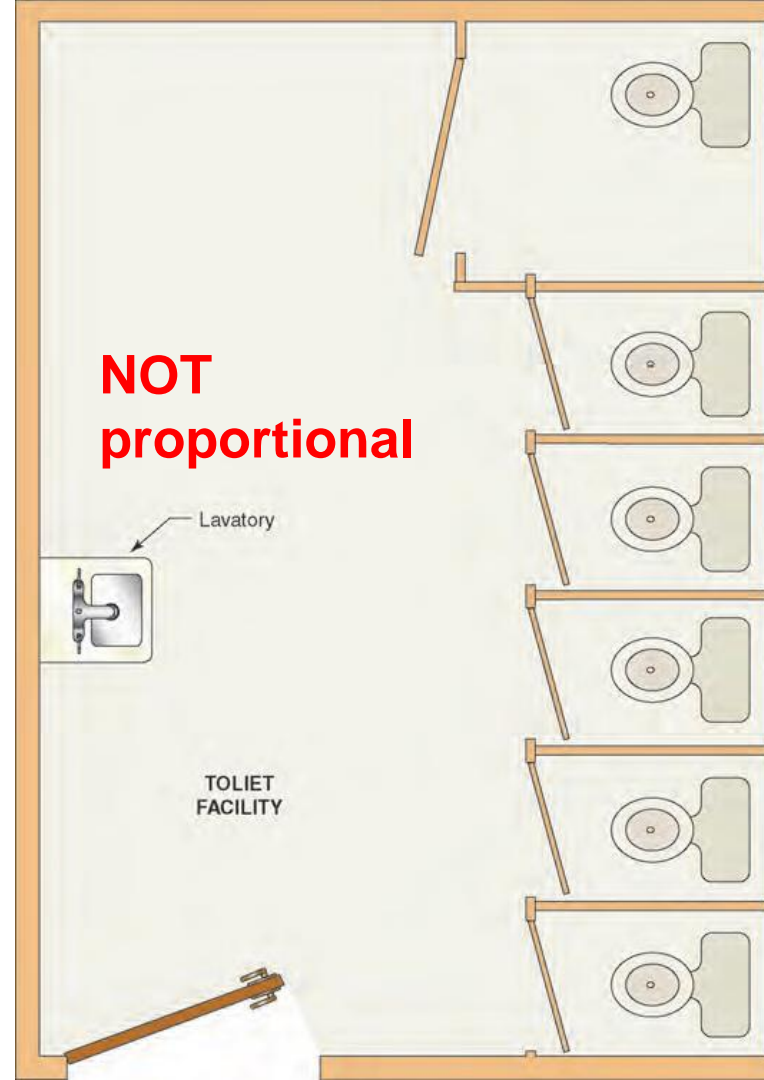
## Table 403.1 - Plumbing Fixtures for Outdoor Public Swimming Pools

- **Modified footnote f:** Required **number and type** of plumbing fixtures for outdoor public pools shall be **per section 609 of the ISPSC** (*International Swimming Pool and Spa Code*)

# 403.1.3

## Distribution of Lavatories - Modification

- Multiple toilet facilities in a building for the same sex must have the required lavatories **distributed proportionally**.



## 403.2 – Separate Facilities - New Exception #4

- 4. Separate facilities shall not be required in business occupancies where the maximum occupant load is 25 or fewer.



One toilet facility, identified as being available for use by all persons regardless of their sex, may be provided.





### 403.3 - Location of Required Toilet Facilities

- The required toilet facilities for a building or tenant space **do not need to be “in” the building** that requires the toilet facilities.



## 403.3.3 – Location of Toilet Facilities in Occupancies other than Malls and Airports



- VA modifies this section to **also exclude airports & airport terminals**
  - Allows for the new more specific subsection for airports – detail next slide
- VA adds a new exception #3 for **Group S** (storage)
  - Group S occupancies can exceed location/maximum distances if approved



## 403.3.5 – Location of Toilet Facilities in Airport Terminals



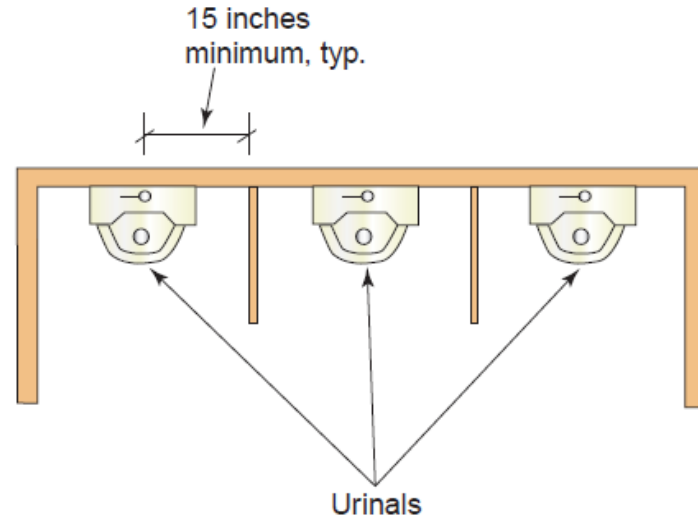
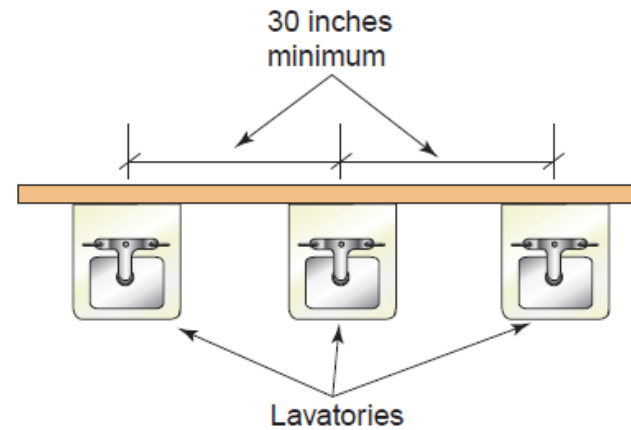
- VA adds a subsection with additional requirements for toilet location in airport terminals.



# 405.3.1

## Clearance of Plumbing Fixtures to Obstructions

- Clarifies that the 30" center to center only applies when there are **no partitions or other obstructions**



# 405.5

## Pumped Waste Plumbing Fixtures

- Plumbing fixtures having a pumped waste arrangement must comply with a standard that covers the integral waste pumping system.
- ASME A112.3.4/CSA B45.9



# 409.1

## Residential Dishwasher Standard

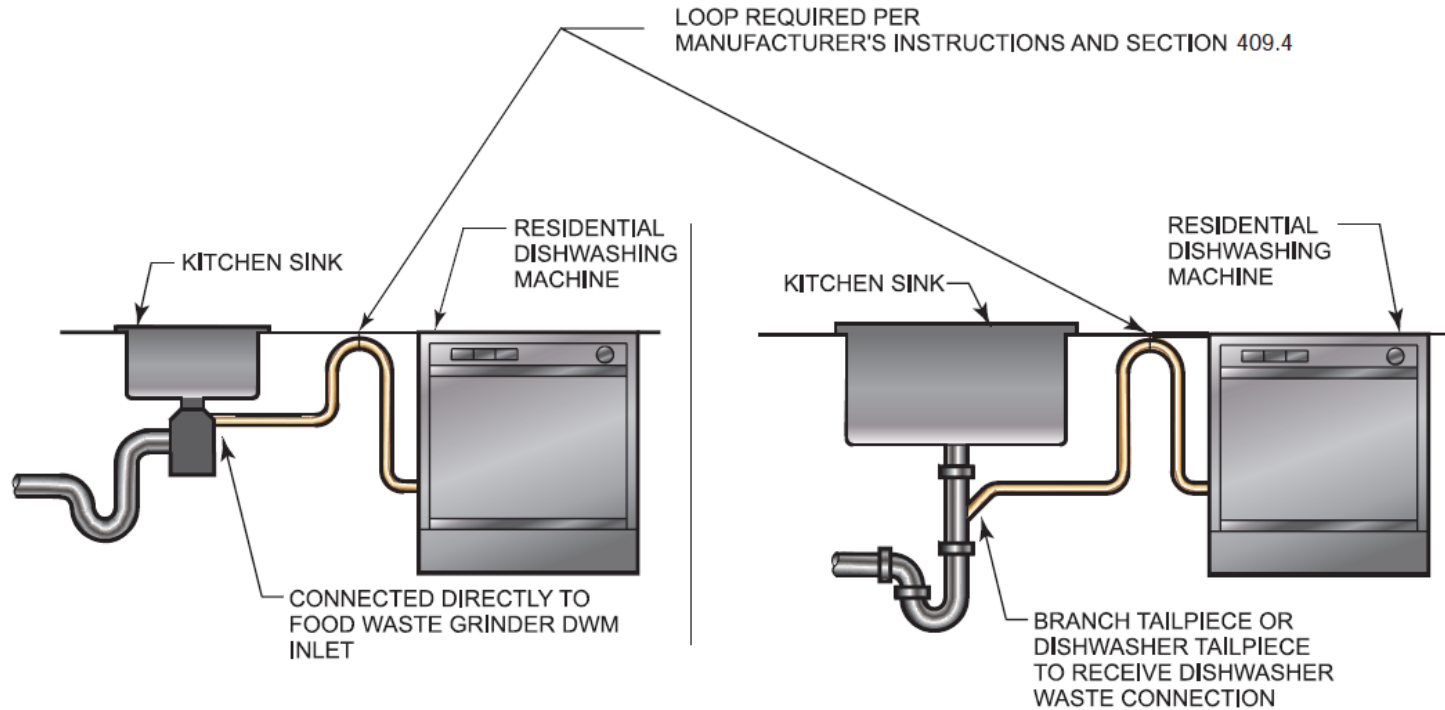
- Adds a residential standard for dishwashers: NSF 184.
  - This standard has bacteria removal and rinse temperature minimums.





# 409.4

## Residential Dishwasher Waste Connection



- Moved from 802.1.6 ("Indirect Wastes") as these are typically direct connections.
- “deck-mounted air gap” has also been removed from the last sentence, which is now: “The waste line of a residential dishwasher shall rise and be securely fastened to the underside of the sink rim or counter top.”



# 411.3

## Emergency Shower Temperature Control

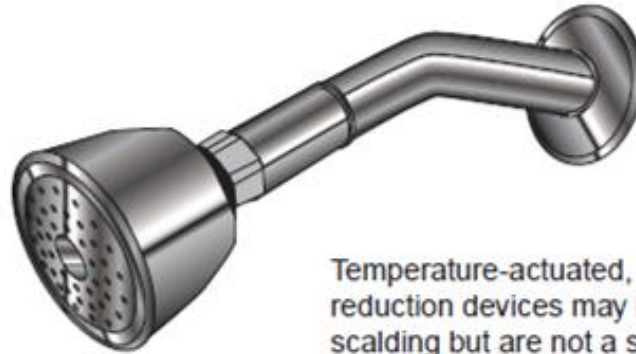
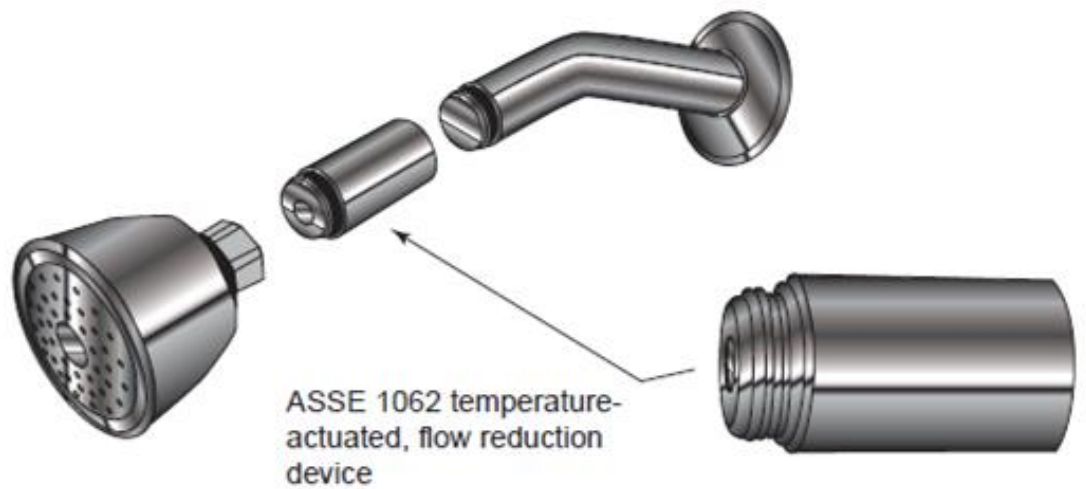
- Where hot and cold water is supplied to an emergency shower or eyewash station, the temperature of the water supply shall only be controlled by a temperature actuated mixing valve complying with ASSE 1071.



# 412.7

## Flow Limiting Device for Hot Water Discharge

- Clarifies that this type of device is acceptable method to limit the temp to 120 at the fixture.



Temperature-actuated, flow reduction devices may be used to prevent scalding but are not a substitute for required balanced-pressure, thermostatic or combination shower valves.

## 422 - Deleted



### ~~422 Healthcare Fixtures and Equipment~~

- Previous section 422 for Healthcare Fixtures and Equipment is removed
- 2018 section 422 is now "Sinks"



## 423.1 - Water Connections for Specialty Plumbing Fixtures



**Modification - Footbaths and pedicure baths are added to the list of specialty fixtures requiring backflow protection**

**“423.1 Water Connections. “...footbaths and pedicure baths, and similar constructions, where provided with water supplies, shall be protected against backflow in accordance with Section 608.”**





## Special Section

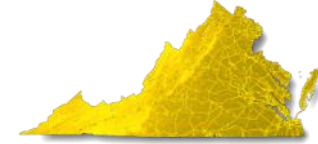
Multi-User Gender-  
Neutral Toilet Facilities  
[TP1209.3.1-18]

Next 9 slides





# Table 403.1 / 2902.1 – New Ratios for Multi-user Gender-neutral Facilities



- With a new **footnote g** – “Use this fixture ratio for...multi-user gender-neutral toilet facilities”

TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES <sup>a</sup> (See Sections 403.1 and 403.2)						
NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES	
			MALE	FEMALE	MALE	FEMALE
		Theaters and other buildings for the performing arts and motion pictures <sup>d</sup>	1 per 125	1 per 65	1 per 200	
			1 per 85.5 <sup>a</sup>			

# 403.1.1 / 2902.1.1 – Fixture Calculations - Two New Exceptions



- New exceptions address how to calculate for the number of fixtures when using **single-user** and **multi-user** gender-neutral facilities.

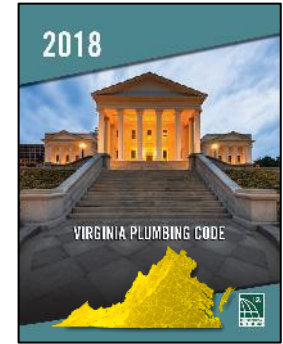
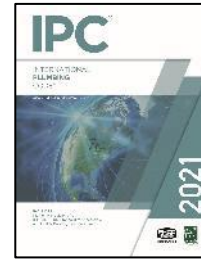
~~Exception~~ Exceptions:

1. (not new)

2. Where multi-user facilities are designed to serve all genders, the minimum fixture count shall be calculated (at) 100 percent, based on the total occupant load.

3. The total occupant load shall not be required to be divided in half where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.3 (2902.1.2.3).

## 403.1.2 / 2902.1.2 - ~~Family or assisted-use~~ Single-User Toilet Facility and Bathing Room fixtures



- Terminology change – “single-user toilet and bathing rooms”
- Language modified to eliminate possible misinterpretation
  - “shall be identified as being available for use by all persons regardless of their sex.”
- New sentence added
  - The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.

# 403.2 / 1209.3.1.1 – Separate Facilities



- Two new exceptions (#5 and #6)

5. Separate facilities shall not be required to be designated by sex where **single-user toilet rooms are provided** in accordance with Section 403.1.2.



6. Separate facilities shall not be required where **multi-user gender-neutral facilities are provided** in accordance with Section 405.3 and Section 1109.2.4 of the VCC.



## 405.3.4 / 405.3.5 – Occupancy Indicators



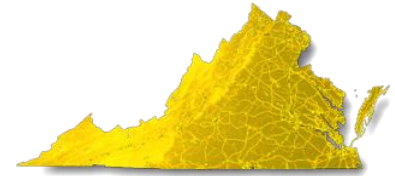
All fully-enclosed compartments (water closets or urinals) shall be provided with occupancy indicators.





## 405.3.4 – Water Closet Compartment

Split into two new subsections to address different requirements between separate and multi-user gender-neutral facilities:



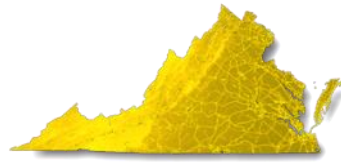
### **405.3.4.1 – Separate Facilities**

- separate enclosed compartment with walls or partitions and a door
- Shall comply with Section 405.3.1.
- Accessible water closets and compartments shall comply with ICC A117.1.

### **405.3.4.2 – Multi-user gender-neutral facilities** **(next slide)**



## 405.3.4.2 – Water Closet Compartment - Multi-user Gender-neutral Facilities



### Requires separate fully-enclosed compartments

- Maximum allowable gaps:
  - 1/2 inch floor and ceiling
  - 1/8 inch between doors, partitions, walls
- Shall comply with 405.3.1 (clearances, compartment size)
- Accessible compartments shall comply with A117.1 **and the increased toe clearance requirements**



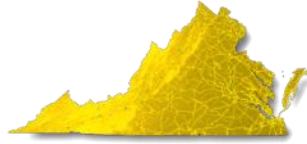
## 405.3.5 Urinal separation and Partitions



- Note the addition of “separation” to the section title.
- This section is also split into two new subsections:
  - **405.3.5.1 Separate facilities** (same partition requirements as previous 405.3.5)
  - **405.3.5.2 Multi-user Gender-Neutral** (next)



## 405.3.5.2 Urinal separation and partitions



### Multi-user Gender-neutral

- Separate fully-enclosed compartment - same maximum gaps as for water closets
- If accessible - grab bars are not required
- Door located for a forward approach
- Increased toe clearances in accordance with A117.1



## 424.2 – Urinal substitution for water closets



**Exception:** In each multi-user gender-neutral bathroom or toilet room, urinals shall not be substituted for more than 22.5% (vs. 67%) of the total number of water closets in Assembly and Educational occupancies...or 25% (vs. 50%) of the total number of water closets in all other occupancies.



Questions?

## Skill Check 2

2018

VIRGINIA PLUMBING CODE



2018

## Chapter 5

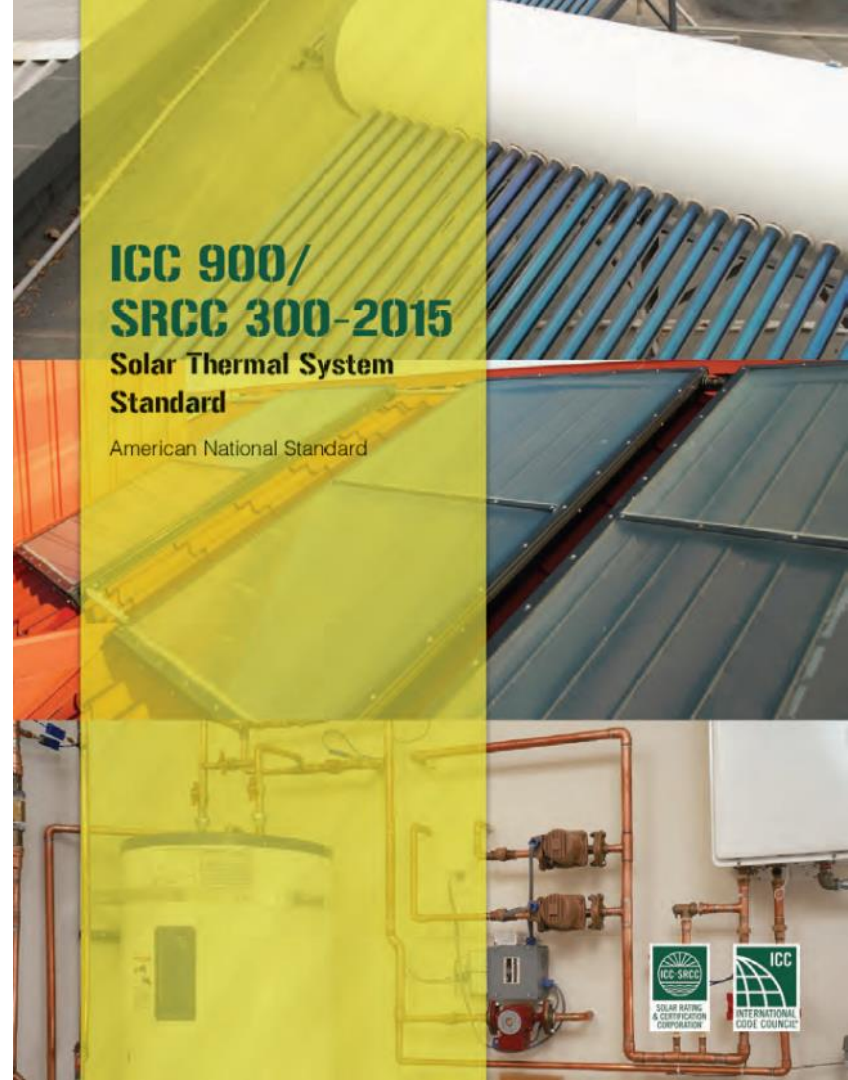
# Water Heaters

VIRGINIA PLUMBING CODE



# 502.1 General - Solar Thermal Water Heating System Standard Added

- A new requirement for solar thermal water heating systems (these are not PV systems) to comply with the Mechanical Code and ICC 900/SRCC 300 – 15 was added to 502.1



# 504.6 – Requirements for Discharge Piping

## Insert Fittings – new item #14

- If insert fittings are used, the discharge piping needs to be one pipe size larger than the relief valve outlet.
- This ensures that the insert fitting doesn't cause a flow restriction in a full trip event.





# 504.7 – Water Heater Drain Pan Materials



- Aluminum and plastic are approved drain pan materials.
- Plastic drain pans must not be used under gas-fired water heaters.





2018

## Chapter 6

# Water Supply and Distribution

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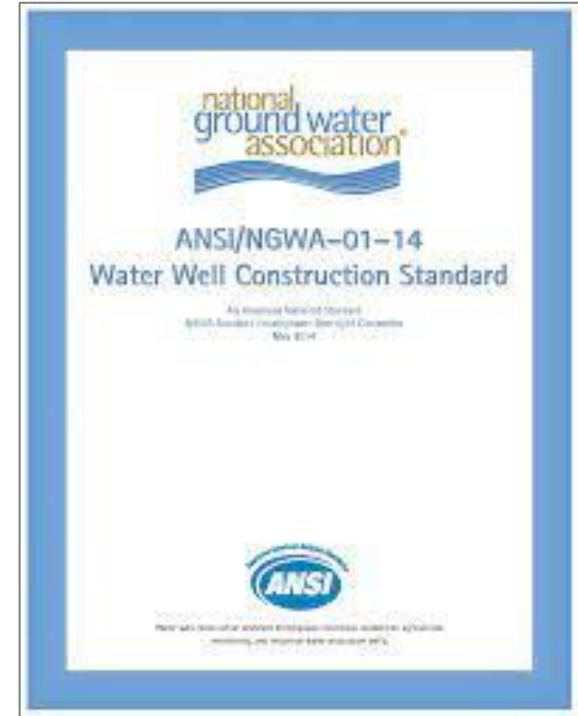


# 602.3 Individual Water Supply



## 602.3.1 Sources

- Constructed and installed per applicable state and local laws.
- **Where such laws do not address all of the requirements set forth in NGWA-01 (2014), individual water supplies shall comply with NGWA-01 (2014) for those requirements not addressed by state and local laws.**



# 605.13.7, 605.14.4, 605.16.3

## Push-fit Joints for Copper, CPVC, PEX and PE-RT Tubing

- The push-fit method of joining was not explicitly described in the “types of joints” sections for various piping materials.
- This change makes the acceptability of this type of mechanical joint more clear.



# 607.3

## Thermal Expansion Control Devices

- Thermal expansion control devices, other than thermal expansion tanks, can be used for control of system pressures.



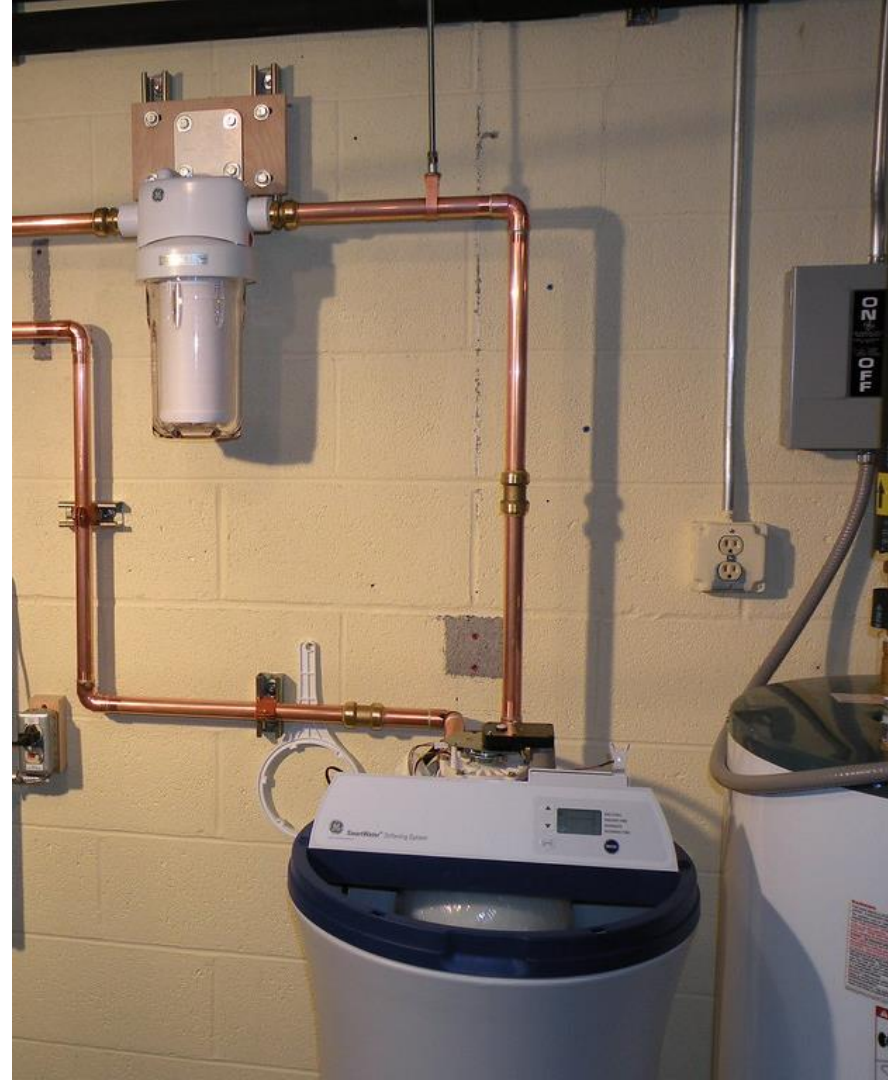
Thermal expansion control device



# 608.3, 608.4

## Backflow Protection for Water Handling Equipment

- Some of the requirements in Section 608.3 were extracted, reworded, and put into a new section to provide clarity around backflow protection requirements.



# 608.12 – Painting of Potable Water Tanks

## Must be NSF 61-compliant for Drinking Water

- Drinking water must be protected from contamination from contact with water tanks, coatings on the inside of water tanks, and liners on the inside of water tanks.



Potable water tank



# 608.15

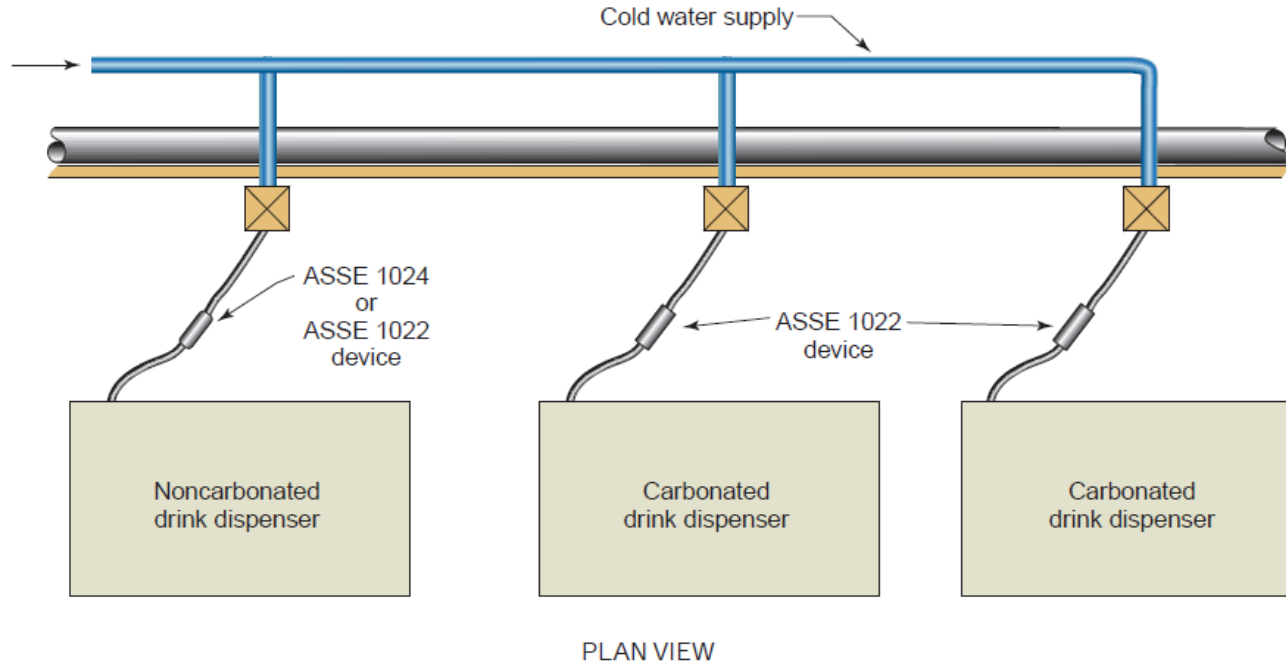


## Location of Backflow Preventers

- Adds additional height installation requirements for backflow prevention assemblies



# 608.17.1.1, 608.17.1.2



## Independent Backflow Protection for Drink Dispensers

- Only carbonated beverage dispensers require a backflow preventer that is designed for exposure to carbon dioxide gas.



## 609.1 - Medical Facility Terminology

- Outdated terminology was updated to align with group occupancy designations used in the *International Building Code*.

# 611.1

## Point of Use Reverse Osmosis Systems

- Point-of-use reverse osmosis drinking water treatment units must now comply entirely with NSF 58 or CSA B483.1.



Reverse osmosis system

Questions?

## Skill Check 3

2018

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## Chapter 7

# Sanitary Drainage

2018

VIRGINIA PLUMBING CODE

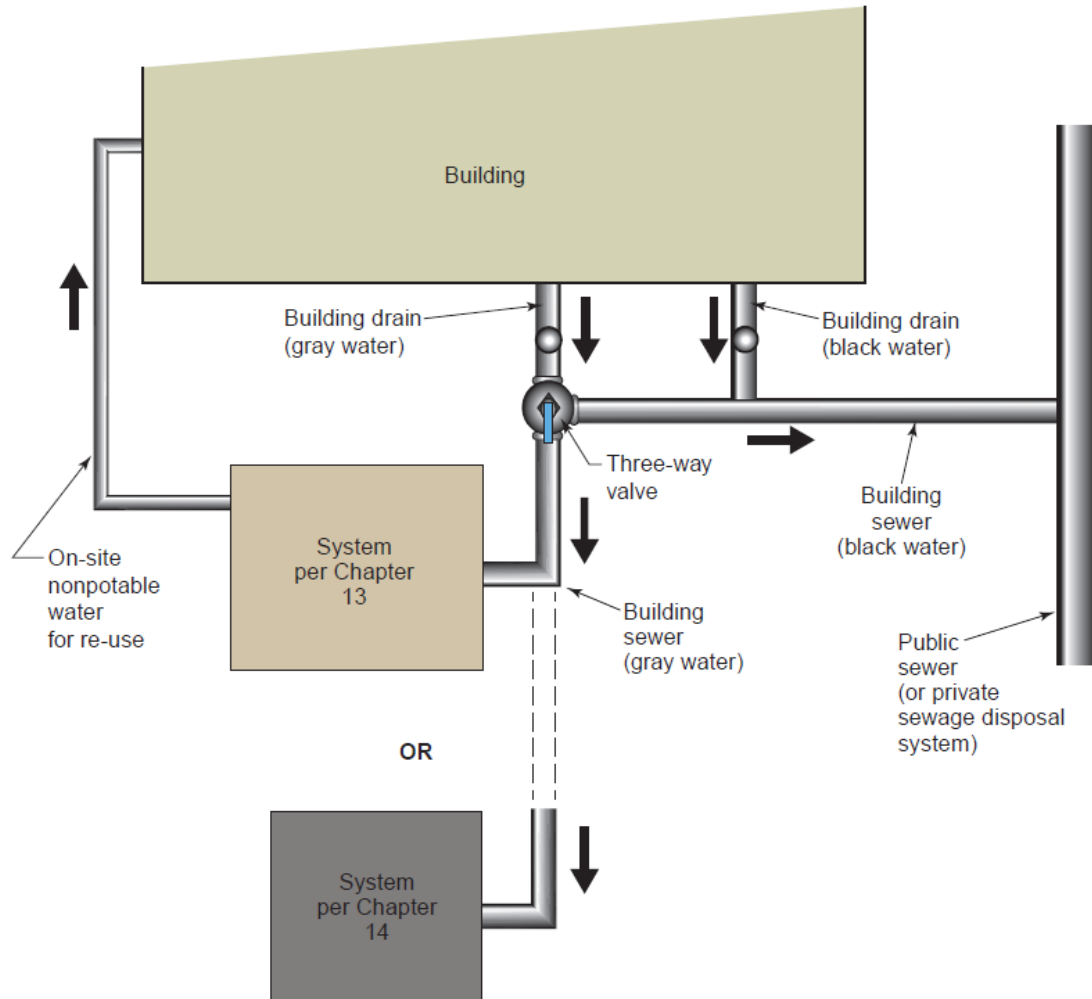




# 701.2

## Connection to Sewer Systems

- Gray water systems are not required to be connected to a public sewer or a private sewage disposal system provided that they discharge to systems in accordance with Chapter 13 or 14.



Diversion of gray water from public sewer

# 702.3

## Polypropylene Piping for Building Sewer

- Standards for polypropylene (PP) plastic pipe are added to Table 702.3 for building sewer piping.



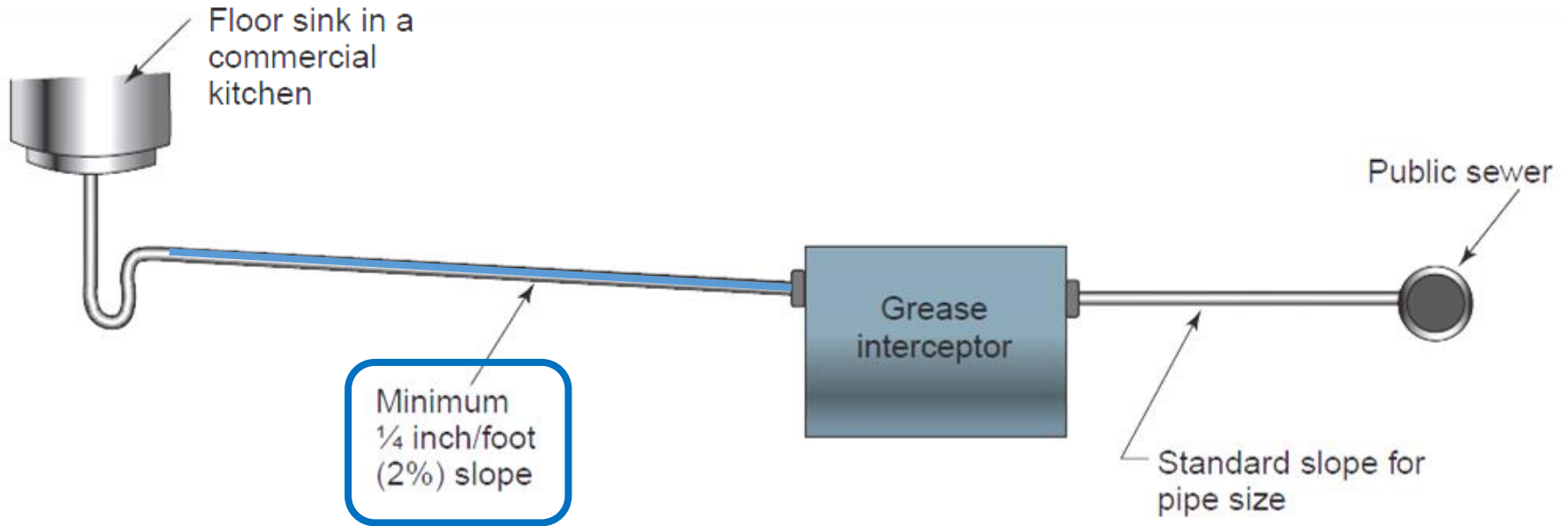
Smooth inner wall polypropylene piping for sewer service

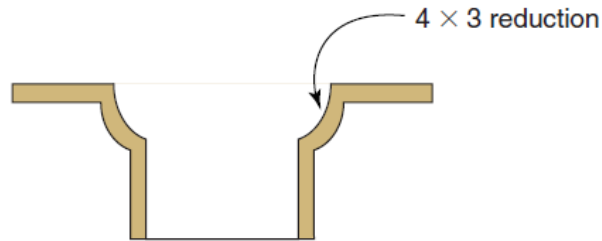
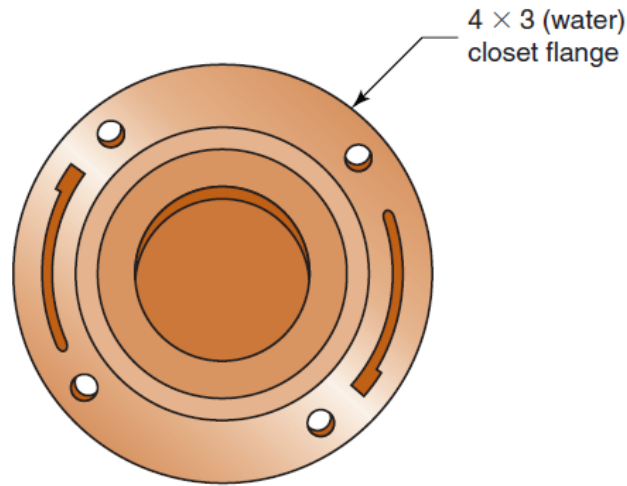
**TABLE 702.3** Building Sewer Pipe

Material	Standard
Polypropylene (PP) Plastic Pipe	<u>ASTM F2736; ASTM F2764; CSA B182.13</u>

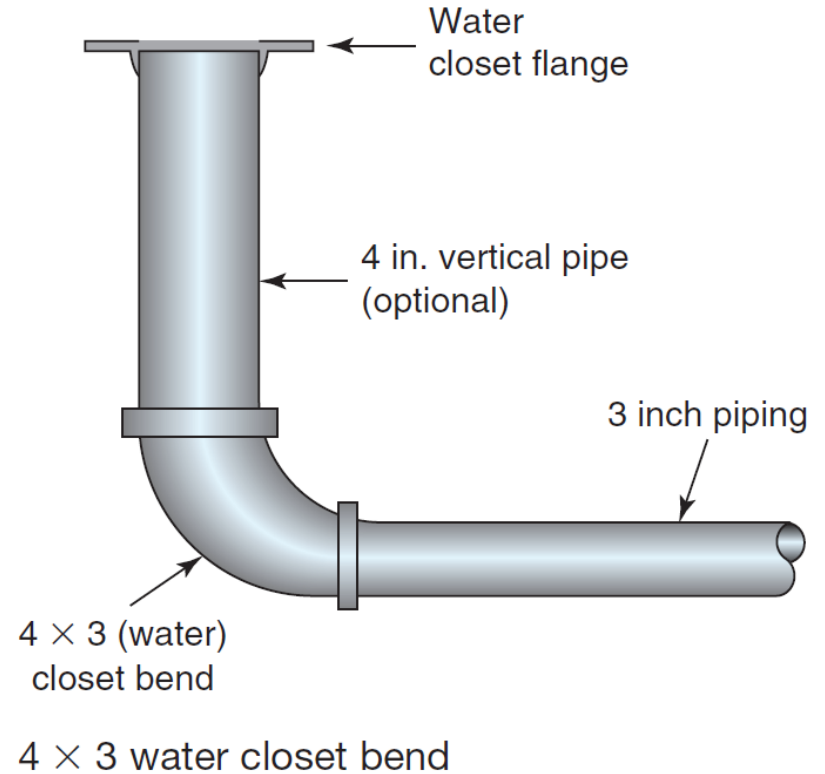
## 704.1 - Grease-laden Waste Piping Slope

- Piping conveying grease-laden waste must slope at least 1/4" per foot (2%).





Water closet flange



## 704.2 - Reduction of Pipe Size

- Bend fittings and offset closet flanges are now addressed.

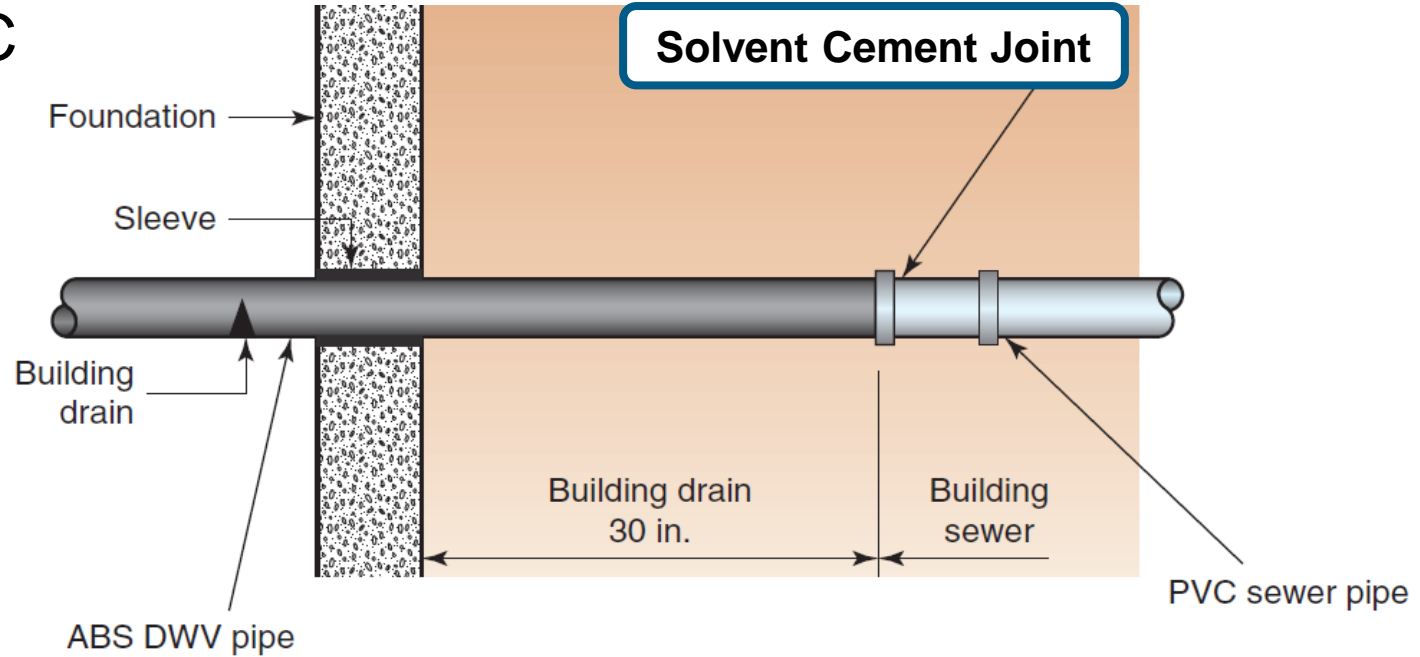
# 705.10.2 – Solvent Cementing



- **VA deletes the amendment for the primer exception added last cycle**
- No longer necessary as the IPC has adopted this



## 705.16.4 / VRC P3003.2



### PVC to ABS Solvent Cement Joint

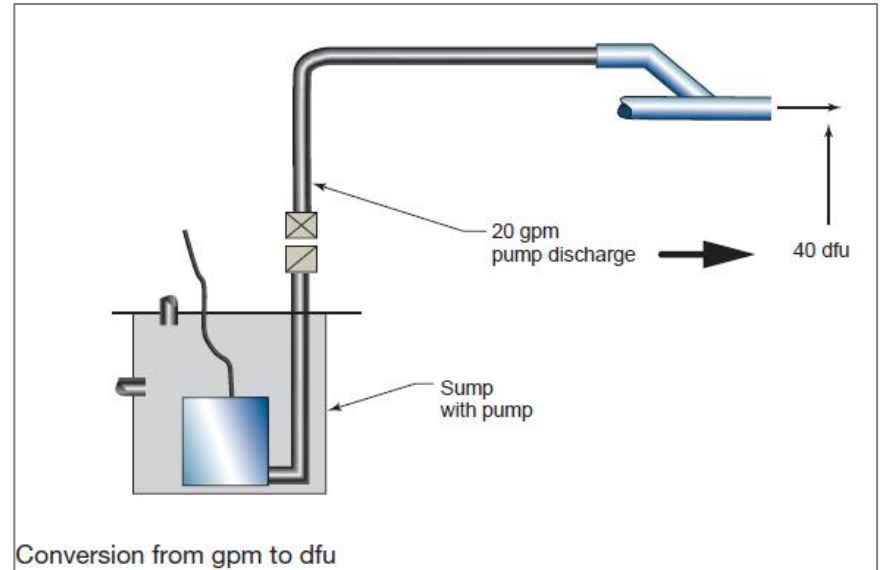
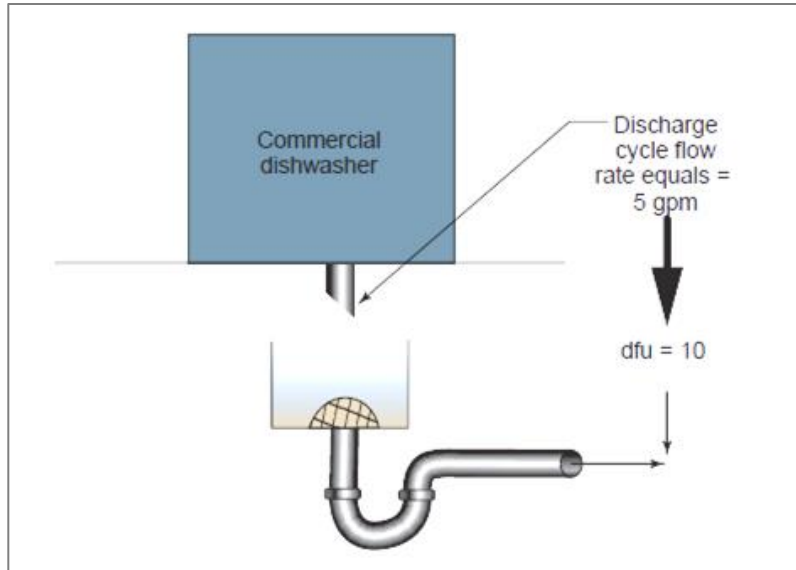
- One joint between ABS piping and PVC piping may be solvent cemented with the proper cement (ASTM D3138).



# 709.3

## GPM Drainage Flow to dfu Conversion

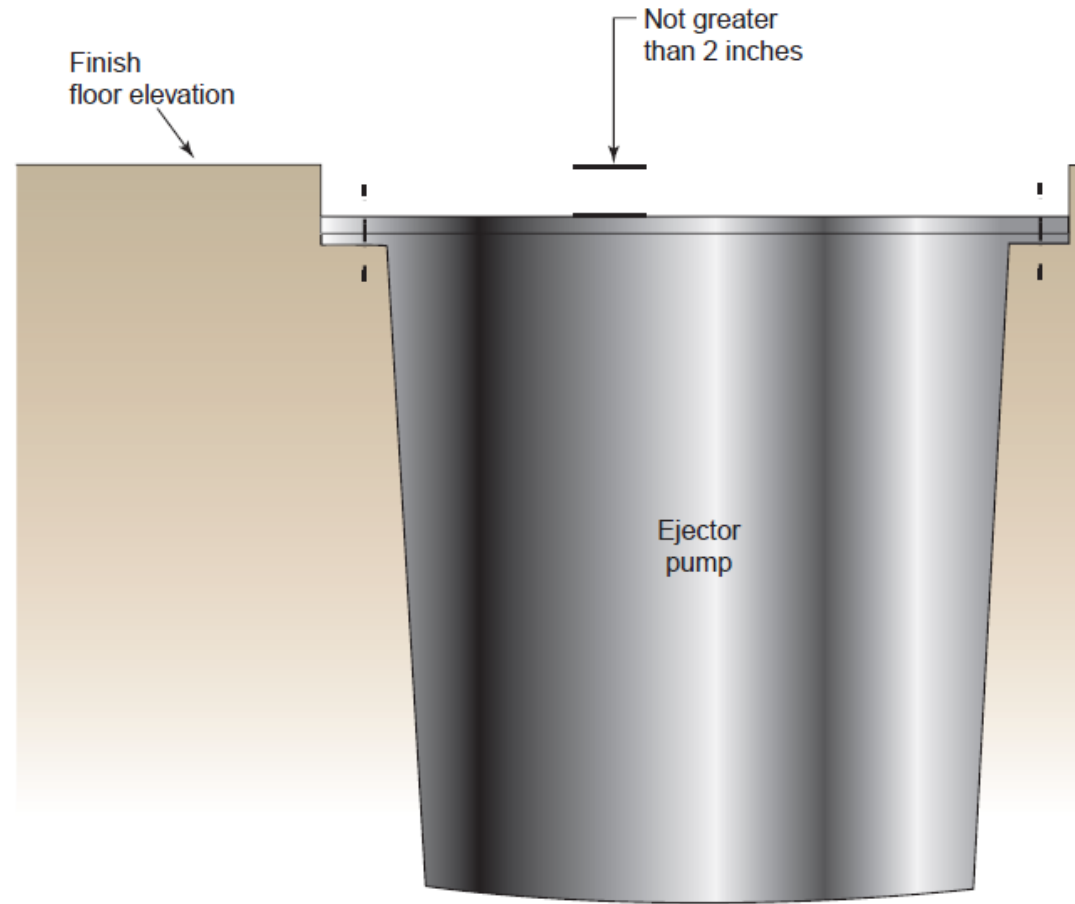
- Conversion of gallon per minute drainage flows to dfu values has been clarified.



## 712.3.2

### Ejector Sump Cover Elevation

- Gas-tight removable covers for sumps having ejectors and sewage pumps cannot be located more than 2 inches below grade or floor level.

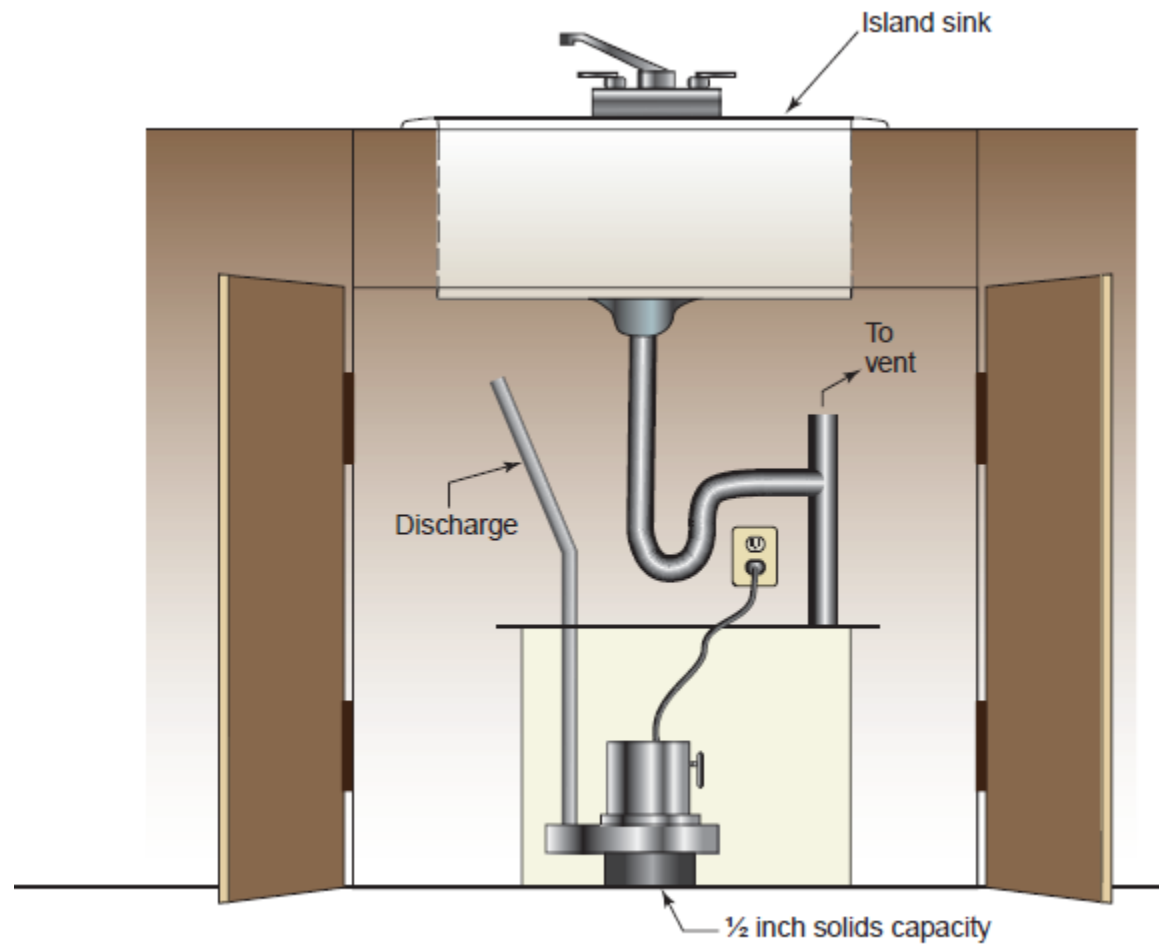


Elevation of floor with respect to sump cover

## 712.4.2

### Waste Ejector Solids Size Reduced

- The maximum solids diameter capacity for waste pumps and waste ejectors has been reduced from 1-inch diameter to 1/2-inch diameter pipe.



Sink pump system



## ~~713 - Health Care Plumbing~~

- Section 713 covering sanitary drainage systems in health care facilities has been **deleted**.



# 717 / P3012 – Relining of Building Sewers and Building Drains

- VA adopts this section verbatim from the 2021 IPC



2018

## Chapter 8

# Indirect / Special Waste

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# 801.2, 802.1

## Connection of Humidifier Drains

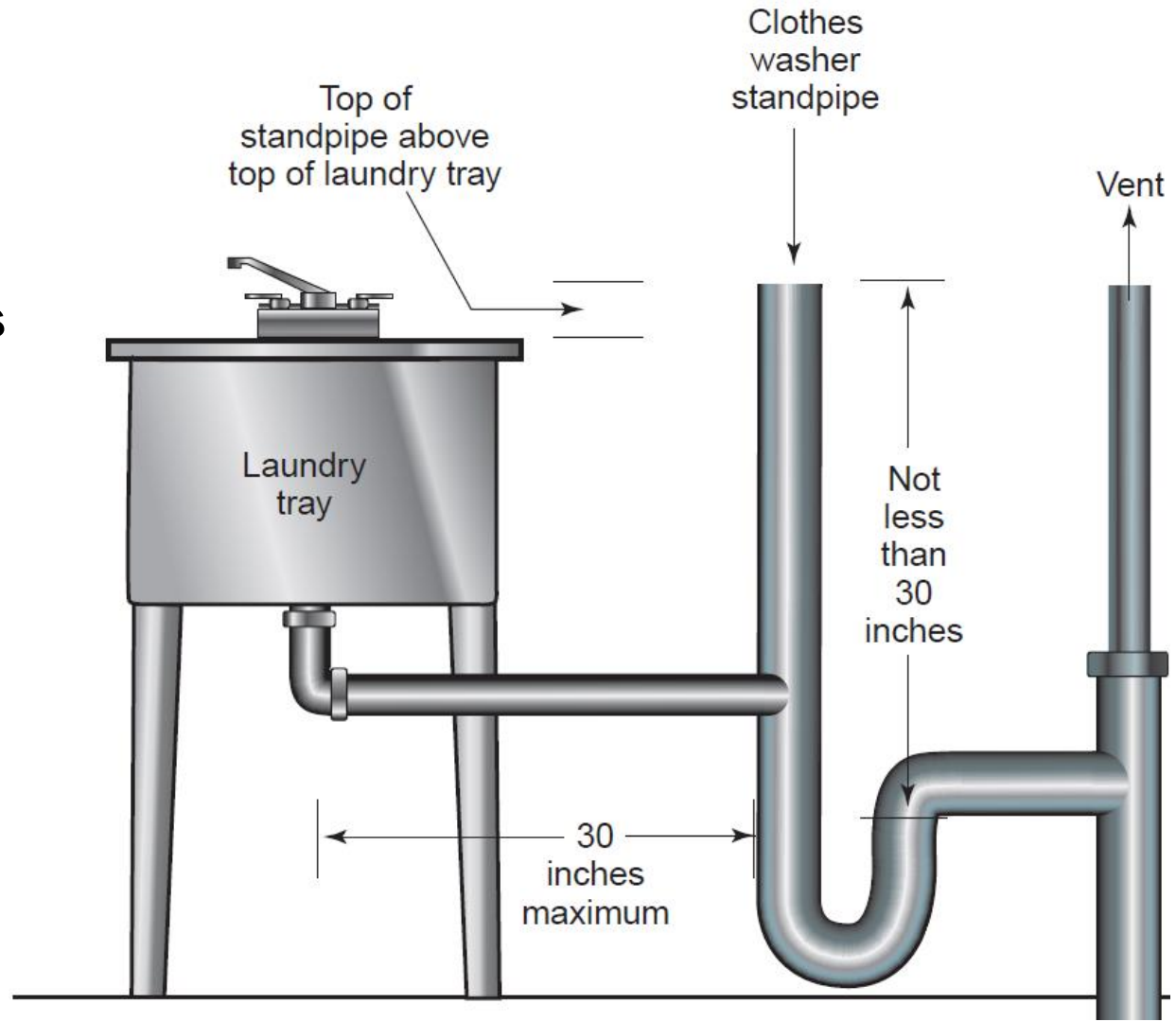
- Air humidification equipment that has a wastewater discharge must have the discharge piping connect in an indirect method to the sanitary drainage system.



# 802.4.3.1

## Laundry Tub Connection to Clothes Washer Standpipe

- An alternative method for connecting a laundry tub drain, without a fixture trap, to a clothes washer standpipe is added to the code.



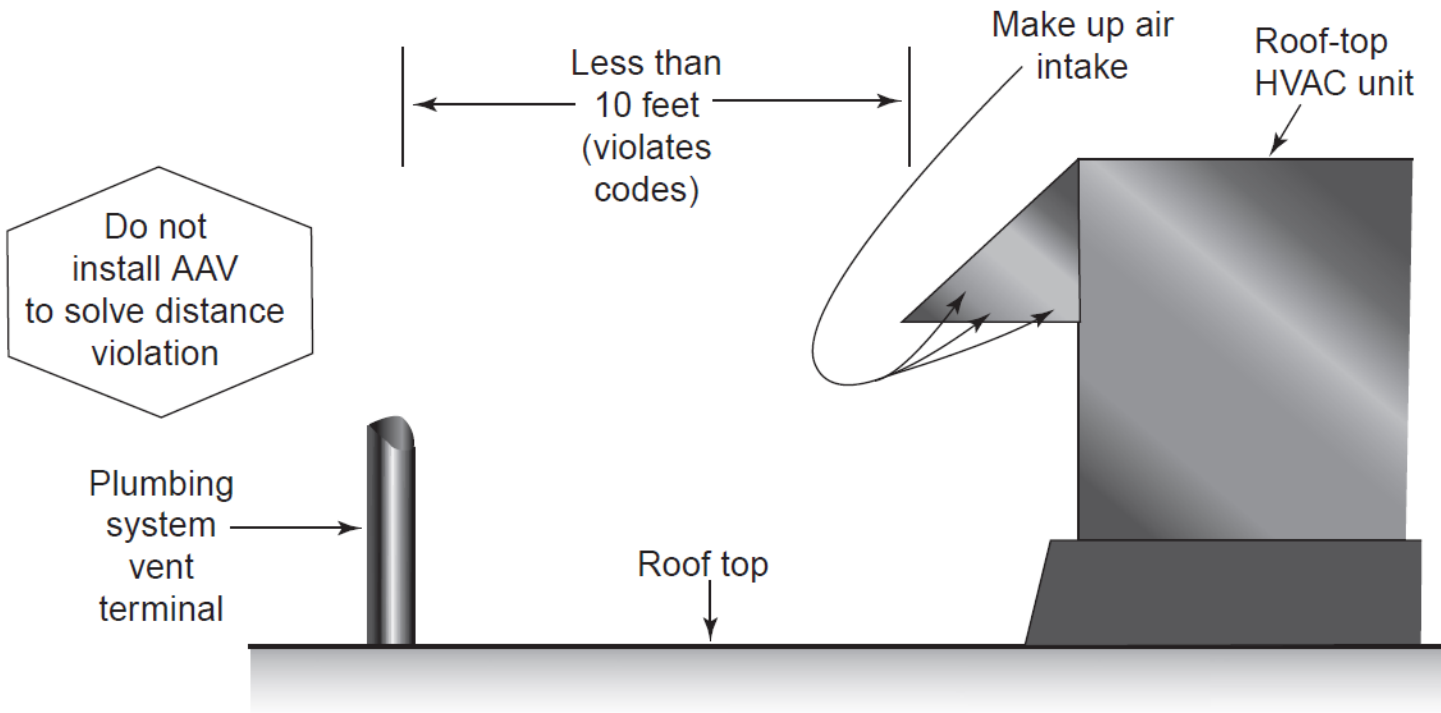
## Chapter 9

# Vents

2018

VIRGINIA PLUMBING CODE





Improper use of AAV

## 918.8 / P3114.8 - Prohibited Installations for Air Admittance Valves

- An air admittance valve cannot be used to resolve the problem of an open vent terminal that is too close to a building air intake.

2018

## Chapter 10

# Traps, Interceptors, and Separators

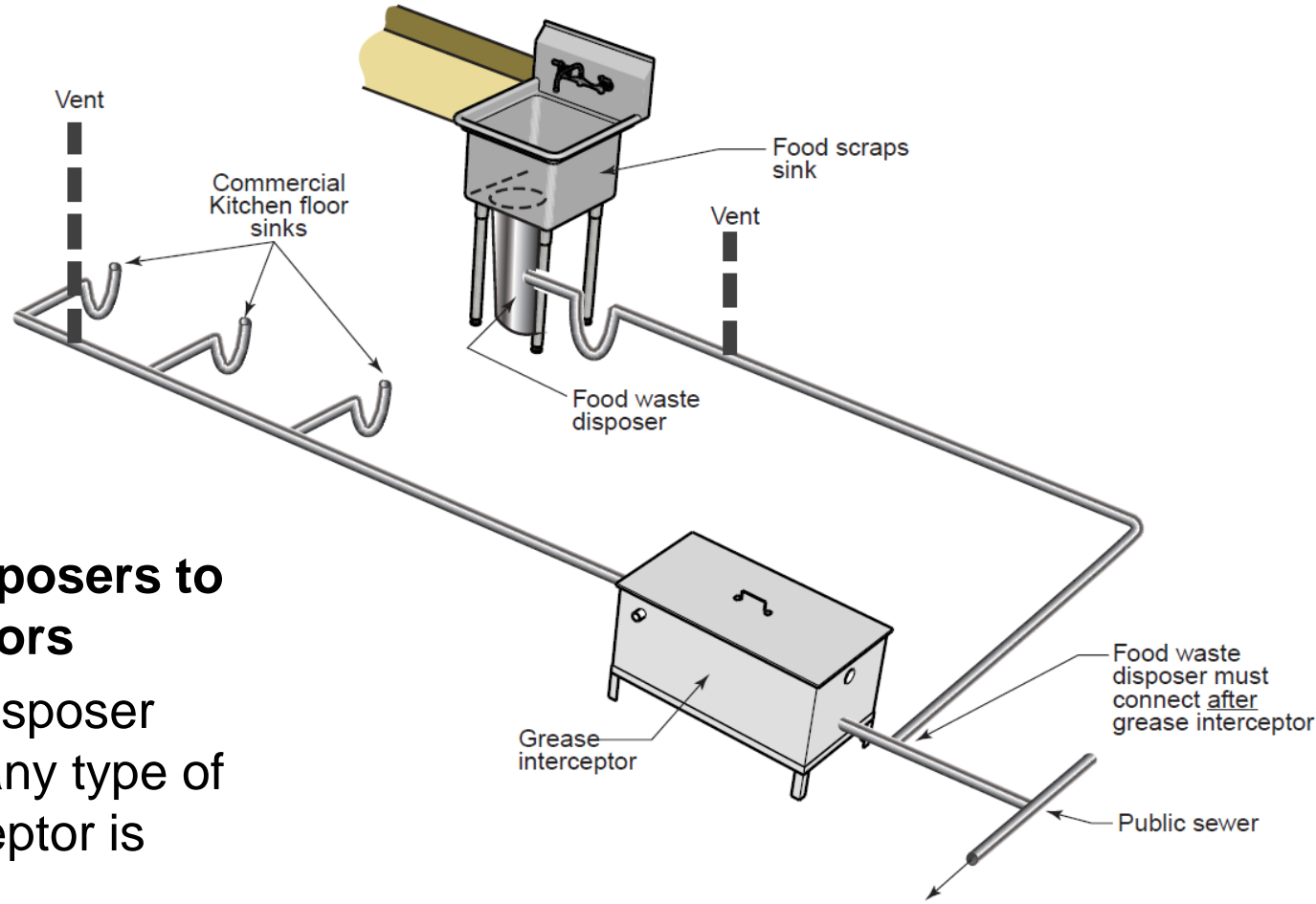
VIRGINIA PLUMBING CODE



## 1003.3.2

### Discharge of Disposers to Grease Interceptors

- Food waste disposer discharge to any type of grease interceptor is prohibited.

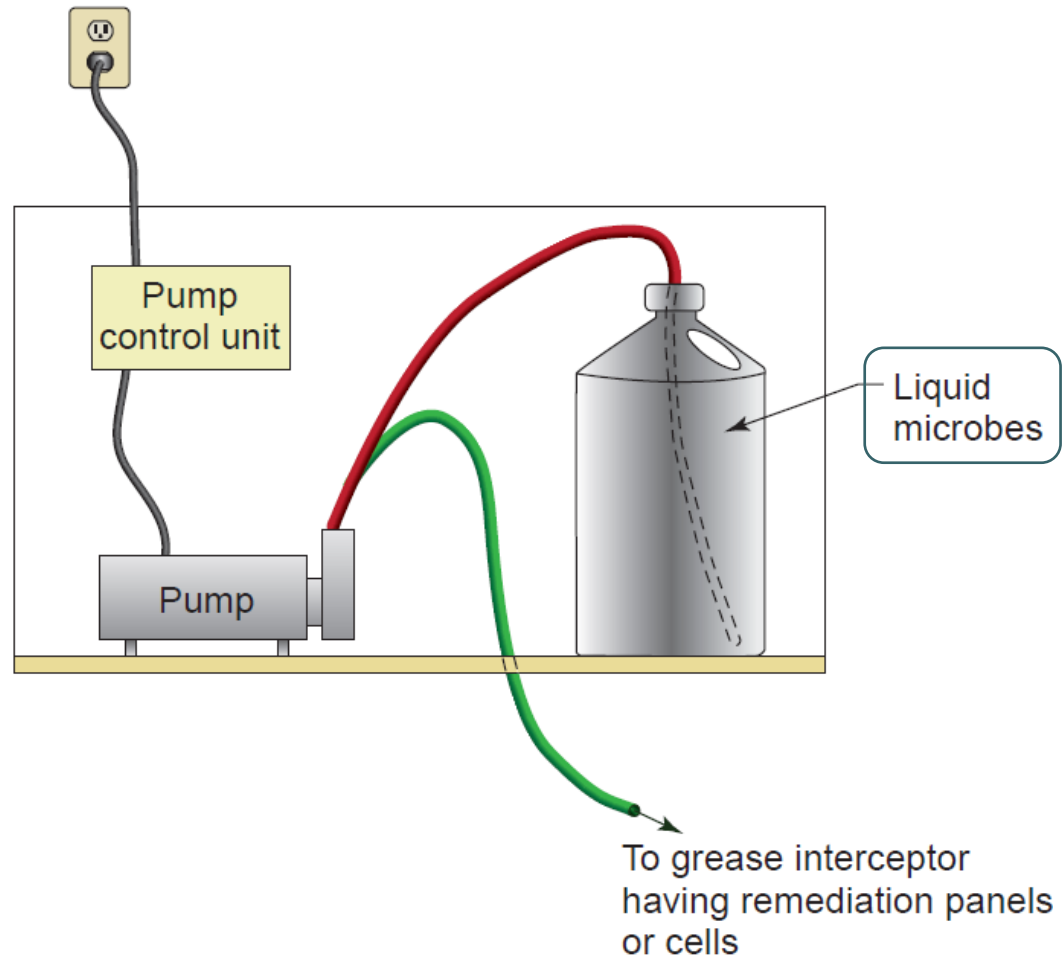




# 1003.3.3

## Additives to Grease Interceptors

- Additives to grease interceptors are **limited to microbes** dispensed by systems that comply with ASME A112.14.6 and are allowed by the interceptor manufacturer.



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## Chapter 11

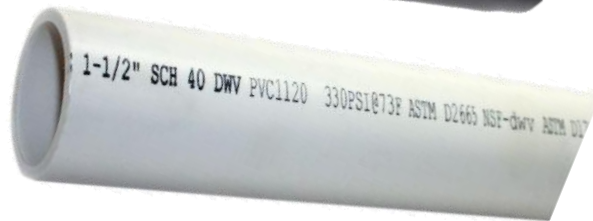
# Storm Drainage

VIRGINIA PLUMBING CODE



**TABLE 1102.4 Building Storm Sewer Pipe**

Material	Standard
Acrylonitrile butadiene styrene (ABS) plastic pipe <u>in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall.</u>	ASTM D2661; <u>ASTM D 2754</u> ; ASTM F628; <u>ASTM F1488</u> ; CSA B181.1; CSA B182.1
Polyethylene (PE) plastic pipe	<u>ASTM F667</u> ; ASTM F2306/F2306M; ASTM F2648/F2648M
<u>Polypropylene (PP) Pipe</u>	<u>ASTM F2881</u> ; CSA B182.13
Polyvinyl chloride (PVC) plastic pipe (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100) <u>in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall.</u>	ASTM D2665; ASTM D3034; ASTM F891; <u>ASTM F1488</u> ; CSA B182.4; CSA B181.2; CSA B182.2



## Table 1102.4 – Building Storm Sewer Pipe

- Additional types of piping materials and standards were added to the table for approved building storm sewer pipe.

# 1106.5

## Parapet Wall Scuppers

- Must be located and sized to prevent the roof water depth from exceeding the maximum capacity of the structure.
- Minimum scupper width and height are now specified.



# 1114, 1114.1 – Storm Drainage



## New Section Added - Values for Continuous Flow

- Provides a method to calculate drain requirements for things like pumps that discharge into the storm drain or building sewer.
- Add 96 sq. ft. of roof area for every GPM of discharge.



Questions?

## Skill Check 4

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# Thank You for Attending!

## 2018 Virginia Plumbing Code (VPC)

**Significant** International Changes and  
State Amendments

