

PLUMBING
Local Technical Amendments
to the
2014 5th Edition Florida Building Code

JURISDICTION	DOCUMENT with TECHNICAL AMENDMENT	TEXT OF TECHNICAL AMENDMENT	TAC REVIEW
Broward County	Florida Building Code, Plumbing Ch. 3 – General Regulations	<p>Florida Building Code – Plumbing , 5th Edition (2014) Amendment to Section [M] 314.2.1 [M] 314.2.1 Condensate drainage collection, use or disposal. <u>Condensate from all cooling coils and evaporators of equipment served by an onsite cooling tower in a building or structure wherein the aggregate cooling capacity of the equipment exceeds 65,000 Btu/hr shall be collected and conveyed from the drain pan outlet and discharged to the cooling tower. Where an on-site cooling tower is not installed the condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope). Condensate shall not discharge into a street, alley or other areas so as to cause nuisance</u></p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <u>Condensate from cooling coils and evaporators is not required to be collected and conveyed to an on-site cooling tower; provided 1.1 through 1.3 are met:</u> <ol style="list-style-type: none"> 1.1 <u>The equipment comprises 10% or less of the total capacity of the cooling tower system</u> 1.2 <u>The equipment is located in an isolated or remote area</u> 1.3 <u>The size of the equipment is 65,000 Btu/hr or less</u> 2. <u>In existing buildings condensate may be collected and conveyed to a cooling tower or discharged to an approved place of disposal.</u> 	Plumbing TAC Vote: (

Broward County

Florida Building Code, Plumbing – Ch. 6 – Water Supply and Distribution

Amendment to Section 604.3 and Table 604.4

**Florida Building Code – Plumbing, 5th Edition (2014)
Amendment to Section 604.3 and Table 604.4**

Exceptions:

1. Blowout design water closets having a water consumption not greater than 3½ gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than 4½ gallons (17 L) per flushing cycle.
4. Service sinks.
5. Emergency showers.
6. All fixtures, fittings and appliances with U.S. Environmental Agency WaterSense ® (EPA) label.

**Table 604.4
MAXIMUM FLOW RATES AND CONSUMPTION
FOR PLUMBING FIXTURES,
AND FIXTURE FITTINGS AND APPLIANCES**

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory, private	2-2 1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head ^a	2.0-2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	4-0 0.5 gallon per flushing
Water closet	4-6 1.28 gallons per flushing cycle
<u>Dishwasher (Residential)*</u>	<u>6.5 gallons per cycle or less (Energy Star/WaterSense Certified)</u>
<u>Dishwasher (Commercial)</u>	<u>Less than 1.2 gallons per rack for fill and dump machines and</u>

Plumbing TAC
Vote:

	<u>less than 0.9 gallons per rack for low temperature machines</u>
<u>Dishwasher(Under the counter machines commercial)</u>	<u>1.0 gallons per rack for high temperature machines and 1.7 gallons per rack for low temperature machines</u>
<u>Washing Machine *</u>	<u>Water factor of 8 or lower (Energy Star/WaterSense Certified) (c)</u>

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head. ***If installed**

b. Consumption tolerance shall be determined from referenced standards.

c. Water factor in gallons per cycle per cubic foot

Section #: 604 - Design of Building Water Distribution System, Table 604.4

Please see attachment.

THIS PROPOSED MODIFICATION SHALL BE EFFECTIVE JUNE 30, 2015.

**BROWARD BORA PUBLIC HEARING AND VOTE, 2015.
AMENDMENT EFFECTIVE DATE JUNE 30, 2015.**

**SECTION 603
WATER SERVICE**

603.1 Size of water service pipe. The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The water service pipe shall be not less than ¼ inch (19.1mm) in diameter.

603.2 Separation of water service and building sewer. Water service pipe and the *building sewer* shall be separated by not less than 5 feet (1524 mm) of undisturbed or compacted earth.

Exceptions:

1. The required separation distance shall not apply where the bottom of the water service pipe within 5 feet (1524 mm) of the *sewer* is not less than 12 inches (305mm) above the top of the highest point of the *sewer* and the pipe materials conform to Table 702.3
2. Water service pipe is permitted to be located in the same trench with a *building sewer*, provided such *sewer* is constructed of materials listed in Table 702.2
3. The required separation distance shall not apply where a water service pipe crosses a *sewer* pipe centerline on both sides of such crossing with pipe materials listed in Table 605.3, 702.2 or 702.3.

603.2.1 Water service near sources of pollution. Potable water service pipes shall not be located in, under or above cesspools, septic tank, drainage fields or seepage pits (see Section 605.1 for soil and groundwater conditions).

**SECTION 604
DESIGN OF BUILDING WATER DISTRIBUTION
SYSTEM**

604.1 General. The design of the water distribution system shall conform to *accepted engineering practice*. Methods utilized to determine pipe sizes shall be *approved*.

604.2 System Interconnection. At the points of interconnection between the hot and cold water supply piping systems and the individual fixtures, appliances or devices, provisions shall be made to prevent flow between such piping systems.

604.3 Water distribution system design criteria. The water distribution system shall be designed, and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the fixture supply pipe outlets shall not be less than shown in Table 604.3. The minimum flow rate and flow pressure provided to fixtures and appliances not listed in Table 604.3 shall be in accordance with the manufacturer's instructions.

**Table 604.3
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA REQUIRED
CAPACITY AT FIXTURE SUPPLY PIPE OUTLETS**

FIXTURE SUPPLY OUTLET SERVING	FLOW RATE* (gpm)	FLOW PRESSURE (psi)
Bathtub, balanced-pressure, thermostatic or combination balanced pressure/thermo-static mixing valve	4	20
Bidet, thermostatic mixing valve	2	20
Combination fixture	4	8
Dishwasher, residential	2.75	8
Drinking fountain	0.75	8
Laundry tray	4	8
Lavatory	2	8
Shower	3	8
Shower, balanced-pressure, thermostatic or combination balanced-pressure/thermo-static mixing valve	3	20
Sillcock, hose bibb	5	8
Sink, residential	2.5	8
Sink, service	3	8
Urinal, valve	12	25
Water closet, blowout, flushometer valve	25	45
Water closet, flushometer tank	1.6	20
Water closet, siphonic, flushometer valve	25	35
Water closet, tank, close coupled	3	20
Water closet, tank, one piece	6	20

For SI: 1 pound per square inch = 6.895 kPs
1 gallon per minute = 3.785 L/m

a. For additional requirements for flow rates and quantities, see Section 604.4

604.4 Maximum flow and water consumption. The maximum water consumption flow rates and

quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4

Exceptions:

1. Blowout design water closets having a water consumption not greater than 3 ½ gallons (13L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than 4 ½ gallons (17.1 L) per flushing cycle.
4. Service sinks.
5. Emergency showers
6. All fixtures, fittings and appliances with U.S. Environmental Agency WaterSense ® (EPA) label.

**TABLE 604.4
MAXIMUM RATES AND CONSUPTION
FOR PLUMBING FIXTURES,
AND FIXTURE FITTINGS AND APPLIANCES**

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY b
Lavatory, private	2.2 <u>1.5</u> gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public, (other than metering)	.5 gpm at 60 psi
Shower head *	<u>2.0</u> 2.5 gpm at 80psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 <u>0.5</u> gallons per flushing
Water closet	1.6 <u>1.28</u> gallons per flushing cycle
<u>Dishwasher (Residential) *</u>	<u>6.5 gallons per cycle or less (Energy Star/WaterSense Certified)</u>
<u>Dishwasher (Commercial)</u>	<u>Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for low temperature machines.</u>
<u>Dishwasher (Under the counter machines commercial)</u>	<u>1.0 gallons per rack for high temperature machines and 1.7 gallons per rack for low</u>

	<u>temperature machines.</u>
<u>Washing Machine *</u>	<u>Water factor of 8 or lower- (Energy Star/WaterSense Certified)</u>

For Si: 1 gallon = 3.785L, 1 gallon per minute = 3.785 L/m,
1 pound per square inch = 6.895 kPa.

- a. A hand-held shower spray is a shower head *if installed
- b. Consumption tolerance shall be determined from referenced standards
- c. Water factor in gallons per cycle per cubic foot

604.5 Size of Fixture supply. The minimum size of a fixture supply pipe shall be as shown in Table 604.5. The fixture supply pipe shall terminate not more than 30 inches (762 mm) from the point of connection to the fixture. A reduced-size flexible water connector installed between the supply pipe and the fixture shall be of an *approved* type. The supply pipe shall extend to the floor or wall adjacent to the fixture. The minimum size of individual distribution lines utilized in gridded or parallel water distribution systems shall be as shown in Table 604.5.

604.6 Variable street pressures. Where street water main pressures fluctuate, the building water distribution system shall be designed for the minimum pressure available.

604.7 Inadequate water pressure. Where water pressure from the street main or other source of supply is insufficient to provide flow pressures at fixture outlets as required under Table 604.3, a water pressure booster system conforming to Section 606.5 shall be installed on the building water supply system.

604.8 Water pressure reducing valve or regulator. Where water pressure within a building exceeds 80 psi (552 kPa) static, an *approved* water-pressure reducing valve conforming to ASSE 1003 or CSA B356 with strainer shall be installed to reduce the pressure in the building water distribution piping to not greater than 80 psi (552 kPa) static.

Exception:

Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 80 psi (552 kPa) or less at individual fixtures.

604.8.1 Valve design. The pressure-reducing valve shall be designed to remain open to permit uninterrupted water flow in case of valve failure.

604.8.2 Repair and removal. Water-pressure reducing valves, regulators and strainers

shall be so constructed and installed as to permit repair or removal of parts without breaking a pipeline or removing the valve and strainer from the pipeline.

**TABLE 604.5
MINIMUM SIZES OF FIXTURE WATER SUPPLY PIPES**

FIXTURE	MINIMUM PIPE SIZE (INCH)
Bathtubs (60" x 32" and smaller)	1/2
Bathtubs (larger than 60" x 32")	1/2
Bidet	3/8
Combination sink and tray	1/2
Dishwasher, domestic	1/8
Drinking fountain	3/8
Hose bibbs	1/2
Kitchen sink	1/2
Laundry, 1,2 or 3 compartments	1/2
Lavatory	3/8
Shower, single head	1/2
Sinks, flushing rim	3/4
Sinks, service	1/2
Urinal, flush tank	1/2
Urinal, flushometer valve	3/4
Wall hydrant	1/2
Water closet, flush tank	3/8
Water closet, flushometer valve	1
Water closet, flushometer tank	3/8
Water closet, one piece	1/2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

1 pound per square inch = 6.895 kPa.

- a. Where the developed length of the distribution line is 60 feet or less and The available pressure at the meter is 35 psi or greater, the minimum size of Individual distribution line supplied from a manifold and installed as part of Parallel water distribution system shall be one nominal tube size smaller than the sizes indicated.

604.9 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.

		<p>604.10 Gridded and parallel water distribution system manifolds. Hot water and cold water manifolds installed with gridded or parallel connected individual distribution lines to each fixture or fixture fitting shall be designed in accordance with Sections 604.10.1 through 604.10.3.</p> <p>604.10.1 Manifold sizing. Hot water and cold water manifolds shall be sized in accordance with Table 604.10.1. The total gallons per minute is the demand of all outlets supplied.</p>	
Broward County	Florida Building Code, Plumbing	<p>(Due to formatting, please review amendment by clicking on this link) Plumbing 604.3 and Table 604.4</p> <p>See attached</p> <p>https://floridabuilding.org/Upload/FBC/CodeID_7187_92a2_Broward%20County-Local-Amend-FBC%205th%20ED-2014-Plumbing-%20Sec604%203-604%204-2015-06-04.pdf</p>	Plumbing TAC
Broward County	Florida Building Code, Plumbing – Appendix F	<p>Appendix F - Florida Building Code – Plumbing – APPENDIX F , 5th Edition (2014) Amendment to APPENDIX F</p> <p>c. Sprinkler layout. <u>Sprinkler layout may be modified to adjust for field conditions provided it complies with part VI, Section B, subsection 1 Sprinkler layout and spacing. Prior to final inspection, the contractor shall submit a letter or as-built drawing that reflects the modification to the authority with jurisdiction.</u></p> <p>PART IV: MATERIALS</p> <p>A. PVC Pipe and fittings</p> <p>3. Threaded PVC pipe fittings shall meet the requirements of Schedule 40 as set forth in ASTM D 2464</p> <p>PART V: INSTALLATION</p> <p>A. Pipe Installation</p> <p>4. Thrust blocks, <u>or other approved method</u> must be used on all gasketed PVC systems. They</p>	Plumbing TAC

		<p>must be formed against a solid, hand-excavated trench wall undamaged by mechanical equipment. They shall be constructed of concrete, and the space between the pipe and trench shall be filled to the height of the outside diameter of the pipe. Size thrustblocks in accordance with ASAE S-376.1</p> <p>5. The trench bottom must be uniform, free of debris, and sufficient width to properly place pipe and support it over its entire length. Native excavated material may be used to backfill the pipe trench. However, the initial backfill material <u>to 6" above the top of the pipe</u> shall be free from rocks or stones larger than 1-inch in diameter. <u>The final backfill material shall be free of rock or debris that is greater than 3" in diameter.</u> At the time of placement, the moisture content of the material shall be such that the required degree of compaction can be obtained with the backfill method to be used. Blocking or mounding shall not be used to bring the pipe to final grade.</p> <p>6. Pipe Sleeves must be used to protect pipes or wires installed under pavement or roadways or when position of irrigation pipes or wires conflict with pipes or appurtenances of other trades. Use pipe sleeves two pipe sizes larger than the carrier pipe or twice the diameter of the wire bundle to be placed under the paving or roadway and extending a minimum of 3 feet beyond the paved area or as required by the Florida Department of Transportation (FDOT). Use sleeve pipe with wall thickness at least equal to the thickness of schedule 40 or PR 160 pipe, whichever is thicker. Proper backfill and compaction procedures should be followed.</p> <p>PART VI: TESTING & INSPECTIONS</p> <p>C. Final Inspection.</p> <p>3. Open Trench Inspection: The trench at all joints and every transition in pipe size, will be open where open trench inspection is required</p>	
City of Miami-Dade	Florida Building Code, Plumbing	<u>Sec. 8-31. - Local technical amendments to Florida Building Code.</u> <u>(A)</u>	Plumbing TAC

The County hereby adopts the following local technical amendments to Chapter 6 (Plumbing) of the Florida Building Code.

604.4 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table 604.4. Effective January 1, 2009, permit applications for new residential and commercial structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table 604.4. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table 604.4 or have received the U.S. Environmental Protection Agency (EPA) WaterSense Label.

Exceptions:

1. Blowout design water closets [3.5 gallons (13L) per flushing cycle].
2. Vegetable sprays.
3. Clinical sinks [4.5 gallons (17 L) per flushing cycle].
4. Service sinks.
5. Emergency showers.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR
PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE (b)
Lavatory, private	1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Shower head (a)	1.5 gpm at 60 psi
Sink faucet	1.5 gpm at 60 psi
Urinal	>>Waterless or 0.5 gallon flushing cycle
Water Closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) ©
Dishwasher (commercial)	Less than 1.2 gallons per rack for fill and dump machines and less Than 0.9 gallons per rack for all other types of machines.
Dishwasher (under the counter machines)	1.0 gallon or less per rack for high-temperature machines and 1.7 gall per rack for low-temperature machines

Washing machine

Water factor of 8 or lower (Energy Star / Water Sense Certified) ©

For SI:

1 gallon = 3.785 L

1 gallon per minute = 3.785 L/m

1 pound per square inch = 6.895 kPa.

(a) A hand-held shower spray is a shower head.

(b) Consumption tolerances shall be determined from referenced standards.

(c) Water factor in gallons per cycle per cubic foot.

(B)

The County hereby adopts the following local technical amendments to Chapter 29 (Residential) of the Florida Building Code.

P2903.2 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture, fittings and appliances shall be in accordance with Table P2903.2a. Effective January 1, 2009, permit applications for new residential structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table P2903.2a.

Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table P2903.2a or have received the U.S. Environmental Protection Agency (EPA) WaterSense Label.

TABLE P2903.2a

MAXIMUM FLOW RATES AND CONSUMPTION FOR
PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

<u>PLUMBING FIXTURE OR FIXTURE FITTING</u>	<u>PLUMBING FIXTURE OR FIXTURE FITTING MAXIMUM FLOW RATE (B)</u>
Lavatory faucet	1.5 gpm at 60 psi
Shower head (a)	1.5 gpm at 80 psi
Sink faucet	1.5 gpm at 60 psi
Water closet	1.28 gallons per flushing cycle

Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) ©
Washing Machine	Water factor of 8 or lower (Energy Star / Water Sense Certified) ©

For SI:

1 gallon = 3.785 L

1 gallon per minute = 3.785 L/m

1 pound per square inch = 6.895kPa

(a) A handheld shower spray is a showerhead.

(b) Consumption tolerances shall be determined from referenced standards.

(c) Water factor in gallons per cycle per cubic foot

Pinellas County
Construction
Licensing Board
(PCCLB)

Florida Building
Code, Residential

P2903.2b Minimum Water Service Size

AMEND FOOTNOTES:

TABLE P2903.2b
MINIMUM WATER SERVICE SIZE^a

<u>NO. OF FIXTURE UNITS FLUSH TANK WC^b</u>	<u>DIAMETER OF WATER PIPE^c</u>	<u>RECOMMENDED METER SIZE (inches)^d</u>	<u>APPROX. PRESSURE LOSS METER + 100' PIPE (psi)^e</u>	<u>NO. OF FIXTURE UN FLUSH VAL WC^b</u>
<u>18</u>	<u>¾</u>	<u>5/8</u>	<u>30</u>	<u>≡</u>
<u>19-55</u>	<u>1</u>	<u>1</u>	<u>30</u>	<u>=</u>
<u>=</u>	<u>1</u>	<u>1</u>	<u>30</u>	<u>9</u>
<u>56-85</u>	<u>1 ¼</u>	<u>1</u>	<u>30</u>	<u>=</u>
<u>=</u>	<u>1 ¼</u>	<u>1</u>	<u>30</u>	<u>10-20</u>
<u>8-225</u>	<u>1 ½</u>	<u>1 ½</u>	<u>30</u>	<u>=</u>
<u>=</u>	<u>1 ½</u>	<u>1 ½</u>	<u>30</u>	<u>21-77</u>
<u>226-350</u>	<u>2</u>	<u>1 ½</u>	<u>30</u>	<u>=</u>
<u>=</u>	<u>2</u>	<u>1 ½</u>	<u>30</u>	<u>78-175</u>
<u>351-550</u>	<u>2</u>	<u>2</u>	<u>30</u>	<u>=</u>

Plumbing
TAC

=	<u>2</u>	<u>2</u>	<u>30</u>	<u>176-315</u>
<u>551-640</u>	<u>2 ½</u>	<u>2</u>	<u>30</u>	=
=	<u>2 ½</u>	<u>2</u>	<u>30</u>	<u>316-392</u>
<u>641-1340</u>	<u>3</u>	<u>3</u>	<u>22</u>	=
=	<u>3</u>	<u>3</u>	<u>22</u>	<u>393-940</u>

AMEND FOOTNOTES:

a. Table is applicable for both copper and plastic water piping.

b. See Table P2903.6 for fixture unit values.

c. Minimum water service shall be 3/4" to control valve.

d. All secondary submeters and backflow assemblies shall be at least the same size as the line in which they are installed.

e. Table based on minimum water main pressure of 50 psi.

f. Minimum sizes for fixture supply pipe from the main or from the riser shall be from the Florida Building Code 5h Edition (2014) - Plumbing Section 604.5.

g. Four (4) fixtures maximum (hot or cold) may connect to a one-half inch fixture water supply or as required by manufacturers' installation instructions.

h. Where the water main pressure falls below 50 p.s.i. the next larger pipe size shall be used.

i. Buildings above three (3) stories in height shall use the next larger pipe size.

Pinellas County

Florida Building

AMEND EXISTING SECTION

Plumbing

Construction Licensing Board (PCCLB)	Code, Plumbing	<p>605.22.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564 or CSA-8137.3 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855.</p> <p>Solventcement joints shall be permitted above or below ground.</p> <p><u>Exception: Clear Primer conforming to ASTM F 656 mav be used on anv exposed PVC pipe or fittings on trim/finish work.</u></p>	TAC
Pinellas County Construction Licensing Board (PCCLB)	Florida Building Code, Plumbing	<p><u>AMEND EXISTING SECTION</u> <u>SECTION 610 DISINFECTION OF POTABLE WATER SYSTEM</u> <u>610.2 Applicable Sizes. The requirements of 610.1 in the following sizes shall apply when connected to an existing approved potable system.</u></p> <ol style="list-style-type: none"> <u>1. All Building Department permitted and approved onsite potable drinking water piping two-inch (2") diameter and greater than one hundred fifty (150) lineal feet in length.</u> <u>2. All Building Department permitted and approved onsite potable drinking water piping of greater than two-inch (2") diameter and greater than fifty (50) lineal feet in length.</u> <u>3. All Building Department permitted and approved onsite potable drinking water piping in size(s) and length(s) adequate to contain twentv (20) gallons or more. (Volume = .0408 x diameter² x length in feet).</u> <u>4. Anv size or length water pipe that has been subiected to contamination will require disinfection.</u> 	Plumbing TAC
Pinellas County Construction Licensing Board (PCCLB)	Florida Building Code, Plumbing	<p><u>AMEND EXISTING SECTION</u> 705.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTMD2564, CSA 8137.3, CSA 8181.2 or CSA 8182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent-cement joints shall be permitted above or below ground.</p> <p><u>Exception: Clear Primer conforming to ASTM F 656 mav be used on anv exposed PVC pipe or fittings on trim/finish work.</u></p>	Plumbing TAC
Broward County	Florida Building	Amendment to 2014 5th Edition FBC – PLUMBING - APPENDIX F	Plumbing

	Code, Plumbing	<p>(Due to size of file must view link)</p> <p>See Attached</p> <p>https://floridabuilding.org/Upload/FBC/CodeID_7185_d37e_Broward%20County-Local_Amend-FBC%205th%20ED-2014-Plumbing-%20Appendix-F-2015-06-04.pdf</p>	TAC
Pinellas County Construction Licensing Board	Florida Building Code, Residential	<p>SECTION P2705 INSTALLATION</p> <p>P2705.1 General. The installation of fixtures shall conform to the following:</p> <ol style="list-style-type: none"> 1. Floor-outlet or floor-mounted fixtures shall be secured to the drainage connection and to the floor, where so designed, by screws, bolts, washers, nuts and similar fasteners of copper, brass or other corrosion-resistant material. 2. Wall-hung fixtures shall be rigidly supported so that strain is not transmitted to the plumbing system. 3. Where fixtures come in contact with walls and floors, the contact area shall be water tight. 4. Plumbing fixtures shall be usable and functionally accessible. 5. Water closets, lavatories and bidets. A water closet, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition or vanity or closer than 30 inches (762 mm) center-to-center between adjacent fixtures. There shall be at least a 21-inch (533 mm) in front of the water closet, lavatory or bidet to any wall, fixture or door. Plus the fixture spacing requirements of Section R307.1. 6. The location of piping, fixtures or equipment shall not interfere with the operation of windows or doors. 7. In flood hazard areas as established by Table R301.2 (1), plumbing fixtures shall be located or installed in accordance with Section R322.1.7. 	Plumbing TAC

		8. Integral fixture-fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.2/CSA 845.4 or ASME A112.19.3/CSA 845.1.	
Pinellas County Construction Licensing Board	Florida Building Code, Residential	<p>AMEND EXISTING SECTION</p> <p>P2903.1 Water supply system design criteria. The water service and water distribution systems shall be designed and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the point of outlet discharge shall not be less than shown in Table P2903.1.</p> <p><u>EXCEPTION: For any one, two or three residential family dwellings. When the building owner approves in writing, one bathroom group may be added to the existing hot and cold water system, not to exceed a maximum of eight drainage fixture units for any fixtures added. In no case shall the additional fixtures be connected to existing piping less than 1/2" diameter (Hot and/or Cold).</u></p> <p>P2903.1.1 Applicable Sizes. The requirements of P2903.1 in the following sizes shall apply when connected to an existing approved potable system.</p> <p><u>1. All Building Department permitted and approved onsite potable drinking water piping two-inch (2") diameter and greater than one hundred fifty (150) lineal feet in length.</u></p> <p><u>2. All Building Department permitted and approved onsite potable drinking water piping of greater than two-inch (2") diameter and greater than fifty (50) lineal feet in length.</u></p> <p><u>3. All Building Department permitted and approved onsite potable drinking water piping in size(s) and length(s) adequate to contain twenty (20) gallons or more. (Volume = .0408 x diameter² x length in feet).</u></p> <p><u>4. Any size or length water pipe that has been subjected to contamination will require disinfection.</u></p>	Plumbing TAC
Pinellas County Construction Licensing Board	Florida Building Code, Residential	<p>AMEND EXISTING SECTION</p> <p>TABLE P2903.2b MINIMUM WATER SERVICE SIZE^a</p> <p>AMEND FOOTNOTES:</p>	Plumbing TAC

**TABLE P2903.2b
MINIMUM WATER SERVICE SIZE^a**

<u>NO. OF FIXTURE UNITS FLUSH TANK WC^b</u>	<u>DIAMETER OF WATER PIPE</u>	<u>RECOMMENDED METER SIZE (INCHES)^d</u>	<u>APPROX. PRESSURE LOSS METER + 100' PIPE (psi)^e</u>	<u>NO. OF FIXTURE UNITS FLUSH VA WC^b</u>
<u>18</u>	<u>3/4</u>	<u>5/8</u>	<u>30</u>	<u>=</u>
<u>19-55</u>	<u>1</u>	<u>1</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>1</u>	<u>1</u>	<u>30</u>	<u>9</u>
<u>56-85</u>	<u>1 ¼</u>	<u>1</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>1 ¼</u>	<u>1</u>	<u>30</u>	<u>10-20</u>
<u>8-225</u>	<u>1 ½</u>	<u>1 ½</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>1 ½</u>	<u>1 ½</u>	<u>30</u>	<u>21-77</u>
<u>226-350</u>	<u>2</u>	<u>1 ½</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>2</u>	<u>1 ½</u>	<u>30</u>	<u>78-177</u>
<u>351-550</u>	<u>2</u>	<u>2</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>2</u>	<u>2</u>	<u>30</u>	<u>176-311</u>
<u>551-640</u>	<u>2 ½</u>	<u>2</u>	<u>30</u>	<u>=</u>
<u>≡</u>	<u>2 ½</u>	<u>2</u>	<u>30</u>	<u>316-399</u>
<u>641-1340</u>	<u>3</u>	<u>3</u>	<u>22</u>	<u>=</u>
<u>≡</u>	<u>3</u>	<u>3</u>	<u>22</u>	<u>393-944</u>

AMEND FOOTNOTES:

- a. Table is applicable for both copper and plastic water piping.
- b. See Table P2903.6 for fixture unit values.
- c. Minimum water services shall be ¾ " to control valve.
- d. All secondary sumeters and backflow assemblies shall be at least the same size as the line in which they are installed.
- e. Table based on minimum water main pressure of 50 psi.
- f. Minimum sizes for fixture supply pipe from the main or from the riser shall be from the Florida Building Code 5th Edition (2014) – Plumbing Section 604.5
- g. Four (4) fixtures maximum (hot or cold) may connect to a one-half inch fixture water supply or as required by manufacturers' installation instructions.
- h. Where the wter main pressure falls below 50 p.s.i. the next larger pipe size shall be used.
- i. Buildings above three (3) stories in height shall use the next larger pipe size.

Pinellas County Construction Licensing Board	Florida Building Code, Residential	<p>AMEND EXISTING SECTION</p> <p>P2905.9.1.3 PVC plastic pipe. A purple primer that conforms to ASTM F 656 shall be applied to PVC solvent cemented joints. Solvent cement for PVC plastic pipe conforming to ASTM D 2564 shall be applied to all joint surfaces.</p> <p><u>Exception: Clear Primer conforming to ASTM F 656 may be used on any exposed PVC pipe or fittings on trim/finish work.</u></p>	Plumbing TAC
Pinellas County Construction Licensing	Florida Building Code, Residential	<p>AMEND EXISTING SECTION</p> <p>P3003.3.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 or CSA 8181.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235, ASTM D 2661, ASTM F 628 or CSA 8181.1. Solvent-cement joints shall be permitted above or below ground.</p> <p>Exception: Clear Primer conforming to ASTM F 656 may be used on any exposed PVC pipe or fittings on trim/finish work.</p>	Plumbing TAC

Florida Building Code – Plumbing – APPENDIX F , 5th Edition (2014)

Amendment to APPENDIX F

c. Sprinkler layout. Sprinkler layout may be modified to adjust for field conditions provided it complies with part VI, Section B, subsection 1 Sprinkler layout and spacing. Prior to final inspection, the contractor shall submit a letter or as-built drawing that reflects the modification to the authority with jurisdiction.

PART IV: MATERIALS

A. PVC Pipe and fittings

3. Threaded PVC pipe ~~firings~~ fittings shall meet the requirements of Schedule 40 as set forth in ASTM D 2464

PART V: INSTALLATION

A. Pipe Installation

4. Thrust blocks, or other approved method must be used on all gasketed PVC systems. They must be formed against a solid, hand-excavated trench wall undamaged by mechanical equipment. They shall be constructed of concrete, and the space between the pipe and trench shall be filled to the height of the outside diameter of the pipe. Size thrustblocks in accordance with ASAE S-376.1

5. The trench bottom must be uniform, free os debris, and sufficient width to properly place pipa and support it over its entire length. Native excavated material may be used to backfill the pipe trench. However, the initial backfill material to 6" above the top of the pipe shall be free from rocks or stones larger than 1-inch in diameter. The final backfill material shall be free of rock or debris that is greater than 3" in diameter. At the time of placement , the moisture content of the material shall be such that the required degree of compaction can be obtained with the backfill method to be used . Blocking or mounding shall not be used to bring the pipe to final grade.

6. Pipe Sleeves must be used to protect pipes or wires installed under pavement or roadways or when position of irrigation pipes or wires conflict with pipes or appurtenances of other trades. Use pipe sleeves two pipe sizes larger than the carrier pipe or twice the diameter of the wire bundle to be placed under the paving or roadway and extending a minimum of 3 feet beyond the paved area or as required by the Florida Department of Transportation (FDOT). Use sleeve pipe with wall thickness at least equal to the thickness of schedule 40 or PR 160 pipe, whichever is thicker. Proper backfill and compaction procedures should be followed.

PART VI: TESTING & INSPECTIONS

C. Final Inspection.

3. Open Trench Inspection: The trench at all joints and every transition in pipe size, will be open where open trench inspection is required.

APPENDIX F

PROPOSED CONSTRUCTION BUILDING CODES FOR TURF AND LANDSCAPE IRRIGATION SYSTEMS

PART 1: GENERAL

A. Description.

- 1. Purpose.** To establish uniform minimum standards and requirements for the design and installation of safe, cost-effective, reliable irrigation systems for turf and landscape areas which promote the efficient use and protection of water and other natural resources.
- 2. Definition.** Turf and landscape irrigation systems apply water by means of permanent above-ground or subsurface sprinkler or microsprinkler equipment under pressure.
- 3. Scope.** These construction codes shall apply to all irrigation systems used on residential and commercial landscape areas. They address the design requirements, water quality, materials, installation, inspection, and testing for such systems. These construction codes do not apply to irrigation systems for golf courses, nurseries, greenhouses, or agricultural production systems.
- 4. Application.** All new irrigation systems and any new work to existing irrigation systems shall conform to the requirements of this code.
- 5. Application to existing irrigation installations.** Nothing contained in this code shall be deemed to require any irrigation system or part thereof, which existed prior to the establishment of this code, to be changed altered or modified to meet the standards of this code.

B. Permits.

- 1. Permits required.** It shall be unlawful to construct, enlarge, alter, modify, repair, or move any irrigation system or part thereof, or to install or alter any equipment for which provision is made or the installation of which is regulated by this code without first having filed application and obtained a permit therefore from the building official. A permit shall be deemed issued when signed by the building official and impressed with the seal of the governmental agency issuing said permit.
- 2. Exceptions.** All work where exempt from permit shall still be required to comply with the code. No permit shall be required for general maintenance or repairs which do not change the structure or alter the system and the value of which does not exceed \$600.00 in labor and material based on invoice value.

C. Preconstruction submittals.

1. Plans or drawings.

- a. Single-family residence.** Provide design drawings or shop drawings, where required, for the installation prior to start of construction. Design drawings shall be clearly readable, to reasonable scale, show the entire site to be irrigated, and include all improvements. Drawings can be prepared by a properly licensed qualified contractor.

- b. Commercial, industrial, municipal and multi-family.** Provide professionally designed drawings prior to start of construction. Design drawings shall be clearly readable, to reasonable scale, show the entire site to be irrigated, including all improvements, and shall include but not be limited to: date, scale, revisions, legend, specifications which list all aspects of equipment and assembly thereof, water source, water meter and/or point of connection, backflow prevention devices, pump station size, pump station location, design operating pressure and flow rate per zone, locations of pipe, controllers, valves, sprinklers, sleeves, gate valves, etc. The plans and specifications shall be prepared in accordance with Section 107 of the *Florida Building Code, Building*.

c. Sprinkler layout. Sprinkler layout may be modified to adjust for field conditions provided it complies with part VI, Section B, subsection 1 Sprinkler layout and spacing. Prior to final inspection, the contractor shall submit a letter or as-built drawing that reflects the modification to the authority with jurisdiction.

D. Definitions.

ABS Pipe. Acrylonitrile-butadiene-styrene black, semi-rigid, plastic pipe extruded to IPS. ABS pipe is in limited use in present day irrigation systems. Solvent weld fittings are used with this pipe (see ASTM D 1788).

Air Release Valve. A valve which will automatically release to the atmosphere accumulated small pockets of air from a pressurized pipeline. A small orifice is used to release air at low flow rates. Air release valves are normally required at all summits of mainline and sub-main pipelines in an irrigation system.

Anti-siphon Device. A safety device used to prevent back-flow of irrigation water to the water source by back-siphonage.

Application Rate. The average rate at which water is applied by an irrigation system, sometimes also called precipitation rate. Units are typically inches/hr or mm/hr.

Arc. The angle of coverage of a sprinkler in degrees from one side of throw to the other. A 90-degree arc would be a quarter-circle sprinkler.

Atmospheric Vacuum Breaker. An anti-siphon device which uses a floating seat to direct water flow. Water draining back from irrigation lines is directed to the atmosphere to protect the potable water supply.

Automatic Control Valve. A valve in a sprinkler system which is activated by an automatic controller by

C. Application uniformity. Irrigation application uniformity describes how evenly water is distributed within an irrigation zone. Irrigation system uniformity is the uniformity coefficient. Use application rates which avoid runoff and permit uniform water infiltration into the soil. Land slope, soil hydraulic properties, vegetative ground cover, and prevailing winds will be considered when application rates are specified. Sprinkler irrigation systems should be designed with the appropriate uniformity for the type of plant being grown and the type of soil found in that area. The general watering of different types of plants as one group without regard to their individual water requirements is to be avoided if at all possible. Different types of sprinklers with different application rates, i.e., spray heads versus rotor heads, shall not be combined on the same zone or circuit.

D. System zoning. The irrigation system should be divided into zones based on consideration of the following:

1. Available flow rate.
2. Cultural use of the area.
3. Type of vegetation irrigated, i.e., turf, shrubs, native plants, etc.
4. Type of sprinkler, i.e., sprinklers with matching precipitation rates.
5. Soil characteristics.

E. Sprinkler/emitter spacing and selection. Sprinkler/emitter spacing will be determined considering the irrigation requirements, hydraulic characteristics of the soil and device, and water quality with its effect on plant growth, sidewalks, buildings, and public access areas. When using square spacing, sprinklers should not be spaced farther apart than 55 percent of their manufacturer-specified diameters of coverage for prevailing wind speeds of 5 miles per hour (mph) or less. Spacing should not exceed 50 percent of sprinkler diameters of coverage for wind speeds of 5 to 10 mph, and 45 percent for prevailing wind speeds greater than 10 mph. When using triangular spacing, the above overlap percentages can be reduced by five percent. Water conservation will be emphasized by minimizing irrigation of non-vegetated areas. Micro irrigation systems should be designed using the Emission Uniformity concept. Space micro irrigation emitters to wet 100 percent of the root zone in turf areas and 50 percent of the root zone for shrubs and trees.

F. Pipelines. Pipelines will be sized to limit pressure variations so that the working pressure at all points in the irrigation system will be in the range required for uniform water application. Velocities will be kept to 5 feet (1524 mm) per second.

G. Wells.

1. Well diameters and depths are to be sized to correspond to the irrigation system demand. Refer to SCS

Code FL-642 and local water management district regulations.

2. Well location and depth shall be in compliance with applicable state, water management district and local codes.

H. Pumps.

1. Pump and motor combinations shall be capable of satisfying the total system demand without invading the service factor of the motor except during start-up and between zones.
2. Pumps shall be positioned with respect to the water surface in order to ensure that the net positive suction head required (NPSHr) for proper pump operation is achieved.
3. The pumping system shall be protected against the effects of the interruption of water flow.

I. Control valves.

1. Control valve size shall be based on the flow rate through the valve. Friction loss through the valve, an approved air gap separation, or a reduced pressure should not exceed 10 percent of the static mainline head.
2. Control systems using hydraulic communication between controller and valve(s) shall comply with the manufacturer's recommendations for maximum distance between controller and valve, both horizontally and vertically (elevation change).
3. The size of the electrical control wire shall be in accordance with the valve manufacturer's specifications; based on the solenoid in-rush amperage and the circuit length, considering the number of solenoids operating on the circuit. Minimum of #14 AWG single strand control wire shall be used on all systems, except individual, single lot residential systems.
4. Locate manually operated control valves so that they can be operated without wetting the operator.

J. Automatic irrigation controller. Automatic irrigation controllers must be UL approved and have an adequate number of stations and power output per station to accommodate the irrigation system design. The controller shall be capable of incorporating a rain shut-off device to override the irrigation cycle when adequate rainfall has occurred, as required by Section 373.62, *Florida Statutes*.

K. Chemical injection.

1. Chemical injection systems for the injection of fertilizer, pesticides, rust inhibitors, or any other injected substance will be located and sized according to the manufacturers' recommendations.
2. Injection systems will be located downstream of the applicable backflow prevention devices as required by Section 487.021, *Florida Statutes*; the Environ-

SCS Code 533: Pumping plant for water control.

SCS Code 642: Well.

PART IV: MATERIALS

A. PVC pipe and fittings.

1. PVC pipe should comply with one of the following standards ASTM D 1785, ASTM D 2241, AWWA C-900, or AWWA C-905. SDR-PR pipe shall have a minimum wall thickness as required by SDR-26. All pipe used with effluent water systems shall be designated for nonpotable use by either label or by the industry standard color purple.
2. All solvent-weld PVC fittings shall, at a minimum, meet the requirements of Schedule 40 as set forth in ASTM D 2466.
3. Threaded PVC pipe fittings shall meet the requirements of Schedule 40 as set forth in ASTM D 2464.
4. PVC gasketed fittings shall conform to ASTM D 3139. Gaskets shall conform to ASTM F 477.
5. PVC flexible pipe should be pressure rated as described in ASTM D 2740 with standard outside diameters compatible with PVC IPS solvent-weld fittings.
6. PVC cement should meet ASTM D 2564. PVC cleaner-type should meet ASTM F 656.

B. Ductile iron pipe and fittings.

1. Gasket fittings for iron pipe should be of materials and type compatible with the piping material being used.

C. Steel pipe and fittings.

1. All steel pipe shall be rated Schedule 40 or greater and be hot-dipped galvanized or black in accordance with ASTM 53.
2. Threaded fittings for steel pipe should be Schedule 40 malleable iron.

D. Polyethylene pipe.

1. Flexible swing joints shall be thick-walled with a minimum pressure rating of 75 psi (517 kPa) in accordance with ASTM D 2239.
2. Low pressure polyethylene pipe for microirrigation systems shall conform with ASAE S-435.
3. Use fittings manufactured specifically for the type and dimensions of polyethylene pipe used.

E. Sprinklers, spray heads, and emitters.

1. Select units and nozzles in accordance with the size of the area and the type of plant material being irrigated. Sprinklers must fit the area they are intended to water without excessive overspray onto anything but the lot individual landscaped surface. Intentional direct spray onto walkways, buildings, roadways, and drives is prohibited. All sprinklers used with effluent water systems shall be designated for non-

potable use by either label or by the industry standard color purple.

2. Use equipment that is protected from contamination and damage by use of seals, screens, and springs where site conditions present a potential for damage.
3. Support riser-mounted sprinklers to minimize movement of the riser resulting from the action of the sprinkler.
4. Swing joints, either flexible or rigid, shall be constructed to provide a leak-free connection between the sprinkler and lateral pipeline to allow movement in any direction and to prevent equipment damage.

F. Valves.

1. Valves must have a maximum working pressure rating equal to or greater than the maximum pressure of the system, but not less than 125 psi (861 kPa). This requirement may be waived for low mainline pressure systems [30 psi (207 kPa) or less]. All valves used with effluent water systems shall be designated for nonpotable use by either label or by the industry standard color purple.
2. Only valves that are constructed of materials designed for use with the water and soil conditions of the installation shall be used. Valves that are constructed from materials that will not be deteriorated by chemicals injected into the system shall be used on all chemical injection systems.

G. Valve boxes.

1. Valve boxes are to be constructed to withstand traffic loads common to the area in which they are installed. They should be sized to allow manual operation of the enclosed valves without excavation.
2. Each valve box should be permanently labeled to identify its contents. All valve boxes used with effluent water systems shall be designated for nonpotable use by either label or by the industry standard color purple.

H. Low voltage wiring.

1. All low voltage wire which is directly buried must be labeled for direct burial wire. Wire not labeled for direct burial must be installed in watertight conduits, and be UL listed TWN or THHN type wire as described in the NEC. All wire traveling under any hardscape or roadway must be installed within a pipe and sleeve.
2. The size of the electrical control wire shall be in accordance with the valve manufacturer's specifications, based on the solenoid in-rush amperage and the circuit length, considering the number of solenoids operating, on the circuit. Minimum of #14 AWG single strand control wire shall be used on all systems, except single lot individual residential systems.

APPENDIX F

3. Connections are to be made using UL approved devices specifically designed for direct burial. All splices shall be enclosed within a valve box.

I. Irrigation controllers.

1. All irrigation controllers shall be UL listed, conform to the provisions of the *National Electric Code* (NEC), and be properly grounded in accordance with manufacturer's recommendations. Equip solid state controls with surge suppressors on the primary and secondary wiring, except single lot residential systems.
2. The controller housing or enclosure shall protect the controller from the hazards of the environment in which it is installed.

The rain switch shall be placed on a stationary structure minimum of 5-foot (1524 mm) clearance from other outdoor equipment, free and clear of any tree canopy or other overhead obstructions, and above the height of the sprinkler coverage.

J. Pumps and wells.

1. Irrigation pump electrical control systems must conform to NEC and local building codes.
2. The pumping system shall be protected from the hazards of the environment in which it is installed.
3. Use electric motors with a nominal horsepower rating greater than the maximum horsepower requirement of the pump during normal operation. Motor shall have a service factor of at least 1.15.
4. Casings for drilled wells may be steel, reinforced plastic mortar, plastic, or fiberglass pipe. Only steel pipe casings shall be used in driven wells. Steel pipe must have a wall thickness equal to or greater than Schedule 40. See SCS code FL-642. Steel casings shall be equal to or exceed requirements of ASTM A 589.

K. Chemical injection equipment.

1. Chemical injection equipment must be constructed of materials capable of withstanding the potential corrosive effects of the chemicals being used. Equipment shall be used only for those chemicals for which it was intended as stated by the injection equipment manufacturer.

L. Filters and strainers.

1. Filtration equipment and strainers constructed of materials resistant to the potential corrosive and erosive effects of the water shall be used. They shall be sized to prevent the passage of foreign material that would obstruct the sprinkler/emitter outlets in accordance with the manufacturer's recommendations.

PART V: INSTALLATION

A. Pipe installation.

1. Pipe shall be installed at sufficient depth below ground to protect it from hazards such as vehicular traffic or routine occurrences which occur in the

normal use and maintenance of a property. Depths of cover shall meet or exceed SCS Code 430-DD, Water Conveyance, as follows:

a. Vehicle traffic areas.

Pipe Size (inches)	Depth of Cover (inches)
1/2 - 2 1/2	18
3 - 5	24
6 and larger	30

b. All areas except vehicle traffic:

Pipe Size (inches)	Depth of Cover (inches)
1/2 - 1 1/2	6
2 - 3	12
4 - 6	18
More than 6	24

2. Make all pipe joints and connections according to manufacturer's recommendations. Perform all solvent-weld connections in accordance with ASTM D 2855.
3. Minimum clearances shall be maintained between irrigation lines and other utilities. In no case shall one irrigation pipe rest upon another. Comingling or mixing of different types of pipe assemblies shall be prohibited.
4. Thrust blocks, or other approved method must be used on all gasketed PVC systems. They must be formed against a solid, hand-excavated trench wall undamaged by mechanical equipment. They shall be constructed of concrete, and the space between the pipe and trench shall be filled to the height of the outside diameter of the pipe. Size thrustblocks in accordance with ASAE S-376.1
5. The trench bottom must be uniform, free of debris, and of sufficient width to properly place pipe and support it over its entire length. Native excavated material may be used to backfill the pipe trench. However, the initial backfill material to 6" above the top of the pipe shall be free from rocks or stones larger than 1-inch in diameter. The final backfill material shall be free of rock or debris that is greater than 3" in diameter. At the time of placement, the moisture content of the material shall be such that the required degree of compaction can be obtained with the backfill method to be used. Blocking or mounding shall not be used to bring the pipe to final grade.
6. Pipe Sleeves must be used to protect pipes or wires installed under pavement or roadways or when position of irrigation pipes or wires conflict with pipes or appurtenances of other trades. Use pipe sleeves two pipe sizes larger than the carrier pipe or twice the diameter of the wire bundle to be placed under the paving or roadway and extending a minimum of 3 feet beyond the paved area or as required by the Florida Department of Transportation (FDOT). Use sleeve pipe with wall thickness at least equal to the thickness of schedule 40 or PR 160 pipe, whichever is thicker. Proper backfill and compaction procedures should be followed.

APPENDIX F

tion or modification of the system to meet field conditions. To pass this inspection, sprinkler/emitter spacing should be within ± 5 percent of the design spacing.

2. Pipe installation depth: All pipes in the system shall be installed to depths as previously described in this code.

Test all mainlines upstream of the zone valves as follows:

- a. Fill the completely installed pipeline slowly with water to expel air. Allow the pipe to sit full of water for 24 hours to dissolve remaining trapped air.
- b. Using a metering pump, elevate the water pressure to the maximum static supply pressure expected and hold there for a period of 2 hours, solvent-weld pipe connections shall have no leakage.
- c. For gasketed pipe main lines add water as needed to maintain the pressure. Record the amount of water added to the system over the 2-hour period.
- d. Use the following formulas to determine the maximum allowable leakage limit of gasketed pipe.

DUCTILE IRON:

$$L = \frac{SDP}{133,200}$$

PVC, GASKETED JOINT:

$$L = \frac{NDP}{7,400}$$

Where:

- L = allowable leakage (gph)
- N = number of joints,
- D = nominal diameter of pipe (inches),
- P = average test pressure (psi), and
- S = length of pipe (fi).

- e. When testing a system which contains metal-seated valves, an additional leakage per closed valve of 0.078 gph/inch of nominal valve size is allowed.

3. Open Trench Inspection: The trench at all joints and every transition in pipe size, will be open where open trench inspection is required.

C. Final inspection. When the work is complete the contractor shall request a final inspection.

1. Cross connection control and backflow prevention.
 - a. Public or domestic water systems: Check that an approved backflow prevention assembly is properly installed and functioning correctly. Review the location of the assembly to check that it is not creating a hazard to pedestrians or vehicular traffic.
 - b. Water systems other than public or domestic water systems: Check that the proper backflow prevention assemblies are provided.
 - c. All assemblies that can be, will be tested by a certified technician prior to being placed into service.
2. Sprinkler coverage testing.
 - a. All sprinklers must be adjusted to minimize overspray onto buildings and paved areas.
 - b. All sprinkler controls must be adjusted to minimize runoff of irrigated water.
 - c. All sprinklers must operate at their design radius of throw. Nozzle sizes and types called for in the system design must have been used.
 - d. Spray patterns must overlap as designed.
 - e. Sprinklers must be connected, as designed, to the appropriate zone.

D. Site restoration.

1. All existing landscaping, pavement, and grade of areas affected by work must be restored to original condition or to the satisfaction of the governing authority.

Verify that the pipeline trenches have been properly compacted to the densities required by the plans and specifications.

Florida Building Code – Plumbing, 5th Edition (2014)

Amendment to Section 604.3 and Table 604.4

Exceptions:

1. Blowout design water closets having a water consumption not greater than 3½ gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than 4½ gallons (17 L) per flushing cycle.
4. Service sinks.
5. Emergency showers.
6. All fixtures, fittings and appliances with U.S. Environmental Agency WaterSense ® (EPA) label.

TABLE 604.4
 MAXIMUM FLOW RATES AND CONSUMPTION
 FOR PLUMBING FIXTURES,
 AND FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory, private	2.2 1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head ^a	2.0 2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 0.5 gallon per flushing
Water closet	1.6 1.28 gallons per flushing cycle
Dishwasher (Residential) *	6.5 gallons per cycle or less (Energy Star/WaterSense Certified)
Dishwasher (Commercial)	Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for low temperature machines
Dishwasher (Under the counter machines commercial)	1.0 gallons per rack for high temperature machines and 1.7 gallons per rack for low temperature machines
Washing Machine *	Water factor of 8 or lower (Energy Star/WaterSense Certified) (c)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m,
 1 pound per square inch = 6.895 kPa.

- a. A hand-held shower spray is a shower head. *If installed
- b. Consumption tolerance shall be determined from referenced standards.
- c. Water factor in gallons per cycle per cubic foot



Broward County

Board of Rules and Appeals

One N. University Drive, Suite 3500-B, Plantation, Florida 33324

TL 954.765.4500 ♦ FX 954.765.4504

<http://www.broward.org/codeappeals>

BROWARD COUNTY LOCAL AMENDMENT Proposed Modification to the Florida Building Code

Per Section 553.73. Fla Stat

Name: Broward County, Board of Rules and Appeals, ATTN: J. DiPietro _____
Address: 1 North University Dr. Suite 3500B Plantation, FL 33324 _____
E-mail: jdipietro@broward.org _____
Phone: 954-765-4500 _____
Fax: 954-765-4504 _____
Code: 5th Edition (2014) FBC – Plumbing _____
Section #: 604 - Design of Building Water Distribution System, Table 604.4 _____

Please see attachment.

THIS PROPOSED MODIFICATION SHALL BE EFFECTIVE JUNE 30, 2015.

Respond to the following questions:

1. How is the local amendment more stringent than the minimum standards described in the FBC?

This Amendment exceeds minimum standards by reducing plumbing fixture water flow rates currently required by the Florida Building Code "Plumbing" thereby increasing water conservation standards. This proposed amendment will adopt U.S. Environmental Protection Agency (EPA) WaterSense Label as an Alternate for table 604.4.

2. Demonstrate or provide evidence or data that the geographical jurisdiction governed by the local governing body exhibits a local need to strengthen the FBC beyond the needs or regional variation addressed by the FBC.

Water conservation is an essential part of the Broward water supply plan and implementation of high efficiency plumbing requirements is supported by the Broward County Board of County Commissioners, the Broward League of Cities and the Broward Water Resources Task Force. The Biscayne Aquifer is the primary source of drinking water for all of Broward County and offers the lowest cost water supply for the region. However, concerns about future water availability resulted in the permanent restrictions on withdrawals from this Aquifer while saltwater intrusion limits withdrawals from two coastal well fields and threatens several others. Efforts to conserve water are essential to preserving the capacity of existing water sources while

reducing the need to develop alternative water supplies which will impose a substantial cost to rate payers.

3. Explain how the local need is addressed by the proposed local amendment.

This modification will help reduce the water demands on our Biscayne Aquifer while not creating a health or inconvenience problem for the residents of this area.

4. Explain how the local amendment is no more stringent than necessary to address the local need.

The local need of water conservation is very serious as mandated by the Broward Commission. The establishment of this amendment is only one of the means to help prevent a water shortage situation.

5. Are the additional requirements discriminatory against materials, products, or construction techniques of demonstrated capabilities?

Due to the advancement in technology by all Plumbing Fixture manufacturers and the need for additional water conservation, this amendment would have little to no recognizable impact on materials, products or construction developments.

6. Indicate whether or not additional requirements introduce a new subject not already addressed in the FBC.

This amendment is modifying existing verbiage of the Florida Building Code "Plumbing", therefore it does not address a new subject.

7. Include a fiscal impact statement which documents the costs and benefits of the proposed amendment. Criteria for the fiscal impact statement shall include a, b, and c:

- a) Impact to local government, relative to enforcement.
- b) Impact to property and building owners relative to cost of compliance.
- c) Impact to industry relative to the cost of compliance

- a) *No impact.*
- b) *This modification will reduce impact fees charged by Broward County.*
- c) *No impact.*

BROWARD BORA PUBLIC HEARING AND VOTE, 2015.

AMENDMENT EFFECTIVE DATE JUNE 30, 2015.

**SECTION 603
WATER SERVICE**

603.1 Size of water service pipe. The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The water service pipe shall be not less than 3/4 inch (19.1 mm) in diameter.

603.2 Separation of water service and building sewer. Water service pipe and the *building sewer* shall be separated by not less than 5 feet (1524 mm) of undisturbed or compacted earth.

Exceptions:

1. The required separation distance shall not apply where the bottom of the water service pipe within 5 feet (1524 mm) of the *sewer* is not less than 12 inches (305 mm) above the top of the highest point of the *sewer* and the pipe materials conform to Table 702.3.
2. Water service pipe is permitted to be located in the same trench with a *building sewer*, provided such *sewer* is constructed of materials listed in Table 702.2.
3. The required separation distance shall not apply where a water service pipe crosses a *sewer* pipe, provided the water service pipe is sleeved to a point not less than 5 feet (1524 mm) horizontally from the *sewer* pipe centerline on both sides of such crossing with pipe materials listed in Table 605.3, 702.2 or 702.3.

603.2.1 Water service near sources of pollution. Potable water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits (see Section 605.1 for soil and groundwater conditions).

**SECTION 604
DESIGN OF BUILDING WATER DISTRIBUTION SYSTEM**

604.1 General. The design of the water distribution system shall conform to *accepted engineering practice*. Methods utilized to determine pipe sizes shall be *approved*.

604.2 System interconnection. At the points of interconnection between the hot and cold water supply piping systems and the individual fixtures, appliances or devices, provisions shall be made to prevent flow between such piping systems.

604.3 Water distribution system design criteria. The water distribution system shall be designed, and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the fixture supply pipe outlets shall not be less than shown in Table 604.3. The minimum flow rate and flow pressure provided to fixtures and appliances not listed in Table 604.3 shall be in accordance with the manufacturer's installation instructions.

**TABLE 604.3
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA REQUIRED CAPACITY AT FIXTURE SUPPLY PIPE OUTLETS**

FIXTURE SUPPLY OUTLET SERVING	FLOW RATE* (gpm)	FLOW PRESSURE (psi)
Bathtub, balanced-pressure, thermostatic or combination balanced-pressure/thermo-static mixing valve	4	20
Bidet, thermostatic mixing valve	2	20
Combination fixture	4	8
Dishwasher, residential	2.75	8
Drinking fountain	0.75	8
Laundry tray	4	8
Lavatory	2	8
Shower	3	8
Shower, balanced-pressure, thermostatic or combination balanced-pressure/thermo-static mixing valve	3	20
Sillcock, hose bibb	5	8
Sink, residential	2.5	8
Sink, service	3	8
Urinal, valve	12	25
Water closet, blow out, flushometer valve	25	45
Water closet, flushometer tank	1.6	20
Water closet, siphonic, flushometer valve	25	35
Water closet, tank, close coupled	3	20
Water closet, tank, one piece	6	20

For SI: 1 pound per square inch = 6.895 kPa,
1 gallon per minute = 3.785 L/m.

a. For additional requirements for flow rates and quantities, see Section 604.4.

604.4 Maximum flow and water consumption. The maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4.

Exceptions:

1. Blowout design water closets having a water consumption not greater than 3 1/2 gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than 4 1/2 gallons (17 L) per flushing cycle.
4. Service sinks.
5. Emergency showers.
6. All fixtures, fittings and appliances with U.S. Environmental Agency WaterSense® (EPA) label.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION
FOR PLUMBING FIXTURES,
AND FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory, private	2.2 1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head ^a	2.0 2.5 1.5 gpm at 80 psi
Sink faucet	2.2 2.2 1.5 gpm at 60 psi
Urinal	1.0 0.5 gallon per flushing
Water closet	1.6 1.28 gallons per flushing cycle
Dishwasher (Residential) *	6.5 gallons per cycle or less (Energy Star/WaterSense Certified)
Dishwasher (Commercial)	Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for low temperature machines
Dishwasher (Under the counter machines commercial)	1.0 gallons per rack for high temperature machines and 1.7 gallons per rack for low temperature machines
Washing Machine *	Water factor of 8 or lower-(Energy Star/WaterSense Certified) (c)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head. *If installed

b. Consumption tolerance shall be determined from referenced standards.

c. Water factor in gallons per cycle per cubic foot

604.5 Size of fixture supply. The minimum size of a fixture supply pipe shall be as shown in Table 604.5. The fixture supply pipe shall terminate not more than 30 inches (762 mm) from the point of connection to the fixture. A reduced-size flexible water connector installed between the supply pipe and the fixture shall be of an *approved* type. The supply pipe shall extend to the floor or wall adjacent to the fixture. The minimum size of individual distribution lines utilized in gridded or parallel water distribution systems shall be as shown in Table 604.5.

604.6 Variable street pressures. Where street water main pressures fluctuate, the building water distribution system shall be designed for the minimum pressure available.

604.7 Inadequate water pressure. Wherever water pressure from the street main or other source of supply is insufficient to provide flow pressures at fixture outlets as required under Table 604.3, a water pressure booster system conforming to Section 606.5 shall be installed on the building water supply system.

604.8 Water pressure reducing valve or regulator. Where water pressure within a building exceeds 80 psi (552 kPa) static, an *approved* water-pressure reducing valve conforming to ASSE 1003 or CSA B356 with strainer shall be installed to reduce the pressure in the building water distribution piping to not greater than 80 psi (552 kPa) static.

Exception: Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 80 psi (552 kPa) or less at individual fixtures.

604.8.1 Valve design. The pressure-reducing valve shall be designed to remain open to permit uninterrupted water flow in case of valve failure.

604.8.2 Repair and removal. Water-pressure reducing valves, regulators and strainers shall be so constructed and installed as to permit repair or removal of parts without

breaking a pipeline or removing the valve and strainer from the pipeline.

TABLE 604.5
MINIMUM SIZES OF FIXTURE WATER SUPPLY PIPES

FIXTURE	MINIMUM PIPE SIZE (inch)
Bathtubs ^a (60" × 32" and smaller)	1/2
Bathtubs ^a (larger than 60" × 32")	1/2
Bidet	3/8
Combination sink and tray	1/2
Dishwasher, domestic ^a	1/2
Drinking fountain	3/8
Hose bibbs	1/2
Kitchen sink ^a	1/2
Laundry, 1, 2 or 3 compartments ^a	1/2
Lavatory	3/8
Shower, single head ^a	1/2
Sinks, flushing rim	3/4
Sinks, service	1/2
Urinal, flush tank	1/2
Urinal, flushometer valve	3/4
Wall hydrant	1/2
Water closet, flush tank	3/8
Water closet, flushometer valve	1
Water closet, flushometer tank	3/8
Water closet, one piece ^a	1/2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. Where the developed length of the distribution line is 60 feet or less, and the available pressure at the meter is 35 psi or greater, the minimum size of an individual distribution line supplied from a manifold and installed as part of a parallel water distribution system shall be one nominal tube size smaller than the sizes indicated.

604.9 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.

604.10 Gridded and parallel water distribution system manifolds. Hot water and cold water manifolds installed with gridded or parallel connected individual distribution lines to each fixture or fixture fitting shall be designed in accordance with Sections 604.10.1 through 604.10.3.

604.10.1 Manifold sizing. Hot water and cold water manifolds shall be sized in accordance with Table 604.10.1. The total gallons per minute is the demand of all outlets supplied.