Plumbing

Proposed Code Modifications

Glitch Modifications

This document created by the Florida Department of Business and Professional Regulation - 850-487-1824

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review: 19**

Total Mods for report: 19

Sub Code: Fuel Gas

Date Submitted	4/28/2013	**Section**	8	**Proponent**	John Farinelli
Chapter	8	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

To correct the language used to identify the specific code volumes adopted and referenced within the Florida Building Code, Fuel Gas Volume.

Rationale

To remove conflicts within the code and for consistency within the code and with other Florida Building Code Volumes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. Currently used under the 2010 FBC. no new requirements established.

Impact to building and property owners relative to cost of compliance with code

No impact. Currently used under the 2010 FBC. no new requirements established.

Impact to industry relative to the cost of compliance with code

No impact. Currently used under the 2010 FBC. no new requirements established.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Carried over from previous field tested code. Proven to be effective.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Carried over from previous field tested code. Proven to be effective.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Carried over from previous field tested code. Proven to be effective.

Does not degrade the effectiveness of the code

Carried over from previous field tested code. Proven to be effective.

Is the proposed code modification part of a prior code version? No

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

Florida Codes Florida Building Commission

c/o Florida Department of Business and Professional Regulation

Building Codes and Standards

1940 North Monroe Street

Tallahassee, Florida 32399.

Standard Referenced in code

reference number	Title	section number
FBC-B—2013 Florida Building Code, Building		
	101.1, 201.3, 301.14, 302.1, 302.2, 305.6, 306.6,	
	401.1.1, 412.6, 413.3, 413.3.1, 501.1, 501.3, 501.12, 501.15.4, 609.3, 614.2, 706.1, 706.3	
~~Chapter 13~~ FBC-EC - 2013 Florida Building Code, Energy Conservation		
	301.2	
FBC-M—2013 Florida Building Code, Mechanical	201.3, 301.10, 301.13, 304.11, 501.1, 614.2, 618.5, 621.1, 624.1, 631.2, 632.1, 703.1.2, 706.3.2	
FBC-P—2013 Florida Building Code, Plumbing		
	201.3, 301.6, 624.1.1, 624.2	
F~~R~~BC—2013 Florida Building Code, Residential ~~Code~~		
	703.2.1	

FFPC—2013 Florida Fire Prevention Code

201.3, 303.4, 401.2, 412.1, 412.6, 412.7, 412.7.3, 412.8, 413.1, 413.3, 413.3.1, 413.4, 413.8.2.5, 701.1, 701.2, 703.2, 703.2.2, 703.3.8, 703.4,703.5, 704.1.2, 704.3, 704.4, 706.2, 706.3.4, 706.3.5, 707.1, 707.2, 708.1.

Sub Code: Plumbing

Date Submitted	4/28/2013	**Section**	202	**Proponent**	John Farinelli
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Add section identification (1); add a comma after the word “Housing” in section (1); add sections 2 and 3 as contained in the statute; correct the referenced FAC Section.

Rationale

To be consistent with Florida Statute 381.0065-381.0067; to correct grammatical and typographical errors in the original proposed modification. F.S. 553.73(e).

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

Impact to building and property owners relative to cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Carried over from the previous, field tested and proven to be effective

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Carried over from the previous, field tested and proven to be effective

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

[ ] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[X] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

BEDROOM. A room that can be used for sleeping and that:

(1) a. For site-built dwellings has a minimum of 70 square feet of conditioned space;

b. For manufactured homes is constructed according to the standards of the United States Department of Housing, and Urban Development and has a minimum of 50 square feet of floor area;

c. Is located along an exterior wall;

d. Has a closet and a door or an entrance where a door could be reasonably installed; and

e. Has an emergency means of escape and rescue opening to the outside in accordance with the Florida Building Code.

(2). A room may not be considered a bedroom if it is used to access another room except a bathroom or closet.

(3)."Bedroom" does not include a hallway, bathroom, kitchen, living room, family room, dining room, den, breakfast nook, pantry, laundry room, sunroom, recreation room, media/video room, or exercise room.

This definition is specific to on-site sewage treatment system as regulated by Chapter 64E-6 FAC for onsite sewage treatment and Disposal System - See Section 701.2.

Date Submitted	4/28/2013	**Section**	202	**Proponent**	John Farinelli
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Remove the reference section identification “b” and replace with “c”; add reference section “d”; add definition (d) “Domestic Sewage”.

Rationale

To be consistent with F.S. 381.0065 and the onsite sewage treatment and disposal regulations as contained in 64E-6, Florida Administrative Code; to provide a more complete definition; to correct typographical errors in the original proposed modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Proposal simplifies enforcement by making definitions consistent with current Florida Statutes and onsite sewage regulations.

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Sewage contains pathogens, and treatment and disposal of it is necessary for the protection of health, safety and welfare.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposed language is consistent with Florida Statutes and Administrative Code and avoids confusion.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable to definitions.

Does not degrade the effectiveness of the code

By making the building code and the onsite sewage treatment code more consistent with each other the code system overall will become more effective.

Is the proposed code modification part of a prior code version? No

- [ ] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [X] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

GRAY WATER. As defined by 381.0065(2)(b c), ~~and~~ (d) and (e), *Florida Statutes*, "Graywater" means that part of domestic sewage that is not blackwater, including waste from the bath, lavatory, laundry, and sink, except kitchen sink waste. "Blackwater" means that part of domestic sewage carried off by toilets, urinals, and kitchen drains. ~~Waste discharged from lavatories, bathtubs, showers, clothes washers and laundry trays~~ "Domestic sewage" means human body waste and wastewater, including bath and toilet waste, residential laundry waste, residential kitchen waste, and other similar waste from appurtenances at a residence or establishment.

P6254

Date Submitted	4/29/2013	**Section**	309.3	**Proponent**	Joy Duperault
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Equivalent proposal for M301.16.1

Summary of Modification

Make P309.3 consistent with the FBC, Building by removal of "coastal A zone" based on No Affirmative Action on SP5271.

Rationale

Subsequent to approval by the Plumbing TAC, the Special Occupancy TAC recommended No Affirmative Action on SP5271 (which would have recognized Coastal A Zone only where delineated). To be consistent, "coastal A zones" should be removed from this section. Note that under the Building Code, by reference to ASCE 24, Coastal A Zones are treated like Coastal High Hazard Areas if a location is determined to be subject to waves between 1.5 and 3 ft.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change because consistency with FBC is restored.

Impact to building and property owners relative to cost of compliance with code

No change because consistency with FBC is restored.

Impact to industry relative to the cost of compliance with code

No change because consistency with FBC is restored.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

No change because consistency with FBC is restored.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

No change because consistency with FBC is restored.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No change because consistency with FBC is restored.

Does not degrade the effectiveness of the code

No change because consistency with FBC is restored.

Is the proposed code modification part of a prior code version? No

- [ ] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P309.3 Coastal high hazard areas ~~and coastal A zones~~. Structures located in coastal high hazard areas and ~~coastal A zones~~ shall meet the requirements of Section 309.2. The plumbing systems, pipes and fixtures shall not be mounted on or penetrate through walls intended to break away under flood loads.

Date Submitted	4/5/2013	**Section**	312.2	**Proponent**	Gary Kozan
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-R Section P2503.5.1 Mod #6050

Summary of Modification

Revises drainage testing to 5-foot head of water

Rationale

5-foot head testing has been permitted in most of the state since the '50's, and was formally adopted statewide in 2001 as a Florida-specific amendment. This is a proven method that must be retained to avoid massive conflicts in the field. A similar change has been proposed to the 2013 IRC code cycle, with hearings set for April 21st.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - 5-foot head tests have a proven track record

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - a 5-foot head allows for a visual verification of the water-tightness of the system, without the need for ladders or "shaking the stack"

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No

Does not degrade the effectiveness of the code

No - maintains the code requirements currently in force

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

312.2 Drainage and vent water test.

A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a ~~10~~ 5-foot (3048 mm) head of water. In testing successive sections, at least the upper ~~10~~ 5 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost ~~10~~ 5 feet (3048 mm) of the system, shall have been submitted to a test of less than a ~~10~~ 5-foot (3048 mm) head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

Date Submitted	4/5/2013	**Section**	312.6	**Proponent**	Gary Kozan
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-R - Section 2503.4 Mod #6052

Summary of Modification

Revises sewer testing requirements

Rationale

This maintains the current requirements for testing of building sewers, that were formally adopted statewide in 2001 as a Florida-specific amendment. This is a proven method that must be retained to avoid massive conflicts in the field. A similar change was submitted to the 2013 IRC code cycle, with hearings set for April 21st.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - this method of sewer testing has been used in Florida since 2001. It is also the identical language referenced in the Uniform Plumbing Code, which is used in a large portion of the United States

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - provides a more streamlined method for sewer testing

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

No - maintains the code requirements currently in force

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

312.6 Gravity sewer test.

Gravity *sewer* tests shall consist of plugging the end of the *building sewer* at the point of connection with the *public sewer,* filling the *building sewer* with water to the highest point thereof.~~, testing with not less than a 10-foot (3048 mm) head of water and maintaining such pressure for 15 minutes.~~ The building sewer shall be watertight at all points.

Date Submitted	4/28/2013	**Section**	403.1.3.2	**Proponent**	John Farinelli
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

To remove a conflict within the code and to eliminate redundancy.

Rationale

In addition to the method of calculating occupant loads as indicated in Florida Plumbing Code Section 403.1.3.2 conflicting with the occupancy calculation methods prescribed in Florida Building Code Section 1004, the required method of calculating occupant loads is already addressed in Florida Plumbing Code Section 403.1.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Does not apply

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Does not apply

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate

Does not degrade the effectiveness of the code

Does not degrade

Is the proposed code modification part of a prior code version? No

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

403.1.3.2 Reserved. ~~Occupancy content calculation~~. ~~The occupancy content of a building, which determines the number of water closets required for men, shall be calculated using the square footage per person requirements established by the *Florida Building Code, Building*.~~

Date Submitted	4/28/2013	**Section**	403.1.3	**Proponent**	John Farinelli
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Remove the existing definition of a historic building and replace with the definition contained in the Florida Building Code, Existing Building Volume, Section 1102.

Rationale

To remove a conflict with and for consistency with the definition contained in the Florida Building Code, Existing Building Volume, Section 1102.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. Currently used under the 2010 FBC. No new requirements being established.

Impact to building and property owners relative to cost of compliance with code

No impact. Currently used under the 2010 FBC. No new requirements being established.

Impact to industry relative to the cost of compliance with code

No impact. Currently used under the 2010 FBC. No new requirements being established.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Carried over from previous field tested code. Proven to be effective.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Carried over from previous field tested code. Proven to be effective.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Carried over from previous field tested code. Proven to be effective.

Does not degrade the effectiveness of the code

Carried over from previous field tested code. Proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Consistent with FS with regard to Potty Parity and to also implement FBC approved plan for 2013 code.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

403.1.3.1 Definitions.

3. Historic building. ~~A building which is (a) listed on the National Register of Historic Places; (b) listed on the State Register of Historic Places; (c) listed on a municipal register of historic property, designated according to localordinance; or (d) included in a district which is listed on a municipal, state or national register of historic property and which has been determined to contribute to the historicsignificanceof the district.~~ For the purposes of this section, a historic building is:

1. Individually listed in the National Register of Historic Places; or

2. A contributing resource within a National Register of Historic Places listed district; or

3. Designated as historic property under an official municipal, county, special district or state designation, law, ordinance or resolution either individually or as a contributing property in a district, provided the local program making the designation is approved by the Department of the Interior (the Florida state historic preservation officer maintains a list of approved local programs); or

4. Determined eligible by the Florida State Historic Preservation Officer for listing in the National Register of Historic Places, either individually or as a contributing property in a district.

Date Submitted	4/5/2013	**Section**	504.7	**Proponent**	Gary Kozan
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-R - Section 2801.5 Mod #6054

Summary of Modification

specifies the locations where water heater pans are required

Rationale

This is the code language currently in force statewide since 2001. It specifies precisely where water heater pans are required. This language must be retained to avoid massive conflicts in the field.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - spells out precisely where water heater pans are required

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - spells out precisely where water heater pans are required

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

504.7 Required pan.

Where a storage tank-type water heater or a hot water storage tank is installed ~~in a location where water leakage from the tank will cause damage~~ above the ground floor space, in attics or ceiling areas, or within the habitable space, the tank shall be installed in a galvanized steel pan having a material thickness of not less than 0.0236 inch (0.6010mm) (No. 24 gage), or other pans approved for such use.

Date Submitted	4/5/2013	**Section**	605.2.1	**Proponent**	Gary Kozan
Chapter	6	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

IRC Section 2905.2 Mod #6059

Summary of Modification

Adds new "lead-free" requirements to comply with changes to the federal Safe Water Drinking Act

Rationale

Effective January 4, 2014, the federal Safe Water Drinking Act makes it illegal to install products in drinking water applications with a lead content above 0.25%. This particular code change was approved last year for inclusion into the 2015 International Plumbing Code, which will be the basis for the 2016 FBC. Although federal law supersedes state law, accelerating the adoption of this proposal into the 2013 FBC will help make manufacturers, installers, and regulators aware of this important new change, and avoid potential conflicts in the field.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

brings state law in line with federal law

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none - must still comply with federal law

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

yes - helps improve compliance with federal law

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

yes - limits the amount of lead in drinking water components IAW federal law

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version? No

☐ (a.) Conflicts within the updated code;

☐ (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

☐ (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

☐ (d.) Equivalency of standards;

☒ (e.) Changes to or inconsistencies with federal or state law;

☐ (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

Add new text as follows:

605.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets, and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372 and shall have a weighted average lead content of 0.25 percent lead or less.

Add new standard to Chapter 14 as follows:

NSF

372-2010 Drinking Water System Comnponents - Lead Content

Date Submitted	4/5/2013	**Section**	607.1	**Proponent**	Gary Kozan
Chapter	6	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

permits piping only cold water to certain handwashing lavs

Rationale

This reflects the current Florida-specific amendment since2001, which permits handwashing lavs to be piped with cold water only, except where required by law. This exempts many small nonresidential occupancies from the expense of hot or tempered water for handwashing.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

saves many building owners the expense of providing hot water

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

yes - tap water in Florida is tepid enough to wash hands without warming

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

yes - continues the current code provisions

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

607.1 Where required.

In residential *occupancies, hot water* shall be supplied to plumbing fixtures and equipment utilized for bathing, washing, culinary purposes, cleansing, laundry or building maintenance. In nonresidential *occupancies, hot water* shall be supplied for culinary purposes, cleansing, laundry or building maintenance purposes. In nonresidential *occupancies, hot water* or *tempered water* shall be supplied for bathing and washing purposes. In nonresidential *occupancies*, cold water only shall be permitted to be supplied to all handwashing fixtures except where *hot water* or *tempered water* is required by law.

Date Submitted	4/27/2013	**Section**	1	**Proponent**	Jack Glenn
Chapter	Appendix F	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Re-consideration of the adoption of the Florida Specific Amendment to the Florida Building Code - Plumbing that provides uniform guidelines for the installation of irrigation systems.

Rationale

This is a Florida Specific Amendment that was not submitted during the regular code cycle and is helpful for uniform enforcement around the state by those local jurisdiction who wish to use the guidelines.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No fiscal impact

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

provides for standardization of irrigation code

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

provides for standardization of irrigation code

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

does not discriminate

Does not degrade the effectiveness of the code

does not degrade the code

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

☐ (a.) Conflicts within the updated code;

☐ (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

☒ (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

☐ (d.) Equivalency of standards;

☐ (e.) Changes to or inconsistencies with federal or state law;

☐ (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

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 multiple-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 106 of the Florida Building Code, Building.

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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 submain 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 way of hydraulic or electrical control lines and controls a single device or multiple devices.

Automatic System. An irrigation system which operates following a preset program entered into an automatic controller.

Backflow Prevention Device. An approved safety device used to prevent pollution or contamination of the irrigation water supply due to backflow from the irrigation system.

Belled (Pipe). Pipe which is enlarged at one end so that the spigot end of another length of pipe can be inserted into it during the assembly of a pipeline.

Block (of sprinklers). A group of sprinklers controlled by one valve. Also called zones or subunits.

Block System. An irrigation system in which several groups of sprinklers are controlled by one valve for each group.

Bubbler Irrigation. The application of water to the soil surface or a container as a small stream or fountain. Bubbler emitter discharge rates are greater than the 0.5 to 2 gph characteristic of drip emitters, but generally less than 60 gph.

Check Valve. A valve which permits water to flow in one direction only.

Chemical Water Treatment. The addition of chemicals to water to make it acceptable for use in irrigation systems

Chemigation. The application of water soluble chemicals by mixing or injecting with the water applied through an irrigation system.

Contractor. Any person who engages in the fabrication and installation of any type of irrigation system on a contractual basis in accordance with all stipulations receiving his compensation.

Control Lines. Hydraulic or electrical lines which carry signals (to open and close the valves) from the controller to the automatic valves.

Controller. The timing mechanism and its mounting box. The controller signals the automatic valves to open and close on a pre-set program or based on sensor readings.

Coverage. Refers to the way water is applied to an area.

Cycle. Refers to one complete run of a controller through all programmed controller stations.

Demand (or irrigation demand). Refers to the irrigation requirements of the irrigated area. Demand primarily depends on the type of crop, stage of growth, and climatic factors.

Design Area. The specific land area to which water is to be applied by an irrigation system.

Design Emission Uniformity. An estimate of the uniformity of water application with an irrigation system.

Design Pressure. The pressure at which the irrigation system or certain components are designed to operate. The irrigation system design pressure is that measured at the pump discharge or entrance to the system if there is no pump, and a zone design pressure is the average operating pressure of all emitters within that zone.

Direct Burial Wire. Plastic-coated single-strand copper wire for use as control line for electric valves.

Discharge Rate. The instantaneous flow rate of an individual sprinkler, emitter, or other water emitting device, or a unit length of line-source micro irrigation tubing. Also, the flow rate from a pumping system.

Double Check Valve. An approved assembly of two single, independently-acting check valves with test ports to permit independent testing of each check valve.

Drain Valve. A valve used to drain water from a line. The valve may be manually or automatically operated.

Drip Irrigation. The precise low-rate application of water to or beneath the soil surface near or directly into the plant root zone. Applications normally occur as small streams, discrete or continuous drops, in the range of 0.5 to 2.0 gph.

Effluent water. Also referred to as reclaimed or gray water is wastewater which has been treated per Florida Statute, §403.086 and is suitable for use as a water supply for irrigation systems.

Emitters. Devices which are used to control the discharge of irrigation water from lateral pipes. This term is primarily used to refer to the low flow rate devices used in micro irrigation systems.

Fertigation. The application of soluble fertilizers with the water applied through an irrigation system.

Filtration System. The assembly of physical components used to remove suspended solids from irrigation water. These include both pressure and gravity type devices, such as settling basins, screens, media filters, and centrifugal force units (vortex sand separators).

Flexible Swing Joint. A flexible connection between the lateral pipe and the sprinkler which allows the sprinkler to move when force is applied to it.

Flow Meters. Devices used to measure the volume of flow of water (typically in gallons), or flow rates (typically in gpm), and to provide data on system usage.

Gauge (Wire). Standard specification for wire size. The larger the gauge number, the smaller the wire diameter.

Head. A sprinkler head. Sometimes used interchangeably with and in conjunction with "Sprinkler."

Infiltration Rate. The rate of water flow across the surface of the soil and into the soil profile. Units are usually inches/hr.

Irrigation. Application of water by artificial means, that is, means other than natural precipitation. Irrigation is practiced to supply crop water requirements, leach salts, apply chemicals, and for environmental control including crop cooling and freeze protection.

Irrigation Water Requirement or Irrigation Requirement. The quantity of water that is required for crop production, exclusive of effective rainfall.

Landscape. Refers to any and all areas which are ornamentally planted, including but not limited to turf, ground covers, flowers, shrubs, trees, and similar plant materials as opposed to agricultural crops grown and harvested for monetary return.

Lateral. The water delivery pipeline that supplies water to the emitters or sprinklers from a manifold or header pipeline downstream of the control valve.

Line-Source Emitters. Lateral pipelines which are porous or contain closely-spaced perforations so that water is discharged as a continuous band or in overlapping patterns rather than discrete widely-spaced points along the pipeline length.

Looped System. A piping system which allows more than one path for water to flow from the supply to the emitters or sprinklers.

Mainline. A pipeline which carries water from the control station to submains or to manifolds or header pipelines of the water distribution system.

Manifold. The water delivery pipeline that conveys water from the main or submain pipelines to the laterals. Also sometimes called a header pipeline.

Manual System. A system in which control valves are manually operated rather than operated by automatic controls.

Meter Box. A concrete or plastic box buried flush to grade which houses flow (water) meters or other components.

Microirrigation. The frequent application of small quantities of water directly on or below the soil surface, usually as discrete drops, tiny streams, or miniature sprays through emitters placed along the water delivery pipes (laterals). Microirrigation encompasses a number of methods or concepts, including drip, subsurface, bubbler, and spray irrigation. Previously known as trickle irrigation.

Overlap. The amount one sprinkler pattern overlaps another one when installed in a pattern. Expressed as a percentage of the diameter of coverage.

PE Pipe. Flexible polyethylene pipe for use in irrigation systems, normally manufactured with carbon black for resistance to degradation by ultraviolet radiation.

Potable Water. Water which is suitable in quality for human consumption and meets the requirements of the Health Authority having jurisdiction.

Pressure Relief Valve. A valve which will open and discharge to atmosphere when the pressure in a pipeline or pressure vessel exceeds a pre-set point to relieve the high-pressure condition.

Pressure Vacuum Breaker. A backflow prevention device which includes a spring-loaded check valve and a spring-loaded vacuum breaker to prevent the backflow of irrigation system water to the water source.

Pumping Station. The pump or pumps that provide water to an irrigation system, together with all of the necessary accessories such as bases or foundations, sumps, screens, valves, motor controls, safety devices, shelters and fences.

PVC Pipe. Polyvinyl chloride plastic pipe made in standard thermoplastic pipe dimension ratios and pressure rated for water. Manufactured in accordance with AWWA C-900 or ASTM D-2241.

Rain Shut off Device. A calibrated device that is designed to detect rainfall and override the irrigation cycle of the sprinkler system when a predetermined amount of rain fall has occurred.

Riser. A threaded pipe to which sprinklers or other emitters are attached for above-ground placement.

Sleeve. A pipe used to enclose other pipes, wire, or tubing; usually under pavement, sidewalks, or planters.

Spacing. The distance between sprinklers or other emitters.

Spray Irrigation. The micro irrigation application of water to the soil or plant surface by low flow rate sprays or mists.

Sprinkler. The sprinkler head. Sometimes called “Head.”

Supply (Water Source). The origin of the water used in the irrigation system.

Swing Joint. A ridged connection between the lateral pipe and the sprinkler, utilizing multiple ells and nipples, which allows the sprinkler to move when force is applied to it.

Tubing. Generally used to refer to flexible plastic hydraulic control lines which are usually constructed of PE or PVC.

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PART II — DESIGN CRITERIA

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A. Design defined. Within the scope of this code, irrigation system design is defined as the science and art of properly selecting and applying all components within the system.

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B. Water supply.

1. The water source shall be adequate from the stand-point of volume, flow rate, pressure, and quality to meet the irrigation requirements of the area to be irrigated, as well as other demands, if any, both at the time the system is designed and for the expected life of the system.

2. If the water source is effluent, it shall meet the advanced waste treatment standard as set forth in Florida Statute §403.086(4) as well as any other standard as set forth by the controlling governmental agency.

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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 vs. rotor heads, shall not be combined on the same zone or circuit.

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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.

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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. Microirrigation systems should be designed using the Emission Uniformity concept. Space microirrigation emitters to wet 100 percent of the root zone in turf areas and 50 percent of the root zone for shrubs and trees.

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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.

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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.

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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.

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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 Florida Statutes, Section 373.62.

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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 Florida Statutes, Section 487.021 and 487.055; the Environmental Protection Agency (EPA); Pesticide Regulation Notice 87-1; or other applicable codes.

3. If an irrigation water supply is also used for human consumption, an air gap separation or an approved reduced pressure principal backflow prevention device is required.

L. Backflow prevention methods. Provide backflow prevention assemblies at all cross connections with all water supplies in accordance with county, municipal or other applicable codes to determine acceptable backflow prevention assembly types and installation procedures for a given application. In the event of conflicting regulation provide the assembly type which gives the highest degree of protection.

1. Irrigation systems into which chemicals are injected shall conform to Florida state law (Florida Statutes 487.021 and 487.055) and Environmental Protection Agency Pesticide Regulation Notice 87-1, which requires backflow prevention regulations to be printed on the chemical label.

2. For municipal water supplies, chemical injection equipment must be separated from the water supply by an approved air gap separation or a reduced pressure principle assembly that is approved by the Foundation for CCC and the Hydraulic Research Institute. The equipment must also comply with ASSE 1013 to protect the water supply from back-siphonage and back-pressure.

3. For other water supplies, Florida State law, EPA regulations, or other applicable local codes must be followed. In the absence of legal guidelines at least a PVB should be used.

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PART III — STANDARDS

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1. American Society of Agricultural Engineers (ASAE) Standards:

ASAE S330.1: Procedure for sprinkler distribution testing for research purposes.

ASAE S376.1: Design, installation, and performance of underground thermoplastic irrigation pipelines.

ASAE S397.1: Electrical service and equipment for irrigation.

ASAE S435: Drip/Trickle Polyethylene Pipe used for irrigation laterals.

ASAE S398.1: Procedure for sprinkler testing and performance reporting.

ASAE S339: Uniform classification for water hardness.

ASAE S394: Specifications for irrigation hose and couplings used with self-propelled, hose-drag agricultural irrigation system.

ASAE EP400.1: Designing and constructing irrigation wells.

ASAE EP405: Design, installation, and performance of trickle irrigation systems.

ASAE EP409: Safety devices for applying liquid chemicals through irrigation systems.

2. ASTM International Standards:

ASTM D 2241: Poly (Vinyl Chloride) (PVC) Plastic pipe (SDR-PR).

ASTM D 2239: Specification for polyethylene (PE) plastic pipe (SDR-PR).

ASTM D 2466: Specification for socket-type poly (vinyl chloride) (PVC) and chlorinated poly (vinyl chloride) (CPVC) plastic pipe fittings, Schedule 40.

ASTM D 2855: Standard recommended practice for making solvent cemented joints with polyvinyl chloride pipe and fittings.

ASTM D 3139: Specification for joints for plastic pressure pipes using flexible elastomeric seals.

ASTM F 477: Specification for elastomeric seals (gaskets for joining plastic pipe).

3. American Water Works Association (AWWA) standards:

AWWA C-900: PVC pipe standards and specifications

4. American Society of Sanitary Engineers (ASSE) Standards:

ASSE 1001: Pipe applied atmospheric type vacuum breakers.

ASSE 1013: Reduced pressure principle backflow preventers.

ASSE 1015: Double check valve type back pressure backflow preventers.

ASSE 1020: Vacuum breakers, anti-siphon, pressure type.

ASSE 1024: Dual check valve type backflow preventers.

5. Hydraulic Institute Standards, 14th Edition

6. Standards and Specifications For Turf and Landscape Irrigation Systems Florida Irrigation Society (FIS) Standards

7. Soil Conservation Service (SCS) Field Office Technical Guide, Section IV-A — Cropland Codes:

SCS Code 430-DD: Irrigation water conveyance, underground, plastic pipeline.

SCS Code 430-EE: Irrigation water conveyance. Low pressure, underground, plastic pipeline.

SCS Code 430-FF: Irrigation water conveyance, steel pipeline.

SOS Code 441-1: Irrigation system, trickle.

SCS Code 442: Irrigation system sprinkler.

SCS Code 449: Irrigation water management.

SCS Code 533: Pumping plant for water control.

SCS Code 642: Well.

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PART IV: MATERIALS

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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 firings 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.

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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.

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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.

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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 micro-irrigation systems shall conform with ASAE S-435.

3. Use fittings manufactured specifically for the type and dimensions of polyethylene pipe used.

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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.

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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 non-potable 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.

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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.

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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 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.

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.

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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.

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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.

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PART V: INSTALLATION

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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.

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Pipe Size (inches)	Depth of Cover (inches)
1/2 – 2 1/2	18 - 24
3 - 5	24 - 30
6 and larger	30 - 36

-

b. Nontraffic and noncultivated areas.

-

Pipe Size (inches)	Depth of Cover (inches)
1/2 – 1 1/4	6 – 12
1 1/2 - 2	12 – 18
1/2 - 3	18 - 24
4 and larger	24 - 36

-

c. Residential single lot installations only.

-

Pipe Size (inches)	Depth of Cover* (inches)
1/2 - 1	4 - 6
1 1/4 - 1 1/2	8 – 12
2 - 2 1/2	12 – 18
3 and larger	24

* Except in areas where more than one lot is connected together, controlled, or connected through a master system then the depths in Chart B shall apply.

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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 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 shall be free from rocks or stones larger than 1-inch 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. 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.

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B. Control valve installation.

1. Valve installation shall allow enough clearance for proper operation and maintenance. Where valves are installed underground, they shall be provided with a valve box with cover extending from grade to the body of the valve. The top of the valve body should have a minimum of 6 inches (152 mm) of cover in nontraffic and noncultivated areas and 18 inches (457 mm) of cover in traffic areas. If an automatic valve is installed under each sprinkler, then the valve box may be omitted.

2. Install valve boxes so that they do not rest on the pipe, the box cover does not conflict with the valve stem or interfere with valve operation, they are flush with the ground surface and do not present a tripping hazard or interfere with routine maintenance of the landscape.

3. Install quick coupling valves on swing joints or flexible pipe with the top of the valve at ground level.

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Any above-ground manually-operated valves on nonpotable water systems will be adequately identified with distinctive purple colored paint. Do not provide hose connections on irrigation systems that utilize nonpotable water supplies.

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C. Sprinkler installation.

1. On flat landscaped areas, install sprinklers plumb. In areas where they are installed on slopes, sprinklers may be tilted as required to prevent erosion. Sprinklers should be adjusted to avoid unnecessary discharge on pavements and structures. Adjust sprinklers so they do not water on roads.

2. Provide a minimum separation of 4 inches (102 mm) between sprinklers and pavement. Provide a minimum separation of 12 inches (305 mm) between sprinklers and buildings and other vertical structures. Piping must be thoroughly flushed before installation of sprinkler nozzles. Surface mounted and pop-up heads shall be installed on

swing joints, flexible pipe, or polyethylene (PE) nipples. Above-ground (riser mounted) sprinklers shall be mounted on Schedule 40 PVC or steel pipe and be effectively stabilized.

D. Pump installation.

1. Install pumps as per the manufacturer's recommendations. Set pumps plumb and secure to a firm concrete base. There should be no strain or distortion on the pipe and fittings. Pipe and fittings should be supported to avoid placing undue strain on the pump. Steel pipe should be used on pumps 5 horsepower (hp) or larger whenever practical.

2. Pumps must be installed in a manner to avoid loss of prime. Install suction line to prevent the accumulation of air pockets. All connections and reductions in suction pipe sizes should be designed to avoid causing air pockets and cavitation.

3. Pumps must be located to facilitate service and ease of removal. Appropriate fittings should be provided to allow the pump to readily be primed, serviced, and disconnected. Provide an enclosure of adequate size and strength, with proper ventilation, to protect the pump from the elements (except residential systems).

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E. Low voltage wire installation.

1. Install low voltage wire (30 volts or less) with a minimum depth of cover of 12 inches (305 mm). Provide a sufficient length of wire at each connection to allow for thermal expansion/shrinkage. As a minimum, provide a 12-inch (305 mm) diameter loop at all splices and connections. Terminations at valves will have 24 inches (610 mm) minimum free wire.

2. Install all above-ground wire runs and wire entries into buildings in electrical conduit. Provide common wires with a different color than the power wires (white shall be used for common wires). Connections are to be made using UL approved devices specifically designed for direct burial. All splices shall be enclosed within a valve box.

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F. Hydraulic control tubing.

1. For hydraulic control systems, use a water supply that is filtered and free of deleterious materials, as defined by the hydraulic control system manufacturer. Install a backflow prevention device where the hydraulic control system is connected to potable water supplies.

2. Install tubing in trenches freely and spaced so that it will not rub against pipe, fittings, or other objects that could score the tubing, and with a minimum 12-inch (305 mm) diameter loop at all turns and connections. Provide a minimum depth of cover of 12 inches (305 mm).

3. Connect tubing with couplings and collars recommended by the tubing manufacturer. All splices shall be made in valve boxes. Prefill tubing with water, expelling entrapped air and testing for leaks prior to installation.

Install exposed tubing in a protective conduit manufactured from Schedule 40 UV protected PVC or electrical conduit.

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PART VI: TESTING & INSPECTIONS

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A. Purpose. All materials and installations covered by the Irrigation Code shall be inspected by the governing agency to verify compliance with the Irrigation Code.

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B. Rough inspections. Rough inspections will be performed throughout the duration of the installation. These inspections will be made by the governing agency to ensure that the installation is in compliance with the design intent, specifications, and the Irrigation Codes. Inspections will be made on the following items at the discretion of the governing agency:

1. Sprinkler layout and spacing: This inspection will verify that the irrigation system design is accurately installed in the field. It will also provide for alteration 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.

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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.

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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).

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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.

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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.

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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.

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

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 multiple-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 106 of the Florida Building Code, Building.

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 submain 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 way of hydraulic or electrical control lines and controls a single device or multiple devices.
Automatic System. An irrigation system which operates following a preset program entered into an automatic controller.
Backflow Prevention Device. An approved safety device used to prevent pollution or contamination of the irrigation water supply due to backflow from the irrigation system.
Belled (Pipe). Pipe which is enlarged at one end so that the spigot end of another length of pipe can be inserted into it during the assembly of a pipeline.
Block (of sprinklers). A group of sprinklers controlled by one valve. Also called zones or subunits.
Block System. An irrigation system in which several groups of sprinklers are controlled by one valve for each group.
Bubbler Irrigation. The application of water to the soil surface or a container as a small stream or fountain. Bubbler emitter discharge rates are greater than the 0.5 to 2 gph characteristic of drip emitters, but generally less than 60 gph.
Check Valve. A valve which permits water to flow in one direction only.
Chemical Water Treatment. The addition of chemicals to water to make it acceptable for use in irrigation systems
Chemigation. The application of water soluble chemicals by mixing or injecting with the water applied through an irrigation system.
Contractor. Any person who engages in the fabrication and installation of any type of irrigation system on a contractual basis in accordance with all stipulations receiving his compensation.
Control Lines. Hydraulic or electrical lines which carry signals (to open and close the valves) from the controller to the automatic valves.
Controller. The timing mechanism and its mounting box. The controller signals the automatic valves to open and close on a pre-set program or based on sensor readings.
Coverage. Refers to the way water is applied to an area.
Cycle. Refers to one complete run of a controller through all programmed controller stations.
Demand (or irrigation demand). Refers to the irrigation requirements of the irrigated area. Demand primarily depends on the type of crop, stage of growth, and climatic factors.
Design Area. The specific land area to which water is to be applied by an irrigation system.
Design Emission Uniformity. An estimate of the uniformity of water application with an irrigation system.
Design Pressure. The pressure at which the irrigation system or certain components are designed to operate. The irrigation system design pressure is that measured at the pump discharge or entrance to the system if there is no pump, and a zone design pressure is the average operating pressure of all emitters within that zone.
Direct Burial Wire. Plastic-coated single-strand copper wire for use as control line for electric valves.
Discharge Rate. The instantaneous flow rate of an individual sprinkler, emitter, or other water emitting device, or a unit length of line-source micro irrigation tubing. Also, the flow rate from a pumping system.
Double Check Valve. An approved assembly of two single, independently-acting check valves with test ports to permit independent testing of each check valve.
Drain Valve. A valve used to drain water from a line. The valve may be manually or automatically operated.
Drip Irrigation. The precise low-rate application of water to or beneath the soil surface near or directly into the plant root zone. Applications normally occur as small streams, discrete or continuous drops, in the range of 0.5 to 2.0 gph.
Effluent water. Also referred to as reclaimed or gray water is wastewater which has been treated per Florida Statute, §403.086 and is suitable for use as a water supply for irrigation systems.
Emitters. Devices which are used to control the discharge of irrigation water from lateral pipes. This term is primarily used to refer to the low flow rate devices used in micro irrigation systems.
Fertigation. The application of soluble fertilizers with the water applied through an irrigation system.
Filtration System. The assembly of physical components used to remove suspended solids from irrigation water. These include both pressure and gravity type devices, such as settling basins, screens, media filters, and centrifugal force units (vortex sand separators).
Flexible Swing Joint. A flexible connection between the lateral pipe and the sprinkler which allows the sprinkler to move when force is applied to it.
Flow Meters. Devices used to measure the volume of flow of water (typically in gallons), or flow rates (typically in gpm), and to provide data on system usage.
Gauge (Wire). Standard specification for wire size. The larger the gauge number, the smaller the wire diameter.
Head. A sprinkler head. Sometimes used interchangeably with and in conjunction with "Sprinkler."
Infiltration Rate. The rate of water flow across the surface of the soil and into the soil profile. Units are usually inches/hr.
Irrigation. Application of water by artificial means, that is, means other than natural precipitation. Irrigation is practiced to supply crop water requirements, leach salts, apply chemicals, and for environmental control including crop cooling and freeze protection.

Irrigation Water Requirement or Irrigation Requirement. The quantity of water that is required for crop production, exclusive of effective rainfall.
Landscape. Refers to any and all areas which are ornamentally planted, including but not limited to turf, ground covers, flowers, shrubs, trees, and similar plant materials as opposed to agricultural crops grown and harvested for monetary return.
Lateral. The water delivery pipeline that supplies water to the emitters or sprinklers from a manifold or header pipeline downstream of the control valve.
Line-Source Emitters. Lateral pipelines which are porous or contain closely-spaced perforations so that water is discharged as a continuous band or in overlapping patterns rather than discrete widely-spaced points along the pipeline length.
Looped System. A piping system which allows more than one path for water to flow from the supply to the emitters or sprinklers.
Mainline. A pipeline which carries water from the control station to submains or to manifolds or header pipelines of the water distribution system.
Manifold. The water delivery pipeline that conveys water from the main or submain pipelines to the laterals. Also sometimes called a header pipeline.
Manual System. A system in which control valves are manually operated rather than operated by automatic controls.
Meter Box. A concrete or plastic box buried flush to grade which houses flow (water) meters or other components.
Microirrigation. The frequent application of small quantities of water directly on or below the soil surface, usually as discrete drops, tiny streams, or miniature sprays through emitters placed along the water delivery pipes (laterals). Microirrigation encompasses a number of methods or concepts, including drip, subsurface, bubbler, and spray irrigation. Previously known as trickle irrigation.
Overlap. The amount one sprinkler pattern overlaps another one when installed in a pattern. Expressed as a percentage of the diameter of coverage.
PE Pipe. Flexible polyethylene pipe for use in irrigation systems, normally manufactured with carbon black for resistance to degradation by ultraviolet radiation.
Potable Water. Water which is suitable in quality for human consumption and meets the requirements of the Health Authority having jurisdiction.
Pressure Relief Valve. A valve which will open and discharge to atmosphere when the pressure in a pipeline or pressure vessel exceeds a pre-set point to relieve the high-pressure condition.
Pressure Vacuum Breaker. A backflow prevention device which includes a spring-loaded check valve and a spring-loaded vacuum breaker to prevent the backflow of irrigation system water to the water source.
Pumping Station. The pump or pumps that provide water to an irrigation system, together with all of the necessary accessories such as bases or foundations, sumps, screens, valves, motor controls, safety devices, shelters and fences.
PVC Pipe. Polyvinyl chloride plastic pipe made in standard thermoplastic pipe dimension ratios and pressure rated for water. Manufactured in accordance with AWWA C-900 or ASTM D-2241.
Rain Shut off Device. A calibrated device that is designed to detect rainfall and override the irrigation cycle of the sprinkler system when a predetermined amount of rain fall has occurred.
Riser. A threaded pipe to which sprinklers or other emitters are attached for above-ground placement.
Sleeve. A pipe used to enclose other pipes, wire, or tubing; usually under pavement, sidewalks, or planters.
Spacing. The distance between sprinklers or other emitters.
Spray Irrigation. The micro irrigation application of water to the soil or plant surface by low flow rate sprays or mists.
Sprinkler. The sprinkler head. Sometimes called "Head."
Supply (Water Source). The origin of the water used in the irrigation system.
Swing Joint. A ridged connection between the lateral pipe and the sprinkler, utilizing multiple ells and nipples, which allows the sprinkler to move when force is applied to it.
Tubing. Generally used to refer to flexible plastic hydraulic control lines which are usually constructed of PE or PVC.

PART II — DESIGN CRITERIA

A. Design defined. Within the scope of this code, irrigation system design is defined as the science and art of properly selecting and applying all components within the system.

B. Water supply.

1. The water source shall be adequate from the stand-point of volume, flow rate, pressure, and quality to meet the irrigation requirements of the area to be irrigated, as well as other demands, if any, both at the time the system is designed and for the expected life of the system.
2. If the water source is effluent, it shall meet the advanced waste treatment standard as set forth in Florida Statute §403.086(4) as well as any other standard as set forth by the controlling governmental agency.

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 vs. 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. Microirrigation systems should be designed using the Emission Uniformity concept. Space microirrigation 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 Florida Statutes, Section 373.62.

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 Florida Statutes, Section 487.021 and 487.055; the Environmental Protection Agency (EPA); Pesticide Regulation Notice 87-1; or other applicable codes.
3. If an irrigation water supply is also used for human consumption, an air gap separation or an approved reduced pressure principal backflow prevention device is required.

L. Backflow prevention methods. Provide backflow prevention assemblies at all cross connections with all water supplies in accordance with county, municipal or other applicable codes to determine acceptable backflow prevention assembly types and installation procedures for a given application. In the event of conflicting regulation provide the assembly type which gives the highest degree of protection.

1. Irrigation systems into which chemicals are injected shall conform to Florida state law (Florida Statutes 487.021 and 487.055) and Environmental Protection Agency Pesticide Regulation Notice 87-1, which requires backflow prevention regulations to be printed on the chemical label.
2. For municipal water supplies, chemical injection equipment must be separated from the water supply by an approved air gap separation or a reduced pressure principle assembly that is approved by the Foundation for CCC and the Hydraulic Research Institute. The equipment must also comply with ASSE 1013 to protect the water supply from back-siphonage and back-pressure.
3. For other water supplies, Florida State law, EPA regulations, or other applicable local codes must be followed. In the absence of legal guidelines at least a PVB should be used.

PART III — STANDARDS

1. American Society of Agricultural Engineers (ASAE) Standards:

ASAE S330.1: Procedure for sprinkler distribution testing for research purposes.
ASAE S376.1: Design, installation, and performance of underground thermoplastic irrigation pipelines.
ASAE S397.1: Electrical service and equipment for irrigation.
ASAE S435: Drip/Trickle Polyethylene Pipe used for irrigation laterals.
ASAE S398.1: Procedure for sprinkler testing and performance reporting.
ASAE S339: Uniform classification for water hardness.
ASAE S394: Specifications for irrigation hose and couplings used with self-propelled, hose-drag agricultural irrigation system.
ASAE EP400.1: Designing and constructing irrigation wells.
ASAE EP405: Design, installation, and performance of trickle irrigation systems.
ASAE EP409: Safety devices for applying liquid chemicals through irrigation systems.

2. ASTM International Standards:

ASTM D 2241: Poly (Vinyl Chloride) (PVC) Plastic pipe (SDR-PR).
ASTM D 2239: Specification for polyethylene (PE) plastic pipe (SDR-PR).
ASTM D 2466: Specification for socket-type poly (vinyl chloride) (PVC) and chlorinated poly (vinyl chloride) (CPVC) plastic pipe fittings, Schedule 40.
ASTM D 2855: Standard recommended practice for making solvent cemented joints with polyvinyl chloride pipe and fittings.
ASTM D 3139: Specification for joints for plastic pressure pipes using flexible elastomeric seals.
ASTM F 477: Specification for elastomeric seals (gaskets for joining plastic pipe).

3. American Water Works Association (AWWA) standards:

AWWA C-900: PVC pipe standards and specifications

4. American Society of Sanitary Engineers (ASSE) Standards:

ASSE 1001: Pipe applied atmospheric type vacuum breakers.
ASSE 1013: Reduced pressure principle backflow preventers.
ASSE 1015: Double check valve type back pressure backflow preventers.
ASSE 1020: Vacuum breakers, anti-siphon, pressure type.
ASSE 1024: Dual check valve type backflow preventers.

5. Hydraulic Institute Standards, 14th Edition
6. Standards and Specifications For Turf and Landscape Irrigation Systems Florida Irrigation Society (FIS) Standards
7. Soil Conservation Service (SCS) Field Office Technical Guide, Section IV-A — Cropland Codes:

SCS Code 430-DD: Irrigation water conveyance, underground, plastic pipeline.
SCS Code 430-EE: Irrigation water conveyance. Low pressure, underground, plastic pipeline.
SCS Code 430-FF: Irrigation water conveyance, steel pipeline.
SOS Code 441-1: Irrigation system, trickle.
SCS Code 442: Irrigation system sprinkler.
SCS Code 449: Irrigation water management.
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 firings 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 micro-irrigation 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 non-potable 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 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.
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 - 24
3 - 5	24 - 30
6 and larger	30 - 36

b. Nontraffic and noncultivated areas.

Pipe Size (inches)	Depth of Cover (inches)
1/2 – 1 1/4	6 – 12
1 1/2 - 2	12 – 18
1/2 - 3	18 - 24
4 and larger	24 - 36

c. Residential single lot installations only.

Pipe Size (inches)	Depth of Cover* (inches)
1/2 - 1	4 - 6
1 1/4 - 1 1/2	8 – 12
2 - 2 1/2	12 – 18
3 and larger	24

* Except in areas where more than one lot is connected together, controlled, or connected through a master system then the depths in Chart B shall apply.

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 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 shall be free from rocks or stones larger than 1-inch 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. 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.

B. Control valve installation.

1. Valve installation shall allow enough clearance for proper operation and maintenance. Where valves are installed underground, they shall be provided with a valve box with cover extending from grade to the body of the valve. The top of the valve body should have a minimum of 6 inches (152 mm) of cover in nontraffic and noncultivated areas and 18 inches (457 mm) of cover in traffic areas. If an automatic valve is installed under each sprinkler, then the valve box may be omitted.
2. Install valve boxes so that they do not rest on the pipe, the box cover does not conflict with the valve stem or interfere with valve operation, they are flush with the ground surface and do not present a tripping hazard or interfere with routine maintenance of the landscape.
3. Install quick coupling valves on swing joints or flexible pipe with the top of the valve at ground level.

Any above-ground manually-operated valves on nonpotable water systems will be adequately identified with distinctive purple colored paint. Do not provide hose connections on irrigation systems that utilize nonpotable water supplies.

C. Sprinkler installation.

1. On flat landscaped areas, install sprinklers plumb. In areas where they are installed on slopes, sprinklers may be tilted as required to prevent erosion. Sprinklers should be adjusted to avoid unnecessary discharge on pavements and structures. Adjust sprinklers so they do not water on roads.
2. Provide a minimum separation of 4 inches (102 mm) between sprinklers and pavement. Provide a minimum separation of 12 inches (305 mm) between sprinklers and buildings and other vertical structures. Piping must be thoroughly flushed before installation of sprinkler nozzles. Surface mounted and pop-up heads shall be installed on swing joints, flexible pipe, or polyethylene (PE) nipples. Above-ground (riser mounted) sprinklers shall be mounted on Schedule 40 PVC or steel pipe and be effectively stabilized.

D. Pump installation.

1. Install pumps as per the manufacturer's recommendations. Set pumps plumb and secure to a firm concrete base. There should be no strain or distortion on the pipe and fittings. Pipe and fittings should be supported to avoid placing undue strain on the pump. Steel pipe should be used on pumps 5 horsepower (hp) or larger whenever practical.
2. Pumps must be installed in a manner to avoid loss of prime. Install suction line to prevent the accumulation of air pockets. All connections and reductions in suction pipe sizes should be designed to avoid causing air pockets and cavitation.
3. Pumps must be located to facilitate service and ease of removal. Appropriate fittings should be provided to allow the pump to readily be primed, serviced, and disconnected. Provide an enclosure of adequate size and strength, with proper ventilation, to protect the pump from the elements (except residential systems).

E. Low voltage wire installation.

1. Install low voltage wire (30 volts or less) with a minimum depth of cover of 12 inches (305 mm). Provide a sufficient length of wire at each connection to allow for thermal expansion/shrinkage. As a minimum, provide a 12-inch (305 mm) diameter loop at all splices and connections. Terminations at valves will have 24 inches (610 mm) minimum free wire.
2. Install all above-ground wire runs and wire entries into buildings in electrical conduit. Provide common wires with a different color than the power wires (white shall be used for common wires). Connections are to be made using UL approved devices specifically designed for direct burial. All splices shall be enclosed within a valve box.

F. Hydraulic control tubing.

1. For hydraulic control systems, use a water supply that is filtered and free of deleterious materials, as defined by the hydraulic control system manufacturer. Install a backflow prevention device where the hydraulic control system is connected to potable water supplies.
2. Install tubing in trenches freely and spaced so that it will not rub against pipe, fittings, or other objects that could score the tubing, and with a minimum 12-inch (305 mm) diameter loop at all turns and connections. Provide a minimum depth of cover of 12 inches (305 mm).
3. Connect tubing with couplings and collars recommended by the tubing manufacturer. All splices shall be made in valve boxes. Prefill tubing with water, expelling entrapped air and testing for leaks prior to installation.

Install exposed tubing in a protective conduit manufactured from Schedule 40 UV protected PVC or electrical conduit.

PART VI: TESTING & INSPECTIONS

A. Purpose. All materials and installations covered by the Irrigation Code shall be inspected by the governing agency to verify compliance with the Irrigation Code.

B. Rough inspections. Rough inspections will be performed throughout the duration of the installation. These inspections will be made by the governing agency to ensure that the installation is in compliance with the design intent, specifications, and the Irrigation Codes. Inspections will be made on the following items at the discretion of the governing agency:

1. Sprinkler layout and spacing: This inspection will verify that the irrigation system design is accurately installed in the field. It will also provide for alteration 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.

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.

P6231

Date Submitted	4/27/2013	**Section**	1	**Proponent**	Jack Glenn
Chapter	Appendix F	**Affects HVHZ**	Yes	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6228

Summary of Modification

Modify Appendix F Irrigation to be consistent with what is currently used by the jurisdiction that has adopted the Appendix

Rationale

This change is only needed if Mod # 6228 is approved.
This change was recommended by the state irrigation association to be consistent when normal practice.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate

Does not degrade the effectiveness of the code

Does not degrade the code but enhances it by providing guidelines for irrigation system installation

Is the proposed code modification part of a prior code version? No

- [ ] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

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 ~~– 24~~
3 - 5	24 ~~– 30~~
6 and larger	30 ~~– 36~~

~~b. Nontraffic and noncultivated areas.~~

-

~~Pipe Size (inches)~~	~~Depth of Cover (inches)~~
~~1/2 – 1 1/4~~	~~6 – 12~~
~~1 1/2 - 2~~	~~12 – 18~~
~~1/2 - 3~~	~~18 - 24~~
~~4 and larger~~	~~24 - 36~~

b. For All AREAS EXCEPT VEHICLE TRAFFIC:

-

Pipe Size (inches)	Depth of Cover (inches)
1/2 – 1 ½	6
2 - 3	12
4 – 6	18
More than 6	24

-

~~c. Residential single lot installations only.~~

-

~~Pipe Size (inches)~~	~~Depth of Cover* (inches)~~
~~1/2 - 1~~	~~4 - 6~~
~~1 1/4 - 1 1/2~~	~~8 - 12~~
~~2 - 2 1/2~~	~~12 - 18~~
~~3 and larger~~	~~24~~

~~* Except in areas where more than one lot is connected together, controlled, or connected through a master system then the depths in Chart B shall apply.~~

-

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 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 shall be free from rocks or stones larger than 1-inch 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. 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.

Date Submitted	4/5/2013	**Section**	2503.4	**Proponent**	Gary Kozan
Chapter	25	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-P Section 312.6 Mod #6051

Summary of Modification

revises sewer testing requirements

Rationale

This maintains the current requirements for testing of building sewers, that were formally adopted statewide in 2001 as a Florida-specific amendment. This is a proven method that must be retained to avoid massive conflicts in the field. A similar change was submitted to the 2013 IRC code cycle, with hearings set for April 21st.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - this method of sewer testing has been used in Florida since 2001. It is also the identical language referenced in the Uniform Plumbing Code, which is used in a large portion of the United States

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - provides a more streamlined method for sewer testing

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

No - maintains the code requirements currently in force

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P2503.4 Building sewer testing.

The *building sewer* shall be tested by insertion of a test plug at the point of connection with the public sewer and filling the *building sewer* with water to the highest point thereof.~~, testing with not less than a 10-foot (3048 mm) head of water and be able to maintain such pressure for 15 minutes.~~ The building sewer shall be watertight at all points.

P6050

Date Submitted	4/5/2013	**Section**	2503.5.1	**Proponent**	Gary Kozan
Chapter	25	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-P Section 312.2 Mod #6049

Summary of Modification

Revises drainage testing to 5-foot head of water

Rationale

5-foot head testing has ben permitted in most of the state since the '50's, and was formally adopted statewide in 2001 as a Florida-specific amendment. This is a proven method that must be retained to avoid massive conflicts in the field. A similar change has been proposed to the 2013 IRC code cycle, with hearings set for April 21st.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - 5-foot head tests have a proven track record

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - a 5-foot head allows for visual verification of the water-tightness of the system, without the need for ladders or "shaking the stack"

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

No - maintains the code requirements currently in force

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P2503.5.1 Rough plumbing.
DWV systems shall be tested on completion of the rough piping installation by water or for piping systems other than plastic, by air with no evidence of leakage. Either test shall be applied to the drainage system in its entirety or in sections after rough piping has been installed, as follows:

1. Water test. Each section shall be filled with water to a point not less than ~~10~~ 5 feet (3048 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.

2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.

Date Submitted	4/24/2013	**Section**	2603.2	**Proponent**	T Stafford
Chapter	26	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Corrects section references.

Rationale

Corrects section references. Provisions for drilling and notching of wood members have been relocated. Provisions for drilling and notching of cold-formed steel have been deleted and refer to AISI S230.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners.

Impact to industry relative to the cost of compliance with code

No impact to industry.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Corrects a conflict within the updated code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

- [X] (a.) Conflicts within the updated code;
- [ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;
- [ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;
- [ ] (d.) Equivalency of standards;
- [ ] (e.) Changes to or inconsistencies with federal or state law;
- [ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P2603.2 Drilling and notching. Wood-framed structural

members shall not be drilled, notched or altered in any mannerexcept as provided in Sections R502.1.11, R602.2.3, R602.2.3.1, and R802.1.8 ~~R502.8, R602.6, R802.7 and R802.7.1~~. Holes in load-bearing members of cold-formedsteel light-frame construction shall be permitted only inaccordance with AISI S230 ~~Sections R505.2.5, R603.2.5 and R804.2.5~~.In accordance with the provisions in AISI S230 ~~Sections R505.3.5, R603.3.4 and R804.3.4~~, cutting and notching of flanges andlips of load-bearing members of cold-formed steel lightframeconstruction shall not be permitted. Structural insulatedpanels (SIPs) shall be drilled and notched or altered in accordancewith the provisions of Section R613.7.

Date Submitted	4/5/2013	**Section**	2801.5	**Proponent**	Gary Kozan
Chapter	28	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-P Section 504.7 Mod #6053

Summary of Modification

specifies the locations where water heater pans are required

Rationale

This is the code language currently in force statewide since 2001. It specifies precisely where water heater pans are required. This language must be retained to avoid massive conflicts in the field.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current cide enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - spells out precisely where water heater pans are required

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - spells out precisely where water heater pans are required

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P2801.5 Required pan.

Where a storage tank-type water heater or a hot water storage tank is installed ~~in a location where water leakage from the tank will cause damage~~ above the ground floor space, in attics or ceiling areas, or within the habitable space, the in a location where water leakage from the tank will cause damage, the tank shall be installed in a galvanized steel pan having a material thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage), or other pans approved for such use. Listed pans shall comply with CSA LC3.

Date Submitted	4/5/2013	**Section**	2905.2	**Proponent**	Gary Kozan
Chapter	29	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

IPC Section 605.2.1 - Mod #6058

Summary of Modification

Adds new "lead-free" requirements to comply with changes to the federal Safe Water Drinking Act

Rationale

Effective January 4, 2014, the federal Safe Water Drinking Act makes it illegal to install products in drinking water applications with a lead content above 0.25%. Manufacturers will need to comply with the new NSF 372 standard for lead limits. This particular code change was approved this year for inclusion into the 2015 International Residential Code, which will be the basis for the 2016 FBC. Although federal law supersedes state law, accelerating the adoption of this proposal into the 2013 FBC will help make manufacturers, installers, and regulators aware of this important new change, and avoid potential conflicts in the field.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

brings state law in line with federal law

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none - must still comply with federal law

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

yes - helps improve compliance with federal law

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

yes - limits the amount of lead in drinking water components IAW federal law

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version? No

[ ] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[ ] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[X] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

Add new text as follows:

P2905.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets, and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372 and shall have a weighted average lead content of 0.25 percent lead or less.

Add new standard to Chapter 44 as follows:

NSF

372-2010 Drinking Water System Comnponents - Lead Content

Date Submitted	4/5/2013	**Section**	3003.19	**Proponent**	Gary Kozan
Chapter	30	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

permits the continued use of inside-fit water closet flanges

Rationale

Inside-fit closet flanges have always been permitted in Florida. Most water closets today are installed on inside-fit flanges because it affords the most high quality installation (especially on slab-on-grade) without the rocking or spacers associated with other type flanges. The FBC-P does not prohibit inside-fit flanges. The prior Florida Codes did not prohibit them. A similar change has been proposed to the 2013 IRC, with hearings set for April 21st.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

provides continuity of current code enforcement provisions

Impact to building and property owners relative to cost of compliance with code

none

Impact to industry relative to the cost of compliance with code

none

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes - inside-fit flanges have a 30-year proven track reord, and have become the most popular method of installing water closets today.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes - enhances the quality of water closet installations

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

no

Does not degrade the effectiveness of the code

no

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

[X] (a.) Conflicts within the updated code;

[ ] (b.) Conflicts between the updated code and the Florida Fire Prevention Code adopted pursuant to chapter 633;

[X] (c.) Unintended results from the integration of previously adopted Florida-specific amendments with the model code;

[ ] (d.) Equivalency of standards;

[ ] (e.) Changes to or inconsistencies with federal or state law;

[ ] (f.) Adoption of an updated edition of the National Electrical Code if the commission finds that delay of implementing the updated edition causes undue hardship to stakeholders or otherwise threatens the public health, safety, and welfare.

P3003.19 Joints between drainage piping and water closets.

Joints between drainage piping and water closets or similar fixtures shall be made by means of a closet flange or a waste connector and sealing gasket compatible with the drainage system material, securely fastened to a structurally firm base. ~~The inside diameter of the drainage pipe shall not be used as a socket fitting for a 4-inch by 3-inch (102 mm by 76 mm) closet flange.~~ The joint shall be bolted, with an approved gasket flange to fixture connection complying with ASME A112.4.3 or setting compound between the fixture and the closet flange or waste connector and sealing gasket. The waste connector and sealing gasket joint shall comply with the joint-tightness test of ASME A112.4.3 and shall be installed in accordance with the manufacturer's installation instructions.