

November 15, 2012

To Whom It May Concern:

The Polk County UTILITIES CODE COMMITTEE is charged with updating the seven REFERENCE MANUALS associated with Ordinance 10-081 (AKA: Utilities Code). In accordance with Section 11: Utilities Code Committee and Section 12: Reference Manual Revision Procedure, the UTILITIES CODE COMMITTEE recommends approval of revisions to portions of the following reference manuals:

- Utilities Standards and Specifications Manual (6B)
 - USSM Table of Contents
 - TOC – Standards
 - TOC – Detail Drawings
 - Chapter One (1): General Information
 - **Introduction: Web link**
 - Chapter Two (2): Development Coordination
 - **Allow submittals of PDFs**
 - **Survey Requirements**
 - **Extent of Maintenance**
 - Chapter Three (3): General Requirements
 - **Standard Drawing GR-15-1 (ARV)**
 - Chapter Four (4): Potable Water
 - **Section 410:**
 - Variations in main diameters
 - Restrained Joints
 - Formatting
 - Hydraulically Operated Control Valves
 - **Section 450: Standard Drawings TOC**
 - 450A: Pressure Test Formula
 - 450B: Approved Material Checklist
 - **Standard Drawing WA-09 (Master Meter)**
 - **Standard Drawing WA-10 (HOCV)**
 - Chapter Five (5): Wastewater
 - **Section 511:**
 - FM cleansing velocities
 - **Variations in main diameters**
 - **Section 512: Lift Station Design Criteria**
 - **Section 550A: Pressure Test Formula**
 - **Section 550D: Wastewater Hydraulic Standards**
 - **Standard Drawings WW-16 (Fence)**

- Chapter Six (6): Reclaimed Water
 - **Section 610:**
 - Design
 - System Connections
 - Formatting
 - **Section 650A: Pressure Test Formula**
 - **Section 650: Standard Drawings TOC**
 - **Standard Drawing RW-03**

- Reclaimed Water Policy Manual (6D)
 - **Availability of service, uses**

- Industrial Wastewater Pretreatment Policy (6E)
 - **Wastewater Constituent Limitation**

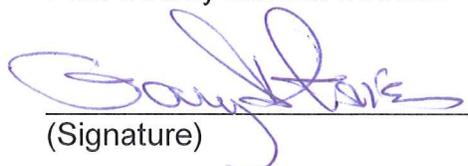
- Water Conservation Manual (6F)
 - **Cross reference to Reclaimed Water Policy Manual**
 - **Deletion of reference to Ord 03-21 (repealed) requirements**

Details concerning each respectively edited Manual, Section, Chapter, and Appendix are attached herewith for reference.

Pursuant to Ordinance 10-081, all of the above listed and subsequently described recommendations are hereby approved as noted. In accordance with Section 12 of the aforementioned Ordinance, the Utilities Director is authorized to approve these updates as recommended by the Utilities Code Committee. The effective date of these revisions shall be 30 calendar days from the date of this approval and shall supersede the prior content and detail drawings in the respective manuals. Similarly all approved revisions will be incorporated into the master set of Utilities Code Documents and Manuals in a clean form without markups within 30 calendar days from the date of this approval.

Each REFERENCE MANUAL that has been revised shall be formally presented to the BoCC and adopted by separate resolution before calendar year end of 2012.

Gary Fries, P.E.
Polk County Utilities Director



(Signature)

11/15/12

(Date)

- **USSM Table of Contents**
 - **TOC – Standards**
 - **TOC – Detail Drawings**

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- **Chapter One (1): General Information**
 - **Introduction: Web link**

CHAPTER 1 **GENERAL INFORMATION**

Section 110 **Introduction** December 2010

- A. Chapter 1 – General Information
- B. Chapter 2 – Development Coordination
- C. Chapter 3 – General Requirements
- D. Chapter 4 – Water
- E. Chapter 5 – Wastewater
- F. Chapter 6 – Reclaimed Water

PART 5 – CLARIFICATION IN THE USE OF CHAPTERS 2, 3, 4, 5, AND 6

- A. Chapter 2 “Development Coordination”, Chapter 3 “General Requirements”, Chapter 4 “Water”, Chapter 5 “Wastewater”, and Chapter 6 “Reclaimed Water” are provided as minimum criteria to assist a consulting ENGINEER in the development of the design documents. This MANUAL shall not be used as a substitute for actual design.
- B. The applicable STANDARD DRAWINGS shall be used as presented. PCU may accept modifications on a limited case-by-case basis only if a modification is deemed by PCU to be of a benefit to PCU.

PART 6 – INFORMATION PROVIDED BY PCU

All information provided by PCU, at any time, shall not be used for the design or construction of any building, development, or other improvements without field verification, including the use of ground penetrating radar and/or soft dig verification methods, by the DEVELOPER, the ENGINEER, or the CONTRACTOR. The recipient’s reliance, at any time, upon maps, data, or other record information provided by PCU shall be solely at his or her risk. PCU shall have no actual or implied liability for incorrect drawings, record drawings, or other materials that the recipient reviews and/or utilizes in preparation of making business or personal decisions.

PART 7 – INTERPRETATION OF THE MANUAL

The PCU interpretation of the MANUAL shall be binding and controlling for any portion of the MANUAL, differences between Sections, or a controlling supplemental specification such as federal, state, or COUNTY regulations.

PART 8 – POLK COUNTY UTILITIES WEB ACCESS

The PCU web page will be accessed through the County’s web site at:

~~<http://www.polk-county.net/utilities.aspx>~~

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PCU will make this MANUAL available for download from the web page and will provide copies of this MANUAL in digital form upon request. Questions regarding this MANUAL should be emailed to the Utilities Code Committee at utilitiescodecommittee@polk-county.net.

- **Chapter Two (2): Development Coordination**
 - **Allow submittals of PDFs**
 - **Survey Requirements**
 - **Extent of Maintenance**

CHAPTER 2 DEVELOPMENT COORDINATION

Section 210

Development Coordination

December 2010

This Package is required for all projects with utility systems that are to be accepted by PCU for ownership, operation, and maintenance.

B. Contents

The Board Acceptance Package shall contain the following items, as applicable:

- 1) Original Developer's Letter of Dedication.
- 2) Original Engineer's Certificate of Completion.
- 3) Original Contractor's Certificate of Completion.
- 4) Potable Water System Schedule of Values.
- 5) Wastewater System Schedule of Values.
- 6) Reclaimed Water System Schedule of Values.
- 7) All original executed Polk County Utilities Easement documents that provide for non-platted easements containing portions of the PCU utility system(s). Once reviewed and approved by PCU, and accepted by the COUNTY, these documents shall be recorded by Polk County.
- 8) Completed and executed Request for Utilities Bond Amount Form.
- 9) Any additional information required pursuant to a Developer/Utilities Agreement.
- 10) Final Record Drawings that are in accordance with the Section entitled "Project Design Documents and Submittals".

C. Submittal

The ENGINEER shall submit this Package to the Land Development Division.

D. PCU Response

Upon receipt of a complete Board Acceptance Request Package, the Development Review staff for completeness and accuracy. Should any of the information be incomplete or unsatisfactory, a letter shall be sent to the ENGINEER stating the deficiencies. No further processing of the Package shall occur until all incomplete and/or unsatisfactory items are satisfactorily addressed by the ENGINEER.

PART 3 PROJECT ACCEPTANCE DOCUMENTATION

3.01 Record Documents

A. General

1. Three sets of certified, full size, black line prints of the RECORD DRAWINGS signed and sealed by the ENGINEER.
2. A digital version of the certified, hard copy RECORD DRAWING in tagged information file (tif) format OR portable document file (pdf) format.

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CHAPTER 2 DEVELOPMENT COORDINATION

Section 210

Development Coordination

December 2010

ENGINEER. The RECORD DRAWINGS must be approved by PCU prior to BOARD acceptance of the improvements.

B. SURVEY REQUIREMENTS:

1. An As-Built or Record Survey performed in accordance with Chapter 5J-17, Florida Administrative Code (F.A.C.), pursuant to Chapter 472, Florida Statutes (F.S.) shall be required.

i. The survey shall depict all pertinent easement lines, right of way lines or boundary lines as well as the horizontal and vertical location of all underground and above ground water, wastewater and reclaimed water piping and related appurtenances. The piping shall be shown at intervals not to exceed 100 feet. Sufficient "spot" elevations shall be shown in order to determine grading over and adjacent to the piping as well as the amount of cover over the piping. For lift stations: horizontal and vertical locations of the center top and invert of the wet well as well as horizontal and vertical locations of all at grade concrete and sufficient "spot elevations" to be able determine the drainage pattern within and adjacent to the lift station easement or tract. All existing fencing around lift stations shall be horizontally located with the type of fencing and height of fencing stated. In the event that fee simple title is conveyed to Polk County for a lift station or other facility a Boundary Survey shall be required in addition to the As-Built Survey.

2. For any other instance not described above, it is the Surveyor's responsibility to determine the type of survey required based upon actual site activity and construction. Examples of survey type include but are not limited to:

- i. As-Built or Record Survey
- ii. Boundary Survey
- iii. Topographic Survey
- iv. Construction Layout Survey, etc.

Any deviation from the types listed above requires the approval of the County Surveyor or County Survey Manager.

C. GPS coordinate data shall be provided as part of all PCU CIP projects and where PCU reimburses the DEVELOPER for the installation or oversizing of any proposed facilities and infrastructure. The data shall include the type of collection, i.e., real time correction or post processed, hardware and software used, and the track log file associated with the actual data collection. The GPS coordinate data and associated attributes shall be provided in an acceptable geo-database, shape file, comma delimited, or other file format subject to PCU approval. Attribute data associated with this data shall include:

- 1. X (Easting) and Y (Northing)
- 2. Z (Elevation), when available

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Deleted: <#>If a main is constructed within an easement, a SPECIFIC PURPOSE SURVEY shall be required.¶ <#>The SPECIFIC PURPOSE SURVEY shall be a survey or map and report certified by a SURVEYOR of an easement with water, wastewater, and/or reclaimed water mains maintained by PCU. ¶ <#>Three sets of the certified survey in hard copy and a scanned digital version of the hard copy in tagged information file (tif) format.¶ <#>BOUNDARY AND TOPOGRAPHICAL SURVEY for Lift Stations and other Structures¶ <#>Three sets of the certified survey of any property that contains a lift station or other structures shall be submitted in hard copy and a scanned digital version of the hard copy in tagged information file (tif) format prior to lift station start up test and inspection.¶

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CHAPTER 2

DEVELOPMENT COORDINATION

Section 210

Development Coordination

December 2010

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C. Extent of PCU Maintenance

1. PCU shall be responsible only for the repair and maintenance of the public components of the PCU utility system. PCU shall not be responsible for the repair and maintenance of house connections or service laterals or for privately owned utility systems. PCU will maintain potable and reclaimed water lines up to and including meters only, and will not repair or maintain any component downstream of the meter, including house connections and service laterals.
2. PCU will only maintain sanitary sewer lines manhole to manhole. PCU will not repair or maintain any component upstream of the sewer line including clean outs, meters, house connections or service laterals.
3. No person shall do any work, or be reimbursed for any work or in connection with any work, on the PCU utility system unless written authorization from PCU is received prior to said work is being started.
4. PCU shall make a reasonable effort to inspect and keep its facilities in good repair, but assumes no liability for any damage caused by the utility system, including damage due to sewage back-ups, disruption of services, breaking of pipes, poor quality of water caused by unauthorized or illegal entry of foreign material into the system, faulty operation of fire protection facilities, or any other reasons.

PART 5 CONSTRUCTION COORDINATION MEETINGS

5.01 GENERAL

This Section establishes the minimum number of meetings necessary for the initiation and inspection of utility related construction activities.

5.02 PROJECT COORDINATION MEETINGS

As a minimum, the following three types of meetings will be held in conjunction with a project.

A. Pre-Construction Meeting

The ENGINEER shall request the scheduling of the pre-construction meeting through the Growth Management Department. A minimum of five business days prior to the desired meeting date is required for scheduling purposes. Attendees shall include the ENGINEER, the CONTRACTOR, Development Review staff within the Growth Management Department, Utilities Operations Division staff, and the INSPECTOR. The ENGINEER shall be responsible for notifying all other affected utility companies and other interested parties of the meeting. Whenever possible, combined pre-

- **Chapter Three (3): General Requirements**
 - **Standard Drawing GR-15-1 (ARV)**

ARV ENCLOSURE (BLUE FOR WATER, GREEN FOR WASTEWATER, OLIVE GREEN FOR RAW WATER AND PANTONE PURPLE 522C FOR RECLAIMED WATER)

DRAFT

ARV OR ACAVRV
(SEE NOTE 4)

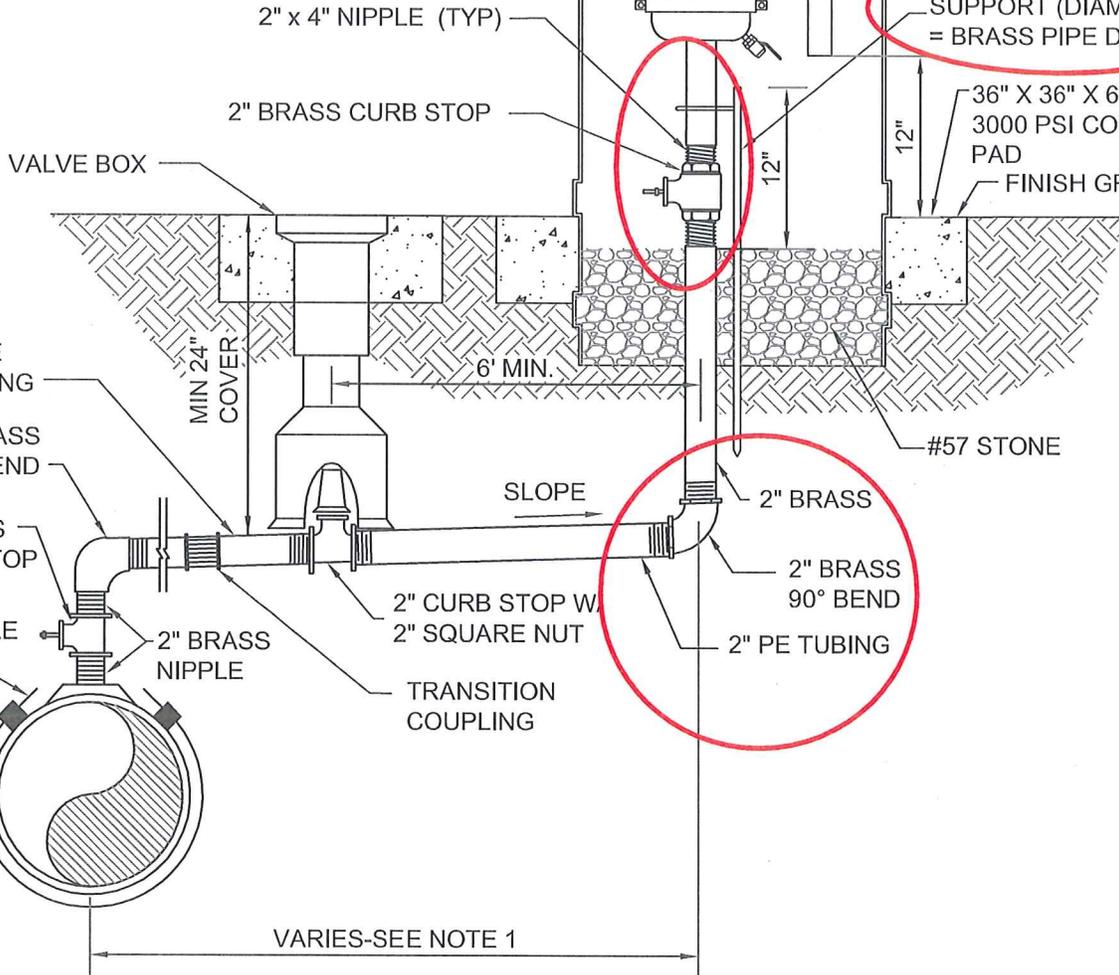
SEE NOTE 5

1- 1/2" PIPE, PVC
(LENGTH AS REQUIRED)
1- 1/2" 90° PVC
ELBOW

1- 1/2" PIPE, PVC
(LENGTH AS
REQUIRED)

SS ROUND PIPE
SUPPORT (DIAMETER
= BRASS PIPE DIA. +2")

36" X 36" X 6" DEEP
3000 PSI CONCRETE
PAD
FINISH GRADE



NOTES:

1. OFFSET DISTANCE TO BE FIELD DETERMINED AND AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE.
2. ADJUST HORIZONTAL LOCATION OF SIDEWALK, AS REQUIRED TO AVOID ARV ENCLOSURE.
3. ABOVE DETAIL IS BASED ON 2" RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES AND NUMBERS TO BE DETERMINED BY THE ENGINEER AND APPROVED BY PCU PRIOR TO INSTALLATION.
4. AUTOMATIC COMBINATION AIR AND VACUUM RELEASE VALVES (ACAVRV) SHALL UTILIZED AS APPROPRIATE OR REQUIRED BY PCU.
5. PROVIDE BACK-FLUSH QUICK RELEASE NOZZLE FOR UNDERGROUND PIPELINE APPLICATIONS.

**AUTOMATIC AIR RELEASE VALVE
(ABOVE GROUND)**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE
GR-15-1**

DECEMBER, 2010

ARV ENCLOSURE (BLUE FOR WATER, GREEN FOR WASTEWATER, OLIVE GREEN FOR RAW WATER AND PANTONE PURPLE 522C FOR RECLAIMED WATER)

1- 1/2" PIPE, PVC
(LENGTH AS
REQUIRED)

ARV OR ACAVRV
(SEE NOTE 4)

1- 1/2" 90° PVC
ELBOW

2" TEE

2" X 1" REDUCER

1- 1/2" PIPE, PVC
(LENGTH AS
REQUIRED)

1" SHORT NIPPLE

SS SUPPORT

1" CURB STOP

2" X 4" NIPPLE

36" X 36" X 6" DEEP
3000 PSI CONCRETE
PAD

2" BRASS CURB STOP

FINISH GRADE

VALVE BOX

2" PE
TUBING

2" BRASS
90° BEND

MIN 24"
COVER

SLOPE

2" PVC (SCH 80)

2" PVC
90° BEND

2" PVC (SCH 80)
OR PE TUBING

2" BRASS
CORP STOP

2" CURB STOP W/
2" SQUARE NUT

2" SADDLE
TAP

2" BRASS
NIPPLE

TRANSITION
COUPLING

VARIES-SEE NOTE 1

NOTES:

1. OFFSET DISTANCE TO BE FIELD DETERMINED AND AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE.
2. ADJUST HORIZONTAL LOCATION OF SIDEWALK, AS REQUIRED TO AVOID ARV ENCLOSURE.
3. ABOVE DETAIL IS BASED ON 2" RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES AND NUMBERS TO BE DETERMINED BY THE ENGINEER AND APPROVED BY PCU PRIOR TO INSTALLATION.
4. AUTOMATIC COMBINATION AIR AND VACUUM RELEASE VALVES (ACAVRV) SHALL UTILIZED AS APPROPRIATE OR REQUIRED BY PCU.

**AUTOMATIC AIR RELEASE VALVE
(ABOVE GROUND)**

**FIGURE
GR-15-1**

POLK COUNTY UTILITIES, FLORIDA

DECEMBER, 2010

- **Chapter Four (4): Potable Water**
 - **Section 410:**
 - Variations in main diameters
 - Restrained Joints
 - Formatting
 - Hydraulically Operated Control Valves
 - **Section 450: Standard Drawings TOC**
 - 450A: Pressure Test Formula
 - 450B: Approved Material Checklist
 - **Standard Drawing WA-09 (Master Meter)**
 - **Standard Drawing WA-10 (HOCV)**

CHAPTER 4

WATER

Section 410

Potable Water Main Standards and Specifications

December 2010

pressures, pressure-reducing provisions may be required.

C. Design Friction Losses:

Friction losses through mains shall be based on the Hazen and Williams or Darcy-Wiesbach formulas. In the use of the Hazen and Williams formula, the value for "C" shall be 130 for all pipes.

D. Design Pressure and Restraint

1. The main and fittings, including all restrained joint pipe fittings shall be designed to withstand pump operating pressures and pressure surges, but not less than 150 psi.
2. The restrained joint lengths shall be calculated consistent with the table format shown in the STANDARD DRAWINGS.
3. In the event that it is necessary to locate proposed mains or leave existing mains longitudinally under any part of a proposed roadway subject to regular non-residential traffic or with speed limits above 30 miles per hour, such mains shall have restrained joints.

E. Velocity and Diameter:

Only 4, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, and 54-inch in diameter water mains shall be permitted. Variations in main size may be authorized by the COUNTY when deemed appropriate provided that the existing or proposed level of service is maintained and operational maintenance and responsibility is established to the benefit of the COUNTY. Water mains with a minimum of 6-inch diameter shall be required for use with fire hydrants. Looped systems shall be required in low-density residential developments. Where looping of mains is not practical, the diameter of dead end mains shall be increased by one pipe size as based on hydraulic modeling. In cul-de-sac situations, mains may be reduced to a minimum of 4 inches in diameter after the last fire hydrant assembly if the length of the reduced size main does not exceed 500 linear feet or will not serve more than 40 ERC's. Mains shall be sized so velocities do not exceed six feet per second under the fire flow plus max day flow condition. In no case shall connections be made to cause velocities to exceed six feet per second in existing mains.

F. Material:

1. Water mains shall be either PVC or ductile iron pipe. HDPE may be used in specific applications as specified in this MANUAL or as approved by PCU. Using the PCU approved hydraulic modeling standards contained within this MANUAL, the ENGINEER shall determine on a case by case basis if it is necessary for all proposed HDPE pipe installations to be increased by one pipe size above all proposed or existing adjacent PVC and Ductile Iron Pipe installations.

G. Fire Hydrant Assembly Location and Spacing:

1. At a minimum, specifications outlined in the latest version of LAND DEVELOPMENT CODE and applicable COUNTY fire codes shall apply.

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Specifically, minimum fire flow rates for individual uses shall be established by the Fire Marshall.

2. Hydrants assemblies shall be placed on the same side of the roadway as the water mains and shall be placed at 500-foot intervals in commercial, multifamily, and industrial areas. Hydrant spacing for single-family residential and other areas shall be 1,000-foot intervals.
3. Unless otherwise directed by the Fire Marshall, fire hydrant assemblies in non-residential developments shall have a minimum horizontal separation distance from a structure that is equal to the vertical distance from the finished ground elevation to the eaves of the structure.
4. If an existing fire hydrant assembly has to be relocated more than five feet longitudinally for any reason, the main shall be tapped and the existing fire hydrant assembly re-installed by the DEVELOPER. Should the existing assembly not be in good condition according to PCU or not in compliance with this MANUAL, it shall be replaced with a new fire hydrant assembly by the DEVELOPER. Relocations of five feet or less shall be accomplished by the DEVELOPER utilizing a section of pipe of the approximately length, diameter, material, and restrained joints.

H. Dead Ends:

1. In order to provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical, as determined by PCU.
2. Where permanent dead-end mains occur, they shall terminate with a fire hydrant, flushing hydrant, or blow-off assembly for flushing purposes. Automatic-metered flushing devices may be required to maintain water quality in water mains. No potable water flushing device shall be directly connected to any WASTEWATER or STORMWATER SYSTEM.

I. Valves:

Sufficient valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Inline valves shall be located no more than 500 feet apart in commercial, industrial, and high-density residential areas and no more than 1000 feet in all other areas. In addition, inline valves shall be utilized to isolate a maximum of 40 ERC's in order to reduce inconveniences to other customers. A minimum of two valves per tee and three valves per cross shall be required to isolate and maintain adequate service. Valves shall be placed at phase lines and located at the end of all water main extensions except at cul-de-sacs.

J. Restrained Joints:

1. Pressure piping, fittings, and other items requiring restraint shall be restrained by assemblies or devices designed for the maximum pressure condition (test pressure) in accordance) in accordance with the STANDARD DRAWINGS.

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2. In the event that it is necessary to locate proposed mains or leave existing mains longitudinally under any part of a proposed roadway subject to regular non-residential traffic or with speed limits above 30 miles per hour, such mains shall have restrained joints or be constructed within steel casing(s).

K. Separation of Water Mains and Sewers:

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1. Separation of potable water, reclaimed water, wastewater, and stormwater systems shall comply with FDEP regulations as detailed in the STANDARD DRAWINGS.
2. Water pipes shall not pass through any part of a storm sewer or manhole. A minimum separation from storm water structures in accordance with the STANDARD DRAWINGS shall be maintained to facilitate maintenance and operation.

L. Combination Air/Vacuum Release Valves:

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Automatic air release valves of appropriate size and number shall be installed in accordance with the STANDARD DRAWINGS to prevent air locking formation. Automatic combination air and vacuum release valves shall be utilized to prevent both air locking and vacuum formation. All such valves are required at significant high points of the main or as specified by PCU. Valves shall be clearly delineated on the profile view for each main in the PLANS. The ENGINEER shall submit calculations to PCU justifying the valve sizes and numbers as specified by AWWA M-51 "Air Release, Air/Vacuum, and Combination Air Valves".

M. Permanent sample stations shall be required in accordance with the STANDARD DRAWINGS and as directed by PCU.

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N. Provision for the installation of temporary access points into and egress points out of the piping system for pigging and cleaning purposes shall be incorporated into the design for pipe diameters. Permanent and temporary access and egress points shall conform to the STANDARD DRAWINGS.

O. All buildings over two stories in height shall be provided with individual domestic water service booster pumps which shall be located within each building. Master booster pumps for developments shall not be permitted.

P. All buildings over two stories in height shall be provided with individual fire suppression system booster pumps which shall be located within each building. Master booster pumps for developments shall not be permitted.

PART 5 – SYSTEM CONNECTION AND SERVICE CONNECTIONS

- A. Water services and connections shall conform to the applicable provisions of this MANUAL. Only 1, 2, 4, 6, 8, 10, and 12-inch services will be permitted. Where water services greater than 12 inches are required, additional services shall be provided. It is recommended that hospitals install at least two services. PCU will install services and

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D. Service Fittings:

1. One-inch and two-inch fittings shall be brass, cast and machined in accordance with specifications in AWWA C800, AWWA C901, complaint with NSF-61, and compatible with polyethylene tubing connections.
2. Fittings, that are 4, 6, 8, 10, and 12 inches in size, shall be the same as water main fittings.

E. Service Tapping Saddles:

1. Stainless Steel Service Saddles:

Saddles shall have epoxy or nylon coated stainless steel 18-8 type 304 straps, and iron pipe threads. Double straps shall be a minimum of 2-inches in width each, Single straps shall be a minimum of three inches wide. Saddles used to connect to HDPE pipe shall allow for the normal expansion and contraction of such pipe.

2. Service Connections:

a. PVC and HDPE Pipe Service Saddle:

- i. One-inch and two-inch services shall utilize with controlled OD.
- ii. Four-inch or larger services shall use mechanical tapping sleeves, stainless steel sleeve for size on size taps, or epoxy coated sleeves with stainless steel hardware for all other sizes.

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b. Ductile Iron Pipe Service Saddle:

- i. One-inch and two-inch services shall use a controlled OD service tapping saddle with stainless steel straps and a ductile iron body that is either nylon or epoxy coated.
- ii. Four-inch or larger services shall be mechanical tapping sleeves, stainless steel sleeve for size on size taps, or epoxy coated sleeve with stainless steel hardware for all other sizes.

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11.07 RESILIENT SEAT GATE VALVES

- A. Gate valves shall be resilient seat gate valves, manufactured to meet or exceed the requirements of AWWA C515, latest revision, and in accordance with these specifications. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve. Valves shall have a minimum pressure rating of 150 psi.
- B. Valves that are 16 inches and larger shall have side actuators. The valve body, bonnet and bonnet cover shall be ductile iron ASTM A126, Class B. All ferrous surfaces inside and outside shall have a fusion-bonded epoxy coating in accordance with AWWA C 550. A two-inch wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C515.
- C. Directional Opening:
All valves shall open left or counter clockwise.

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a blue reflective pavement marker located as follows:

1. On undivided paved roadways, 6 inches to the hydrant side of the centerline stripe.
2. On divided paved roadways, 6 inches to the side of the lane stripe which is closest to the hydrant in line with the largest port.
3. On un-striped paved roadways, the center of the roadway (not the driving lane).

FYI... Part 11, "PRODUCTS"

Typically, the high impact acrylic markers shall measure 4 inches by 4 inches by 0.68 inches, have a minimum compression rating of 6000 pounds (ASTM D4280-04), and have a maximum acceptable deflection rating of 0.130 inch at 2000 pounds.

The marker shall be securely installed on the pavement using a conventional epoxy adhesive. The blue reflective faces of each marker shall face in both directions of traffic flow.

- D. All fire hydrant assemblies shall be covered with black plastic bags until such time that the potable water system has been cleared for service by the FDOH.

11.12 HYDRAULICALLY OPERATED CONTROL VALVES

A. Hydraulically operated control valves may be installed in distribution systems that require automatic or remote control, pressure regulation, solenoid operation, rate of flow control, liquid level control, or check valve operation. Each valve shall consist of a main valve and pilot control system designed and installed in accordance with the STANDARD DRAWINGS and Approved Materials Checklist. The main valve shall be hydraulically actuated, line pressure operated, diaphragm actuated, globe pattern valve. The main valve shall contain an EPDM seat disc contained by a disc retainer and forming a tight seal against removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface.

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PART 12 - CONSTRUCTION

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12.01 MATERIAL IDENTIFICATION AND TESTING

- A. Pipe Identification and Location:
1. Each length of pipe shall bear the name or trademark of the manufacturer, the location of the manufacturing plant, and the class or strength classification of the pipe. The markings shall be plainly visible on the pipe barrel. Pipe, which is not clearly marked, is subject to rejection. The CONTRACTOR shall remove all rejected pipe from the project site within five NORMAL WORKING DAYS.
 2. All PVC pipe and other pipe that is factory color-coded on the outside surface of the pipe shall be identified and locatable as specified in the STANDARD DRAWINGS. All DI pipe, and other pipe not factory color-coded on the outside surface of the pipe, shall be identified and locatable as specified in Appendix A,

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“STANDARD DRAWINGS”. Where the above type of identification method is not considered to be practical by PCU, the pipe shall have a field applied three inch wide permanent blue paint stripe down the top outside center of the pipe along its entire length.

B. Material Testing Requirements:

1. If requested by PCU, a sample of pipe to be tested shall be selected at random by PCU or the testing laboratory hired by PCU.
2. When the samples tested conform to applicable standards, all pipe represented by such samples shall be considered acceptable based on the test parameters measured. Copies of test reports shall be available before the pipe is installed on the project.
3. In the event that any of the test samples fail to meet the applicable standards, all pipe represented by such tests shall be subjected to rejection. The CONTRACTOR may furnish two additional test samples from the same shipment or delivery, for each sample that failed and the pipe will be considered acceptable if all of these additional samples meet the requirements of the applicable standards. All such retesting shall be at the CONTRACTOR’s expense.
4. Pipe that has been rejected by PCU shall be removed from the site of the work by the CONTRACTOR and replaced with pipe that meets these specifications.

12.02 SEPARATION OF MAINS

Separation shall be in accordance with the “STANDARD DRAWINGS”.

12.03 INSTALLATION OF VALVES

- A. All valves shall be inspected upon delivery in the field to insure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of PCU before they are installed.

12.04 NOTIFICATION OF CONNECTION TO EXISTING MAINS

- A. PCU shall be notified at least five NORMAL WORKING DAYS in advance to schedule main connections and valve operations. All existing valves are to be operated only by PCU. All valves installed are to remain closed during construction.

The CONTRACTOR shall exercise extreme caution when excavating in proximity of PCU mains. PCU main locations shown on plans are not exact or guaranteed. The CONTRACTOR is responsible for field verifying existing utility locations. PCU dispatch operator shall be notified immediately in the event of a force main, water main, or reclaimed water main break or damage. The CONTRACTOR shall immediately repair all damage to PCU mains, at the CONTRACTOR’s expense. If the repair is not made in a timely manner, as determined by the PCU Inspector, PCU

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may perform repairs and the CONTRACTOR will be charged for repairs.

12.05 WATER SERVICE LOCATION AND IDENTIFICATION

- A. The location of all service lines shall be as shown on the STANDARD DRAWINGS. On curbed streets, the exact location of each service shall be adequately and permanently identified using durable plastic blue colored pavement markers that states "Water Service" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the curb in accordance with the manufacturer's guidelines approximately 6 inches from the top of the curb.
- B. Where no curb exists, the exact location of each service shall be adequately and permanently identified using durable plastic blue colored pavement markers that states "Water Service" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the pavement in accordance with the manufacturer's guidelines approximately 6 inches from the edge of pavement.

12.06 WATER VALVE LOCATION AND IDENTIFICATION

- A. On curbed streets, the exact location of each valve shall be adequately and permanently identified using durable plastic blue colored pavement markers that states "Water Valve" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the curb in accordance with the manufacturer's guidelines approximately 6 inches from the top of the curb.
- B. Where no curb exists, the exact location of each valve shall be adequately and permanently identified using durable plastic blue colored pavement markers that states "Water Valve" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the pavement in accordance with the manufacturer's guidelines approximately 6 inches from the edge of pavement.

12.07 HYDRAULICALLY OPERATED CONTROL VALVES

- A. The CONTRACTOR shall furnish and install the valve as specified by the PLANS and in accordance with the STANDARD DRAWINGS.
- B. The main valve and the pilot control system shall be factory assembled and tested to determine conformance with the requirements of this Specification section.
- C. All settings shall be factory pre-set and verified in the field. Hydraulic pilots shall be tagged with model #, adjustment range, and factory setting.
- D. All valves shall be installed according to the valve manufacturer's instructions at the location shown in the PLANS.

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CHAPTER 4

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Section 410 Potable Water Main Standards and Specifications

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- E. After installation is complete, operational performance tests shall be conducted in the presence of the manufacturer's representative, CONTRACTOR, and ENGINEER. The manufacturer's representative shall provide training and oversee start-up, testing, and adjustment of the valve to ensure zero leakage, correct installation, and function. Any deficiencies revealed during testing shall be corrected and tests repeated at CONTRACTOR's expense until all tests are passed to the satisfaction of the ENGINEER.
- F. Operation and Maintenance Manuals shall be provided by CONTRACTOR.

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Section 450

STANDARD DRAWINGS

December 2010

- WA-01-1 Blow Off Valve - Standard
- WA-01-2 Blow Off Valve (Above Ground) - Automatic
- WA-02 Fire Line Double Check Detector Assembly (4 Inches to 12 Inches)
- WA-03 Fire Hydrant Assembly
- WA-04-1 Fire Service Master Meter Assembly (Single Cross Connection Control Assembly)
- WA-04-2 Fire Service Master Meter Assembly (Double Cross Connection Control Assembly)
- WA-05 Meter and Reduced Pressure Zone Cross Connection Control Assembly (Up to 2 Inches)
- WA-06 Jumper Connection (Typical)
- WA-07-1 Water System Interconnect - Site Plan
- WA-07-2 Water System Interconnect – Plan and Section Views
- WA-08 Potable Water Irrigation Master Control Assembly (Four Inches and Larger)
- WA-09-1 Master Meter Assembly 3” and Larger (Single Cross Connection Control Assembly)
- WA-09-2 Master Meter Assembly 3” and Larger (Double Cross Connection Control Assembly)
- WA-10 Hydraulically Operated Control Valve (Pressure Reducing/Pressure Sustaining)

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Section 450-A

WATER
Testing and Inspection for Acceptance

December 2010

- f. The CONTRACTOR shall locate and open all new in-line valves beyond the point of connection on the pipeline to be cleaned during the swabbing operation.
- g. At the receiver or exit point for the poly swab, the CONTRACTOR is responsible for creating a safe environment for collection of debris, water, and the swab. The CONTRACTOR shall provide for the protection of surrounding personnel and property and the safe retrieval of the swab.
- h. Only PCU personnel shall operate the supply valve from the existing distribution system. Cleaning and flushing shall be accomplished by propelling the swab down the pipeline to the exit point with potable water. Flushing shall continue until the water is completely clear and swab is retrieved.
 - i. Re-apply a series of individual swabs in varying diameters and/or densities as required, to attain proper cleanliness of pipeline.
 - ii. Swabbing speed shall range between two and five feet per second. After the swabbing process, pressure testing and disinfection of the pipe shall be completed in accordance with this MANUAL.

B. Hydrostatic Pressure Testing of Ductile Iron and PVC Pressure Pipe:

Hydrostatic pressure tests shall consist of a pressure test and leakage test for non-butt welded jointed pipes. Hydrostatic tests shall be conducted on all newly laid pressure pipes, joints, and valves including all service lines to the curb stops and fire hydrants assemblies. Testing shall be performed from in-line valve to in-line valve with a depressurized section behind each valve, whenever possible.

- 1) All pipe sections to be pressure tested shall be subjected to a minimum hydrostatic pressure of 150 psi. The duration of each pressure test shall be for a period of two hours. If during the test, the integrity of the tested line is in question, PCU may require a six-hour pressure test. The basic provisions of AWWA C600 shall be applicable.
- 2) All testing and the quantity of acceptable leakage shall be documented and certified using the appropriate Pressure Test Form.
- 3) Water supply from the existing distribution system shall be provided through a jumper connection consisting of fittings, a reduced pressure zone cross connection control assembly, and installed as shown in the STANDARD DRAWINGS.
- 4) Procedure for Pressure Test:

Pipe to be tested shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. Provisions shall be made to expel air entrapped in the pipe before applying the specified test pressure. To accomplish this, taps shall be made, and appropriate valves installed to ensure bleeding of all air from the main. If defective pipes, fittings, valves, or hydrants are discovered in consequence of this pressure test, all such items shall be removed and replaced by the CONTRACTOR

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CHAPTER 4

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Testing and Inspection for Acceptance

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with sound material and the test shall be repeated until satisfactory results are obtained. Provisions of AWWA C600 and C651, where applicable, shall apply.

5) Procedure for Leakage Test:

1. After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C600 shall apply.
2. Allowable leakage in gallons per hour for pipeline shall not be greater than that determined by the formula:

$$L = \frac{ND(P)^{1/2}}{7.400}$$

Note:

L - Allowable leakage in gallons per hour.

~~N~~ - ~~Number of joints in the tested line,~~

D - Nominal diameter of the pipe in inches.

P - Average test pressure during leakage test in pounds per square inch gauge.

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- 6) Leakage is defined as the quantity of water to be supplied in the newly laid pipe or any valved off section under test, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any test of pipe laid disclose leakage greater than that allowed, the CONTRACTOR shall locate and replace or repair the defective joints, pipe or valve until the leakage from subsequent testing is within the specified allowance.

C. Hydrostatic Pressure Testing of HDPE and Fusible PVC Pressure Pipe:

- 1) After installation, the butt welded jointed pipe shall be tested in accordance with this MANUAL with the following modifications:
 - a) Test Duration: The total test time including initial pressurization, initial expansion, and time at test pressure, shall not exceed five hours. If the test is not completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to "relax" for a minimum of eight hours before it is brought back up to test pressure.
 - b) Prior to Hydrostatic Pressure Testing Procedure:
 - i. Hydraulically clean the main to be tested with a polypropylene swab (pig) to remove dirt, sand, and debris from the main prior to hydrostatic testing.
 - ii. Insure that main to be tested is restrained against horizontal and vertical movement. Exposing joints only is allowed.
 - c) Hydrostatic Pressure Testing Procedure:
 - i. Fill main slowly with water to remove air.
 - ii. Pressurize up to 1.5 times the Pressure Class of the pipe used at the lowest point of the main being tested.

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WATER

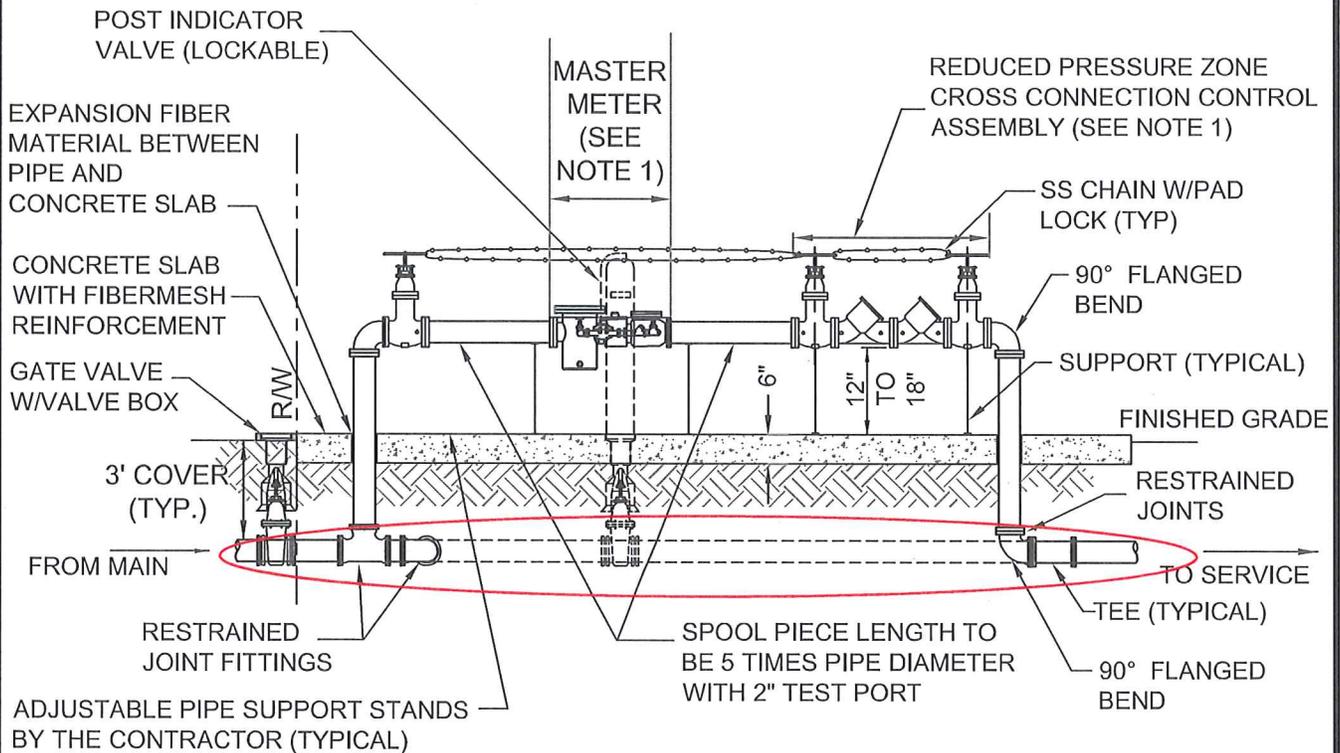
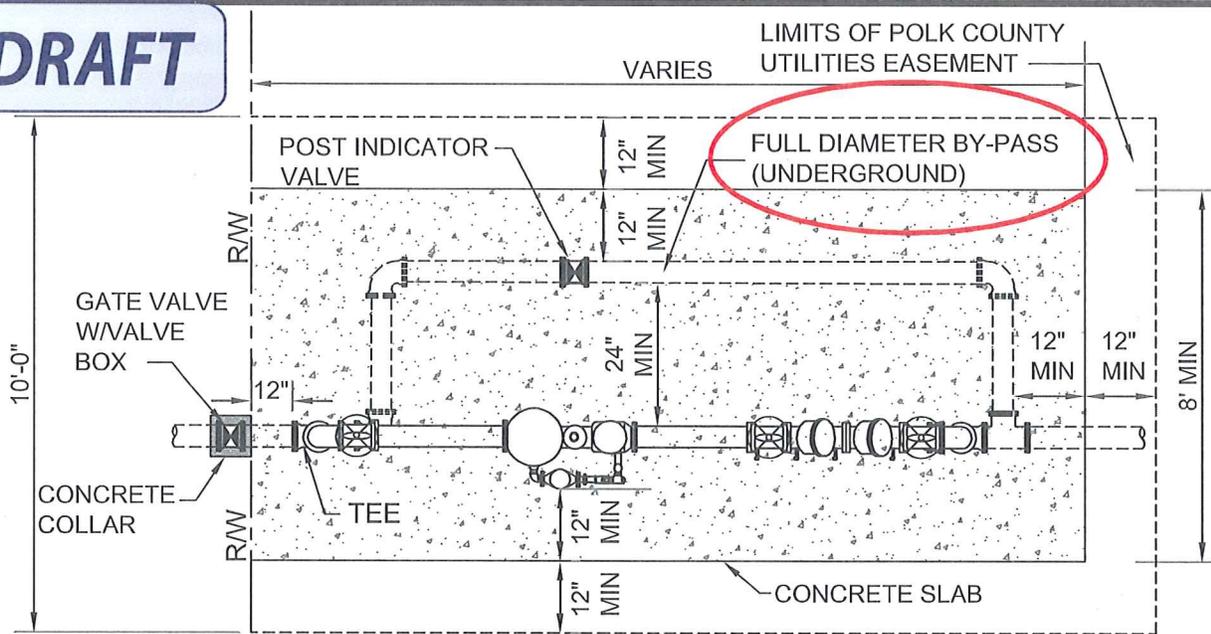
Section 450-B

Approved Materials Checklist

April 2012

	M & H	Series 4067	
Gate Valves 12-inch And Smaller (Resilient Seated Only):			
	American Flow Control	Series 2500	
	M & H	Series 4067	
	Mueller	Series A-2360	
	Clow	Series F-6100	
<u>Hydraulically Operated Control Valves (Pressure Reducing/Sustaining Valves):</u>			
	<u>Cla-Val</u>		<u>Model or Series based on field application.</u>
	<u>OCV</u>		<u>Model or Series based on field application.</u>
	<u>Watts/Ames</u>		<u>Model or Series based on field application.</u>
Sample Station (Above Grade) (Blue in Color):			
	Water Plus	Series 301W	May be used as an alternative to the field assembled sample station.
	Hydro-Guard	Safety-Guard SGBSS-05 SS or -06 SS with S300 Enclosure	May be used as an alternative to the field assembled sample station.
Tapping Valves (Resilient Seated Only):			
	American Flow Control	Series 2500	
	M & H	Series 4751	
	Mueller	Series T-2360 & T-2361	
	Clow	Series F-6114	
Test Station Box For Buried Valves:			
	Bingham/Taylor	P200NFG2T	
Valve Boxes with Lids (5¼ -Inch, ASTM A48 30B Cast or Ductile Iron, With "WATER" cast into the lid top):			
	Bingham / Taylor Foundry	4905-X, 4905, 4904L	
	Tyler	Series 6850	
	American Flow Control*	Trench Adapter Models 1 through 9	* For mains with valve nuts that are 6' or deeper.
	Sigma	VB261, VB262, VB264, VB4650W	
	Mueller	MVB	Use w/ AJBV-4" Locking Bolt
	Star		Heavy Duty Screw or Slip Type

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NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE MASTER METER INCLUDING THE METER, CROSS CONNECTION CONTROL ASSEMBLY, ALL PIPE FITTINGS, STAINLESS STEEL (CHAINS) AND APPURTENANCES.
2. ALL THE ABOVE GROUND PIPE SHALL BE FLANGED DUCTILE IRON.
3. PAINT THE ABOVE GROUND ASSEMBLY, INCLUDING ENTIRE LENGTH OF TIE RODS, AFTER MANUFACTURER'S RECOMMENDED SURFACE PREP IS COMPLETED. DO NOT PAINT OVER NAME/SERIAL PLATE OR BRASS FITTINGS. PAINT COLOR SHALL BE "INTERNATIONAL ORANGE".
4. BOLLARDS SHALL BE REQUIRED BY PCU ON CORNERS OF THE CONCRETE PAD TO PROVIDE PROTECTION ADJACENT TO VEHICULAR USE AREAS.
5. ABOVE GROUND VALVES SHALL BE O.S. & Y TYPE.

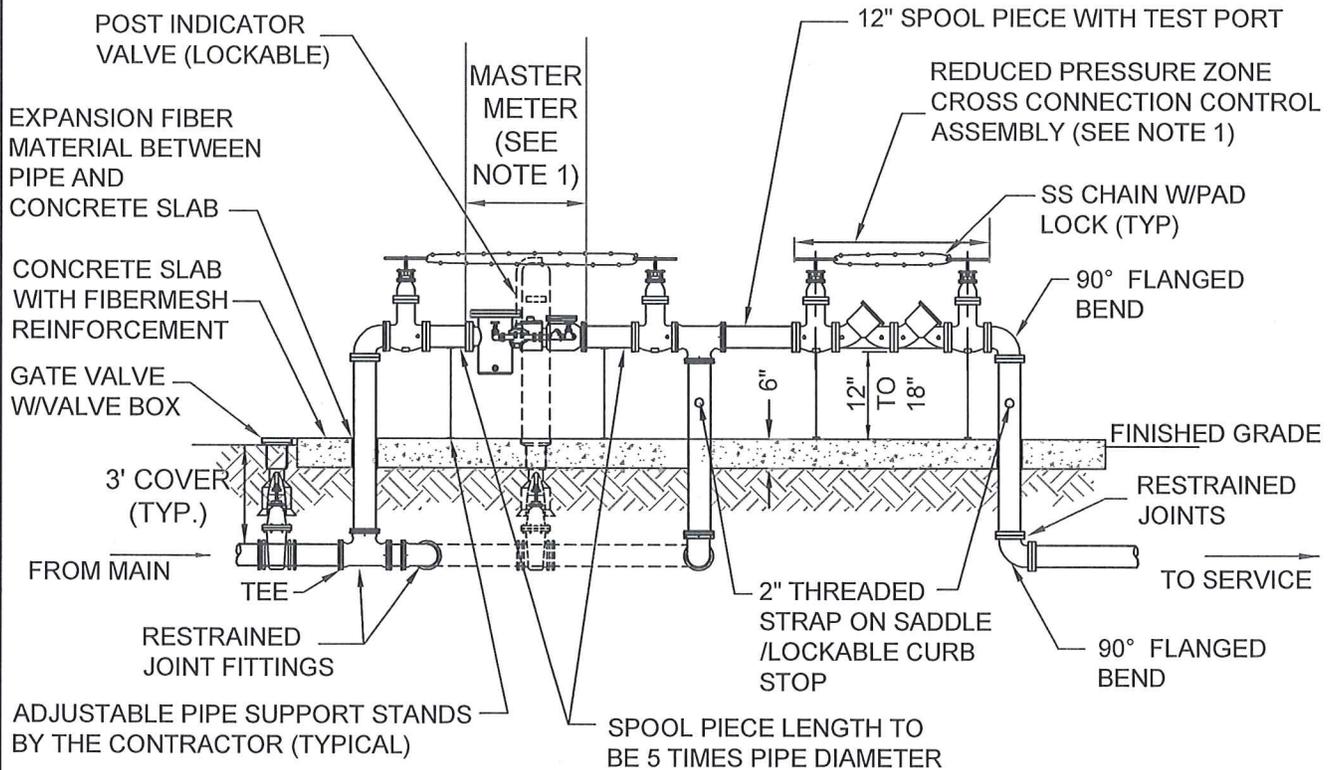
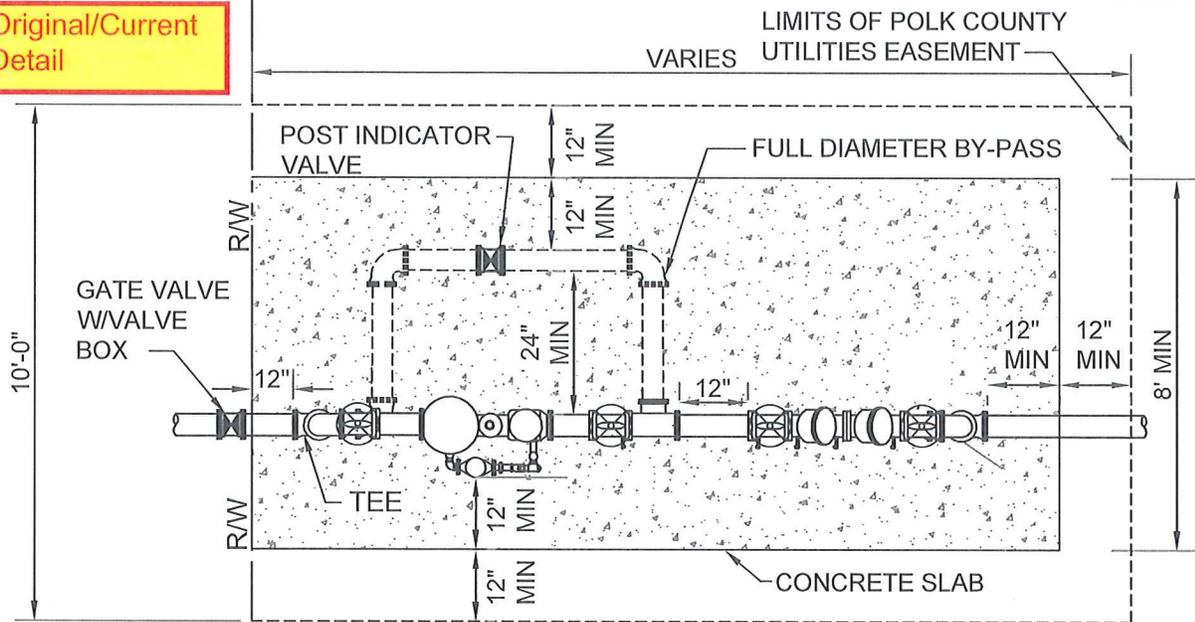
**MASTER METER ASSEMBLY (3" AND LARGER)
(SINGLE CROSS CONNECTION CONTROL ASSEMBLY)**

**FIGURE
WA-09**

POLK COUNTY UTILITIES, FLORIDA

DECEMBER, 2010

Original/Current
Detail



NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE MASTER METER INCLUDING THE METER, CROSS CONNECTION CONTROL ASSEMBLY, ALL PIPE FITTINGS, STAINLESS STEEL (CHAINS) AND APPURTENANCES.
2. ALL THE ABOVE GROUND PIPE SHALL BE FLANGED DUCTILE IRON.
3. PAINT THE ABOVE GROUND ASSEMBLY, INCLUDING ENTIRE LENGTH OF TIE RODS, AFTER MANUFACTURER'S RECOMMENDED SURFACE PREP IS COMPLETED. DO NOT PAINT OVER NAME/SERIAL PLATE OR BRASS FITTINGS. PAINT COLOR SHALL BE "INTERNATIONAL ORANGE".
4. BOLLARDS SHALL BE REQUIRED BY PCU ON CORNERS OF THE CONCRETE PAD TO PROVIDE PROTECTION FROM VEHICULAR TRAFFIC.
5. ABOVE GROUND VALVES SHALL BE O.S. & Y TYPE.

**MASTER METER ASSEMBLY (3" AND LARGER)
(SINGLE CROSS CONNECTION CONTROL ASSEMBLY)**

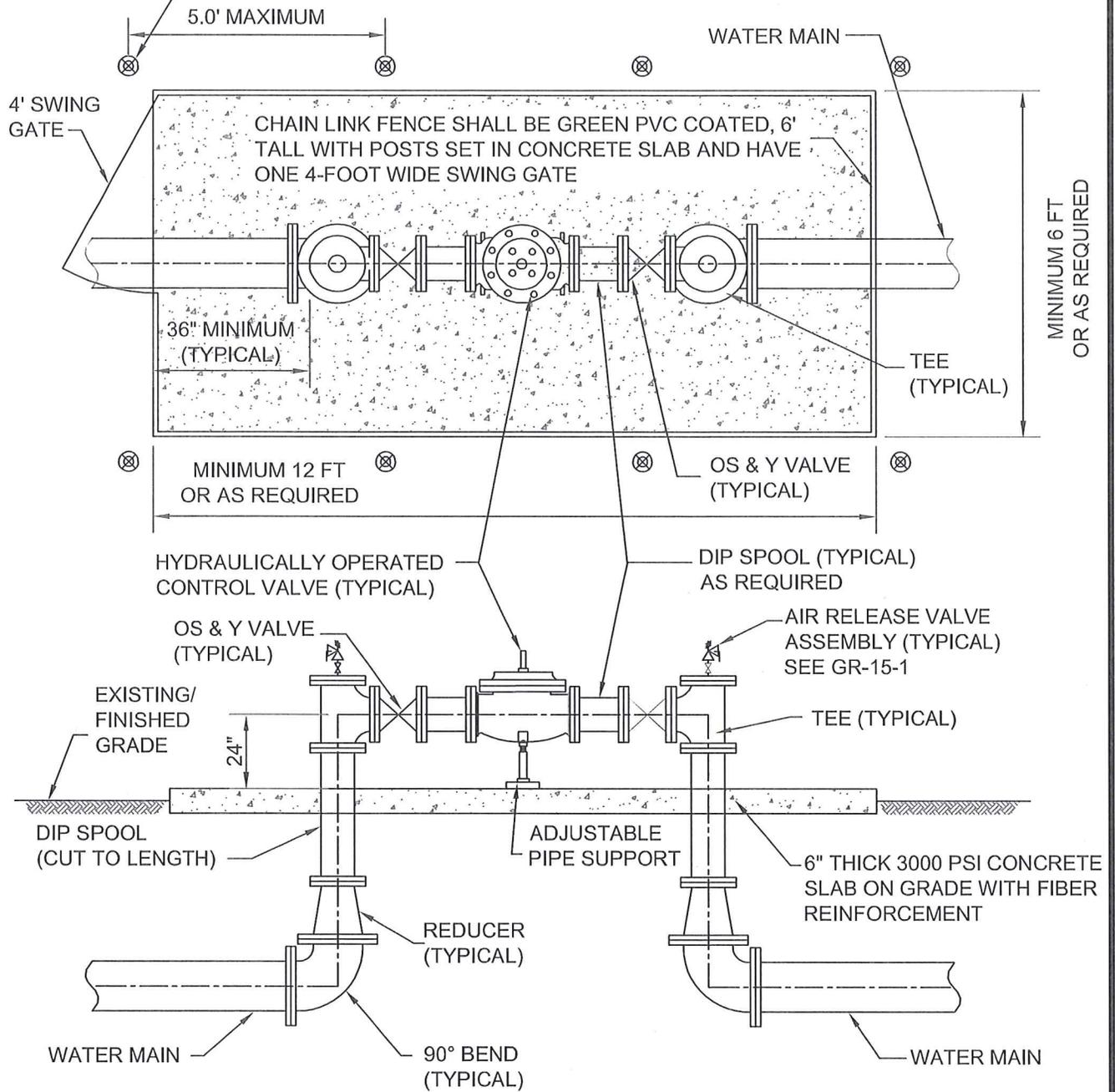
**FIGURE
WA-09-1**

POLK COUNTY UTILITIES, FLORIDA

DECEMBER, 2010

DRAFT

PROTECTIVE BOLLARD, 8 REQ'D BOLLARDS SHALL BE +/- 2' IN THE GROUND & 3' OUT OF GROUND. BOLLARDS SHALL BE PAINTED SAFETY YELLOW. BOLLARDS SHALL BE 6" DIAMETER GALVANIZED STEEL PIPE, CONCRETE FILLED (TYP)



NOTES:

- 1 THE CONTRACTOR SHALL PROVIDE AND INSTALL AIR RELEASE VALVE PER APPROVAL BY POLK COUNTY.
- 2 ALL THE ABOVE GROUND PIPE SHALL BE FLANGED DUCTILE IRON.
- 3 ABOVE GROUND ASSEMBLY SHALL BE PAINTED IN ACCORDANCE WITH PCU REQUIREMENTS.
- 4 BOLLARDS SHALL BE REQUIRED BY PCU ON CORNERS AND ALONG THE LENGTH OF THE CONCRETE PAD TO PROVIDE PROTECTION ADJACENT TO VEHICULAR USE AREAS.
- 5 ABOVE GROUND VALVES SHALL BE O.S. & Y TYPE.

HYDRAULICALLY OPERATED CONTROL VALVE

**FIGURE
WA-10**

- **Chapter Five (5): Wastewater**
 - **Section 511:**
 - **FM cleansing velocities**
 - **Variations in main diameters**
 - **Section 512: Lift Station Design Criteria**
 - **Section 550A: Pressure Test Formula**
 - **Section 550D: Wastewater Hydraulic Standards**
 - **Standard Drawings WW-16 (Fence)**

CHAPTER 5

WASTEWATER

Section 511

Wastewater Force Main Standards

December 2010

PART 1 - GENERAL

- A. Force main systems shall be designed for the estimated tributary population, as delineated in the approved PCU's MASTER PLAN (latest edition) for the subject RUSA. When DEVELOPER's wastewater MASTER PLANS are required, force mains shall be designed for the estimated ultimate build out, as approved by PCU.

PART 2 - LOCATION

- A. Refer to "Gravity Wastewater System Standards and Specifications".

PART 3 - DESIGN BASIS

- A. Average Daily Flow and Peak Flows:
Average daily wastewater flow shall be calculated by referencing the equivalent residential unit flow factors as outlined in the "Utilities Administration Manual". Peak hourly wastewater flow rates shall be calculated by referencing the minimum peaking factors as specified in the Section entitled "Gravity Wastewater System Standards and Specifications".
- B. Design Calculations:
The ENGINEER shall submit signed, sealed, and dated design calculations along with a compact disc copy of the SewerCad based model with the PLANS for all PCU projects. Calculations shall show that the mains will have sufficient hydraulic capacity for peak hourly flows while meeting the requirements of this Section. Minor head losses shall be incorporated in the calculations.

PART 4 - DESIGN

- A. Pipe Cover:
A minimum cover of 36 inches shall be provided.
- B. Velocity and Diameter:
At design pumping rates, a cleansing velocity of at least 2.0 feet per second shall be maintained. Polk County reserves the right to require velocities > 2.0 ft/sec in applications deemed appropriate.. Maximum velocity at design pumping rates should not exceed six feet per second. The minimum force main diameter shall be four inches when connected to a single lift station and is internal of a single development. The ENGINEER shall also provide calculations showing that upsizing the proposed offsite force main has been considered in an effort to downsize the proposed lift station pumps. Only 4, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, and 54-inch diameter force mains shall be permitted. Variations in main size may be authorized by the COUNTY when deemed appropriate provided that the existing or proposed level of service is maintained and operational maintenance and responsibility is established to the benefit of the COUNTY. Using the PCU approved hydraulic modeling standards contained within this MANUAL, the ENGINEER shall determine on a case by case basis if it is

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Section 512 Wastewater Lift Station Standards and Specifications

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appropriate radii and pavement lengths may be considered as part of the access design. The design of the access driveway or roadway shall insure that the ramp break-over angle of a two wheel drive pickup truck with a standard wheelbase is accommodated along its entire length.

- D. Driveways to lift stations along low traffic volume two lane residential roadways shall not be less than 30 feet in length from the lift station's gates to the adjacent roadway's edge of pavement or back of curb so as not to totally block both lanes of travel. The driveway length along all other roadways shall not be less than 45 feet so as to accommodate the entire length of the vehicle described above without impeding traffic in any travel lane.

PART 3 - DESIGN BASIS

- A. Average Daily Flow:

The wastewater lift station design shall be based on ultimate development or projected flow. Average daily wastewater flow shall be calculated by the Equivalent Residential Unit flow factors as outlined in the "Utilities Administration Manual".

- B. Peak Design Flow:

The design pumping capability of the station shall be based upon the peak design flow, which shall be calculated by multiplying the design average flow with the applicable minimum peaking factors as outlined in Table 510-1, "Wastewater Peaking Factors".

- C. Number of Pumps:

Minimum number of pumps is determined by the peak design flow as shown in Table 512-1 below.

Table 512-1. Required Number of Pumps Based on Peak Design Flow.

Peak Design Flow (gpm)	Number of Pumps
Less than 1,000	2
1,000 to less than 2,500	3
2,500 to less than 4,000	4
4,000 or greater	5

- D. Pump and Motor Selection:

The lift station shall be capable of pumping the peak design flow with the largest pumping unit out of service. Pumps shall be capable of meeting all system hydraulic conditions without overloading the motors.

- E. Design Calculations:

The ENGINEER shall submit signed, sealed and dated design calculations for all

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wastewater lift stations. Calculations shall include high head and low head condition system curves plotted on the manufacturer's pump curve, hydraulic analysis of force main system including all friction and minor losses, operating cycles with wet well sizing, and buoyancy calculations. The design basis for all calculations shall provide for 100 percent of all receiving system pumps to be operating at the time that the proposed lift station is to be operating. System curves shall verify that the pumps are operating at peak efficiency in accordance with the manufacturer's specifications and are suitable for the design flow application. Pump and motor selection shall be designed based on the hydraulic grade line at the point of connection as based on PCU's MASTER PLAN model for the regional utility service area affected by the proposed development. Each component of the lift station shall be designed to accommodate the development's design flow at the prevailing system conditions at the time of build out, i.e., utilize impeller change-outs to adjust initial flow and head pressure to meet final conditions, etc.

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PART 4 - DESIGN

A. Flooding:

1. When siting the lift station, the ENGINEER shall consider the potential for damage or interruption of operation because of flooding. Lift station structures, electrical equipment, and mechanical equipment shall be designed to be protected from physical damage by a 100-year 24-hour storm event. The bottom of all station control and electrical boxes shall be no lower than the 100-year 24-hour Flood Elevation. In no case shall the top elevation of the control panel exceed the maximum distance from the lift station's concrete pad that is allowed by the NEC. In such cases, the elevation of the lift station's entire concrete pad shall be raised until the maximum distance allowed by the NEC is achieved.
2. Wastewater lift stations shall remain fully operational and accessible during a 25-year 24-hour storm event. The top elevation of the wet well shall be no lower than the 25-year 24-hour Flood Elevation. On a case-by-case basis, the top elevation of the wet well may be lower if it can be shown that no drainage runoff from the surrounding areas will flow to the lift station site at any time.
3. No occupied structures shall have a floor, which is connected by gravity flow to a PCU wastewater system, with a finish floor elevation below the top elevation of the lift station that serves it. Regulations of local, state and federal agencies regarding flood plains shall be considered.
4. The lift station site design shall insure positive storm water drainage radiates outward from the center of the wet well to the boundaries of the site and away from the lift station site. The access driveway or roadway shall not allow storm water to be conveyed onto the lift station site.

B. Accessibility:

The lift station shall be readily accessible by maintenance vehicles during all weather conditions including a 25-year 24-hour storm event. The lift station driveway shall be concrete onsite while the offsite portion may be either concrete or asphaltic concrete in

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completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to “relax” for a minimum of eight hours before it is brought back up to test pressure. The test procedure consists of initial expansion phase and leakage test phase.

- b. Prior to Hydrostatic Pressure Testing Procedure:
 - 1) Hydraulically clean the main to be tested with a polypropylene swab (pig) to remove dirt, sand, and debris from the main prior to hydrostatic testing.
 - 2) Insure that main to be tested is restrained against horizontal and vertical movement. Exposing joints only is allowed.
- c. Hydrostatic Pressure Testing Procedure:
 - 1) Fill main slowly with water to remove air.
 - 2) Pressurize up to 1.5 times the Pressure Class of the pipe used at the lowest point of the main being tested.
 - 3) Maintain for 4 hours while adding water as needed in non-monitored amounts as pipe will expand while until pressure.
 - 4) Reduce pressure by 10 psi and monitor for 1 hour.
 - 5) Main passes if there are no leaks within 5 percent of the remaining pressure after reduction.

F. Hydrostatic Leakage Testing:

1. Procedure for Leakage Test:

After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C600 shall apply.

- a. Allowable leakage in gallons per hour for pipeline shall not be greater than that determined by the formula:

$$L = \frac{ND(P)}{7,400}^{1/2}$$

Note:

L - Allowable leakage in gallons per hour.

N - Number of joints in the tested line,

D - Nominal diameter of the pipe in inches.

P - Average test pressure during leakage test in pounds per square inch gauge.

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- b. Leakage is defined as the quantity of water to be supplied in the installed pipe or any valve section under test, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any test of pipe installed disclose leakage greater than that allowed, the CONTRACTOR shall locate and replace or repair the defective joints, pipe or

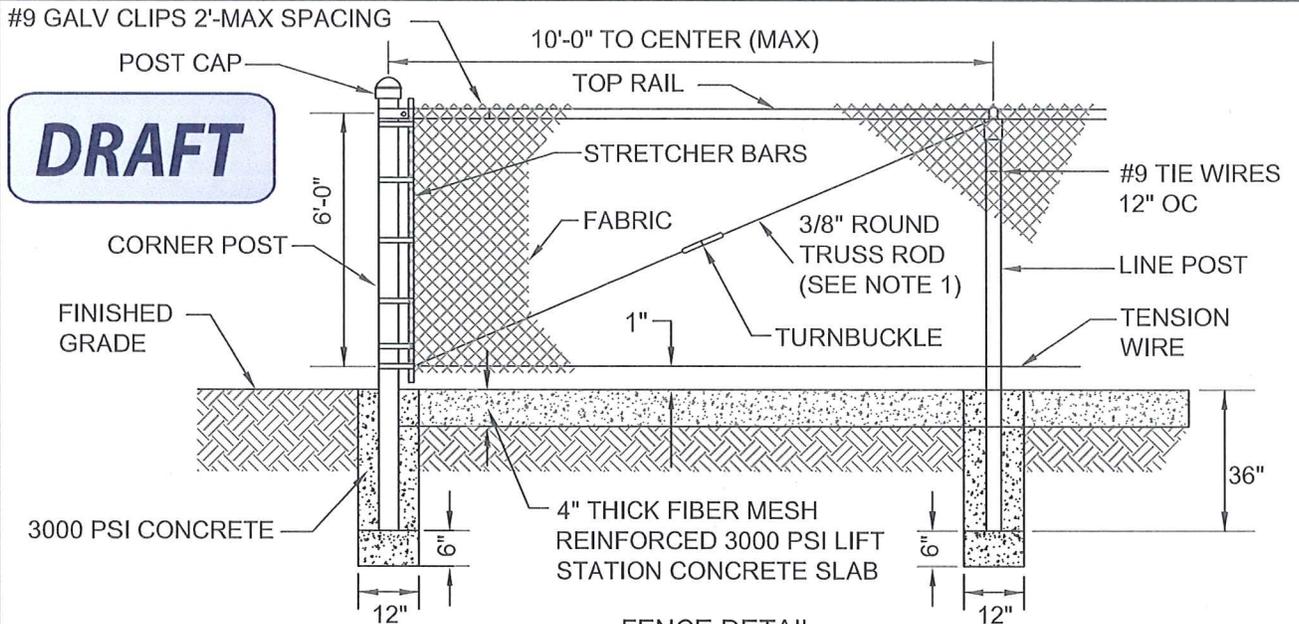
CHAPTER 5
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Wastewater Hydraulic Standards

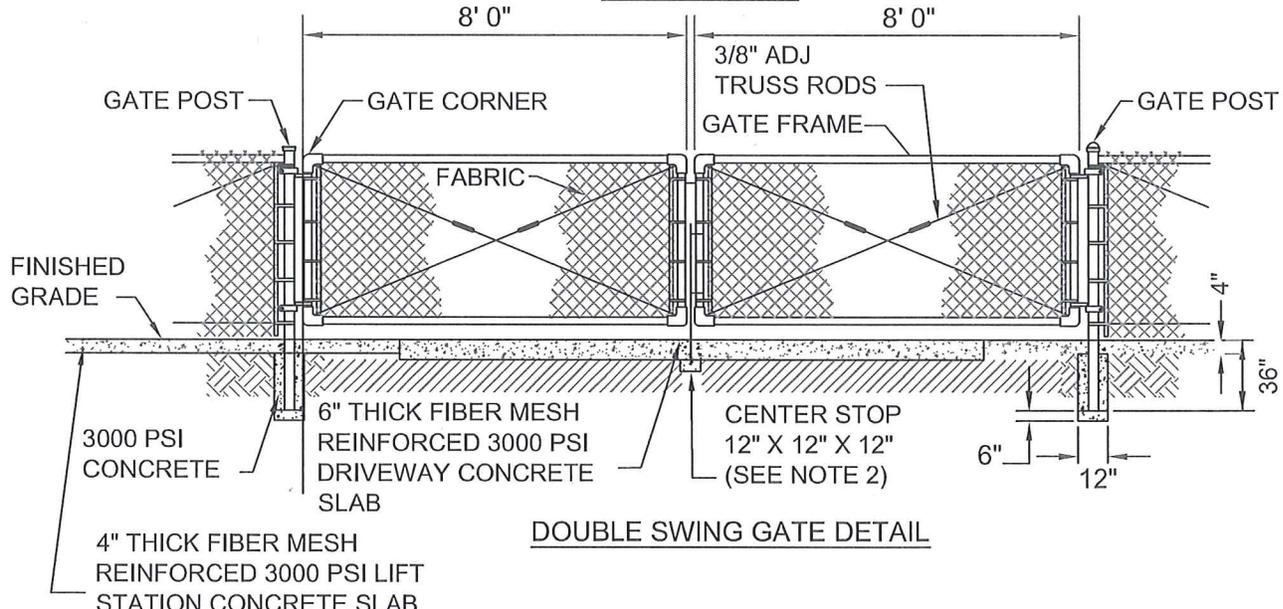
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Force Main Design Criteria														
Minimum Velocity	2 fps													
Maximum Velocity	6 fps													
Maximum Transmission Pressure	40 psi													
Hazen Williams Friction Coefficient (C) New	130	All existing and future pipe materials (Nominal ID)												
Pump Station Design Criteria														
Maximum Pump TDH	150 feet	From both pumps off												
Minimum (run out) pump TDH		Based on lag pump on												
For Pump Station Evaluation: Insure Peaking Factors comply with Ten State Standards for Pump Station Evaluations The design pumping capacity of the station is estimated by multiplying the AADF with the applicable peaking factors as follows:	<table border="1"> <thead> <tr> <th>Annual Average Daily Flow (AADF)</th> <th>Peak Factor</th> </tr> </thead> <tbody> <tr> <td>Flows to 100,000 GPD</td> <td>4.0</td> </tr> <tr> <td>100,000 to 250,000 GPD</td> <td>3.5</td> </tr> <tr> <td>250,000 to 500,000 GPD</td> <td>3.2</td> </tr> <tr> <td>500,000 to 1,000,000 GPD</td> <td>3.0</td> </tr> <tr> <td>Flows Greater Than 1,000,000 GPD</td> <td>2.5</td> </tr> </tbody> </table>	Annual Average Daily Flow (AADF)	Peak Factor	Flows to 100,000 GPD	4.0	100,000 to 250,000 GPD	3.5	250,000 to 500,000 GPD	3.2	500,000 to 1,000,000 GPD	3.0	Flows Greater Than 1,000,000 GPD	2.5	
Annual Average Daily Flow (AADF)	Peak Factor													
Flows to 100,000 GPD	4.0													
100,000 to 250,000 GPD	3.5													
250,000 to 500,000 GPD	3.2													
500,000 to 1,000,000 GPD	3.0													
Flows Greater Than 1,000,000 GPD	2.5													
For Transmission System Evaluation: The design pumping capacity of the station is estimated by multiplying the AADF with the applicable countywide peaking factor as follows:		<p style="text-align: center;"><u>Peak Factor</u></p> <p style="text-align: center;">4.0</p>												
	All calculations shall provide for <u>100</u> percent of all receiving system pumps to be operating at the same time that the proposed lift station(s) will be operating.													

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FENCE DETAIL



DOUBLE SWING GATE DETAIL

NOTES:

1. TRUSS BARS ARE REQUIRED FOR EACH GATE SECTION AND THE FIRST SPAN ON EACH SIDE OF A CORNER POST ONLY.
2. GATE SHALL BE CAPABLE OF BEING LOCKED SECURELY WITH MINIMUM SPACE BETWEEN POST & GATES OR GATES & GATES.
3. FENCING SHALL BE BLACK, FACTORY APPLIED VINYL CLAD.
4. THREE STRANDS OF BARBED WIRE SHALL BE INSTALLED ON TOP ONLY IF REQUIRED AND APPROVED BY PCU. 2' FENCE AND GATE POST CAP EXTENSION SHALL BE INCORPORATED INTO FENCE AND/OR GATE DESIGN ACCORDINGLY. BARBED WIRE SHALL BE INSTALLED VERTICALLY AT GATE.
5. A ROLLER TYPE GATE MAY BE SUBSTITUTED FOR SWING GATES AS APPROVED OR REQUESTED BY PCU.
6. MINIMUM 15' COMPLETELY CLEAR OPENING REQUIRED TO ACCOMMODATE HEAVY EQUIPMENT AND/OR EMERGENCY VEHICLES.
7. ELECTRO-MECHANICAL LOCKING DEVICE MAY BE USED AS APPROVED OR REQUESTED BY PCU AND IN ACCORDANCE WITH APPROVED MATERIALS CHECK LIST.

CHAIN LINK FENCE (TYPICAL)	FIGURE WW-16
POLK COUNTY UTILITIES, FLORIDA	DECEMBER, 2010

- **Chapter Six (6): Reclaimed Water**
 - **Section 610:**
 - Design
 - System Connections
 - Formatting
 - **Section 650A: Pressure Test Formula**
 - **Section 650: Standard Drawings TOC**
 - **Standard Drawing RW-03**

CHAPTER 6 RECLAIMED WATER

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PART 1 - GENERAL

- A. The use of reclaimed water shall be governed by and in accordance with the most current edition of the “Utilities Reclaimed Water Policy Manual”, the “Utilities Standards and Specifications Manual”, the LAND DEVELOPMENT CODE, the COMPREHENSIVE PLAN, the Florida Plumbing Code, and “Chapter 62-610, Reuse of Reclaimed Water and Land Application, Part III, FAC”.
- B. All reclaimed water pipes, piping, meter boxes, meter lids, meter dial faces, sprinkler heads, signage, and other related materials shall be appropriately identified and Pantone Purple 522C in color using light stable colorants.

PART 2 – NOT USED

PART 3 - MANDATORY CONNECTION

- A. Connection to a public access quality reclaimed water system shall be in accordance with the COMPREHENSIVE PLAN, the LAND DEVELOPMENT CODE, and the “Utilities Reclaimed Water Policy Manual”.

PART 4 – LOCATION

- A. Refer to [Chapter 4](#), “Potable Water System Standards and Specifications”, [Section 410, Part 2 - Location](#).

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PART 5 - DESIGN BASIS

- A. Reclaimed water systems shall be designed to promote efficient reclaimed water usage. Reclaimed water mains shall be designed for the estimated ultimate irrigation demand, based on the planned build-out of the DEVELOPMENT. The DEVELOPER is responsible for sizing of the mains and related infrastructure, only for his DEVELOPMENT. Individual single-family homes are exempt from providing design calculations for irrigation systems with one inch or smaller meters.
- B. Average Daily Flows and Peak Flows for Single-Family Residential and Other Developments:
 - 1. Reclaimed water demand shall be calculated in accordance with the most restrictive criteria contained in the documents referenced in Part 1(A) above; and
 - 2. Irrigation zones shall be provided to uniformly distribute flows so that the maximum peak hourly factor is not exceeded. Alternate irrigation system designs will be evaluated on a case-by-case basis.
- C. Minimum Main Sizing for Single-Family Residential Developments:
 - a. The peak hourly demand for reclaimed water mains shall be based on 50 percent of the lots irrigating simultaneously using a demand of 20 gpm per lot.
 - b. Irrigation System Design Calculations:

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CHAPTER 6 RECLAIMED WATER

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- i. DEVELOPER's ENGINEER shall submit signed, sealed, and dated design calculations with the final construction plans for all reclaimed water distribution projects. Calculations shall show that reclaimed water mains will have sufficient hydraulic capacity to transport peak hourly flows. All head losses and minor losses shall be included in calculations. Based on the calculations derived in the Sections above, the DEVELOPER's ENGINEER shall recommend a meter size for each irrigation zone as approved by PCU.

PART 6 - DESIGN

A. Pipe Cover:

A minimum cover of 36 inches shall be provided.

B. Pressure:

All reclaimed water mains shall be designed using a pressure of 35 psi. For master metered systems, the reclaimed water pressure shall be a minimum of 20 psi for each service connection.

C. Diameter:

Only 4, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, and 54-inch diameter water mains shall be permitted. Variations in main size may be authorized by the COUNTY when deemed appropriate provided that the existing or proposed level of service is maintained and operational maintenance and responsibility is established to the benefit of the COUNTY. Looped systems shall be required in low-density residential developments. Where looping of mains is not practical, the diameter of dead end mains shall be increased by one pipe size as based on hydraulic modeling.

D. Velocity:

Mains shall be sized so velocities do not exceed six feet per second under maximum daily flow conditions. In no case shall connections be made to cause velocities to exceed six feet per second in existing mains.

E. Design Friction Losses:

Friction losses through mains shall be based on the Hazen and Williams or Darcy-Wiesbach formulas. In the use of the Hazen and Williams formula, the value for "C" shall be 130 for all pipes.

F. Design Pressure and Restraint

1. The main and fittings, including all restrained joint pipe fittings shall be designed to withstand pump operating pressures and pressure surges, but not less than 150 psi.
2. The restrained joint lengths shall be calculated consistent with the table format shown in the STANDARD DRAWINGS.
3. In the event that it is necessary to locate proposed mains or leave existing mains longitudinally under any part of a proposed roadway subject to regular non-residential traffic or with speed limits above 30 miles per hour, such mains shall

Deleted: Refer to the Section entitled "Potable Water System Standards and Specifications".

CHAPTER 6 RECLAIMED WATER

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have restrained joints.

G. Dead Ends:

1. In order to provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical, as determined by PCU.

H. Valves:

Sufficient valves shall be provided on mains so that inconvenience and sanitary hazards will be minimized during repairs. Inline valves shall be located no more than 500 feet apart in commercial, industrial, and high-density residential areas and no more than 1000 feet in all other areas. In addition, inline valves shall be utilized to isolate a maximum of 40 ERC's in order to reduce inconveniences to other customers. A minimum of two valves per tee and three valves per cross shall be required to isolate and maintain adequate service. Valves shall be placed at phase lines and located at the end of all water main extensions except at cul-de-sacs. The County reserves the right to require additional isolation valves at tees, crosses, etc. as necessary for system operation.

I. Combination Air/Vacuum Release Valves:

Automatic air release valves of appropriate size and number shall be installed in accordance with the STANDARD DRAWINGS to prevent air locking formation. Automatic combination air and vacuum release valves shall be utilized to prevent both air locking and vacuum formation. All such valves are required at significant high points of the main or as specified by PCU. Valves shall be clearly delineated on the profile view for each main in the PLANS. The ENGINEER shall submit calculations to PCU justifying the valve sizes and numbers as specified by AWWA M-51 "Air Release, Air/Vacuum, and Combination Air Valves".

J. Not Used

K. Booster Pumps:

Private in-line booster pumps are not permitted on RECLAIMED WATER SYSTEMS unless otherwise approved by POLK COUNTY.

L. Restrained Joints:

1. Pressure piping, fittings, and other items requiring restraint shall be restrained by assemblies or devices designed for the maximum pressure condition (test pressure) in accordance with the STANDARD DRAWINGS.
2. In the event that it is necessary to locate proposed mains or leave existing mains longitudinally under any part of a proposed roadway subject to regular non-residential traffic or with speed limits above 30 miles per hour, such mains shall have restrained joints or be constructed within steel casing(s).

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Where permanent dead-end mains occur, they shall terminate with a blow-off assembly for flushing purposes. Automatic-metered flushing devices may be required to maintain water quality in water mains.

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CHAPTER 6 RECLAIMED WATER

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- M. Separation of Reclaimed Water Mains from Potable Water and Wastewater Systems:
Separation of reclaimed water, potable water, and wastewater system shall comply with FDEP regulations and PCU standards per the STANDARD DRAWINGS.
- N. Materials:
1. Reclaimed water pipe shall be either PVC or ductile iron pipe.
 2. HDPE may be used in specific applications as specified in this MANUAL or as approved by PCU. Using the PCU approved hydraulic modeling standards contained within this MANUAL, the ENGINEER shall determine on a case by case basis if it is necessary for all proposed HDPE pipe installations to be increased by one pipe size above all proposed or existing adjacent PVC and Ductile Iron Pipe installations.

O. Signage and Public Notice:

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1. For all systems, there shall be readily identifiable “Reclaimed Water” or “Do Not Drink” notices, marking or coding on application/distribution facilities and appurtenances. Notification shall be accomplished by the posting of advisory signs designating the nature of the reclaimed project area where reclaimed is practiced, notes on scorecards or by other methods per the STANDARD DRAWINGS. Notification methods used include posting of advisory signs at entrances to residential neighborhoods, medians, right of ways, at the entrance to a golf course, and at the first and tenth tees. Advisory signs shall be posted adjacent to lakes or ponds used to store reclaimed water with a minimum of four signs or as determined by PCU. Advisory signs shall be posted at decorative water features that use reclaimed water and shall include the following text: “Do Not Drink” and “Do Not Swim” together per the STANDARD DRAWINGS.
2. The DEVELOPER shall be responsible for all cost incurred and installation of reclaimed water signage in accordance with FDEP regulations and PCU standards. The OWNER responsible for operation and maintenance of the private irrigation system shall also be responsible for maintenance of the signage.
3. PCU will be responsible for maintenance of signage for PCU RECLAIMED WATER SYSTEMS.

PART 7 - SYSTEM CONNECTION AND SERVICE CONNECTIONS

- A. Reclaimed water services and connections shall conform to the applicable provisions of this MANUAL. Only 1-inch services are permissible for reclaimed installations at residential locations. 2, 4, 6, 8, 10, and 12-inch services may be permitted for non-residential locations. PCU may install services and connections to existing reclaimed water systems up to two-inch, after payment of applicable fees and charges. The CONTRACTOR shall furnish service connections for new main extensions.

Deleted: Refer to the Section entitled “Potable Water System Standards and Specifications”.

PART 8 - WATER METERING

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A. General:

All reclaimed water service connections shall be metered. In general, the method of metering will follow the guidelines listed below and is subject to PCU's determination of appropriateness.

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1. All meters shall be in accordance with Section 3 of the "Utilities Administration Manual" and the MANUAL's "Approved Meters List".

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2. An above ground meter assembly shall be required for all non-residential installations regardless of meter size.

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3. Single family and duplex residential meters that are two inches or smaller shall be installed in PCU approved meter boxes.

4. On-site systems downstream of and served by a master meter assembly shall be maintained by the Homeowners Association, Owners Association, or the Property Owner unless otherwise determined and/or required by prevailing regulations or County requirements.

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5. The ENGINEER shall obtain approval before finalizing the metering system design.

Deleted: DEVELOPER's

6. Unless specifically approved by PCU, meter boxes shall not be installed in sidewalks, driveways or areas subject to pedestrian or vehicular traffic.

7. Meters subject to vehicular traffic shall be installed in a traffic rated meter box.

B. Single Family, Duplex, and Town Homes Subdivisions with Public Rights of Way:

1. Each unit shall be individually metered. Meters shall be installed within the right-of-way in individual meter boxes as indicated in the STANDARD DRAWINGS
2. Town Homes Subdivisions shall install a master meter for individual buildings or groups of buildings.
3. On-site reclaimed water systems downstream of and served by a master meter assembly shall be maintained by the Homeowners Association, Owners Association, or Property Owner.

C. Single Family and Town Homes Subdivisions with Private Rights-of- Way:

1. If easements are dedicated over the entire private street common areas, individual meters may be permitted in accordance with PART 8 (B). Additionally, private streets shall meet COUNTY standards and sufficient area must be available outside of paved areas to locate water mains, services, and meters. If these criteria cannot be met, the subdivision shall be metered pursuant to PART 8, (D).
2. Town Homes Subdivisions shall install a master meter for individual buildings or groups of buildings.

CHAPTER 6 RECLAIMED WATER

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3. On-site reclaimed water systems downstream of and served by a master meter assembly shall be maintained by the Homeowners Association, Owners Association, or Property Owner.

D. Commercial, Industrial, Institutional, Shopping Centers, Apartments, and Condominium Projects:

In general, all such projects shall require installation of a master meter assembly to service the entire development. In general, shopping centers and associated out parcels shall require installation of a single meter to service the entire development unless out parcels are adjacent to public right of way or otherwise approved by PCU.

E. Meter Installation:

1. Meters that are larger than two inches shall be installed by the DEVELOPER.
2. Installation of meters that are two inches and smaller will be performed by PCU.
3. Single family residential meters that are one inch and smaller in size shall be installed underground in an approved meter box. Deleted: than two inches
4. All other meters shall be installed above ground and located in a Polk County Utilities Easement located adjacent to but outside of the public right of way per the STANDARD DRAWINGS.
5. Where meters are to be installed by PCU in an above ground assembly, the DEVELOPER shall install an appropriately sized lockable curb stop and meter box (if applicable) in the location designated for the meter in order to facilitate ease of installation of the meter by PCU. Deleted: 2 inch or smaller meters are to be installed by PCU in an above
Deleted: sized meter yoke or spool piece

F. Meter Sizing:

PCU shall approve the size and quantity of all meters. The ENGINEER shall recommend meter sizes and provide sufficient information on estimated average daily and peak flows to justify each meter size.

PART 9 – MATERIALS, INSTALLATION, AND TESTING

A. Applicable provisions of the MANUAL shall apply.

PART 10 – LOCATION AND IDENTIFICATION

A. A means for locating and identifying all reclaimed water mains and valves shall be provided in accordance with the MANUAL and the STANDARD DRAWINGS. Formatted: Bullets and Numbering

PART 11 - IRRIGATION WELLS Deleted: 9

A. General:

Private wells shall not be connected to any portion of the PCU RECLAIMED WATER SYSTEM, either directed or indirectly, without the installation of an approved cross connection control assembly on the customer's side of the reclaimed water meter.

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B. Ground Water Protection:

Existing or proposed wells utilized for back-up supply of irrigation water to a private irrigation system shall be protected from reclaimed and non-potable water entering the well by either an air-gap or an approved cross connection control assembly.

PART 12 - ON-SITE STORAGE

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- A. The installation of an on-site storage facility with a backup irrigation well may be utilized with the approval of PCU. Said storage facility shall be separated from the reclaimed water system by an air-gap or an approved cross connection control assembly. The volume of the on-site storage ponds or tanks shall be equal to or greater than the annual average daily demand during a 24-hour period.
- B. Single-family residential developments, where PCU will own, operate, and maintain the on-site distribution system are exempt from on-site storage requirements.

PART 13 - APPROVED USES OF RECLAIMED WATER

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- A. In addition to citrus groves, landscaping, and golf courses, other uses of reclaimed and non-potable water may be acceptable if the following requirements are met:
 - 1. Specific approval by PCU.
 - 2. All requirements of "Chapter 62-610, Reuse of Reclaimed Water and Land Application, Part III, FAC" are met.
- B. Other Approved Uses of Reclaimed Water:
 - 1. Construction dust control;
 - 2. Outdoor aesthetic feature including fountains, ponds, and lagoons;
 - 3. Cleaning roads, sidewalks and other outdoor work areas;
 - 4. Industrial process water; and
 - 5. Cooling towers.

Deleted: <#>Flushing of sanitary sewers and reclaimed water mains;

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PART 14 - PROHIBITED USES OF RECLAIMED WATER

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- A. The following uses of reclaimed water are prohibited:
 - 1. Fire protection - the use of reclaimed water as a primary supply source for fire hydrants and fire sprinkler systems;
 - 2. Toilet flushing - reclaimed water shall not be connected to any internal building plumbing fixture or piping utilized for toilet flushing or other potable water systems;
 - 3. Laundry water supply;
 - 4. Swimming pools or spas;
 - 5. Single family residential air conditioning systems;
 - 6. Vehicle washing, unless otherwise approved by FDEP for commercial car wash facilities;

CHAPTER 6 RECLAIMED WATER

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- 7. Manufacture of ice for ice rinks; and
- 8. Hose bibs.

PART 15 - CROSS CONNECTION CONTROL

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A. General:

Cross connection control requirements shall be as specified in the "Cross Connection Control Policy Manual".

PART 16 - PROTECTION OF RECLAIMED WATER SYSTEM

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A. General:

1. DEVELOPMENTS that use reclaimed water with chemical injection and/or storm water augmentation systems that add potential contaminants such as fertilizer, pesticides, algacides, etc., shall as a minimum, require installation of an approved double check valve cross connection control assembly. Projects with a higher degree of hazard, such as saline solutions, etc., may be required to install an approved reduced pressure principle cross connection control assembly.

B. Location and Installation:

All cross connection control assemblies required under the above conditions shall be installed and maintained in accordance with the "Cross Connection Control Policy Manual".

PART 17 - CONSTRUCTION

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17.01 SCOPE OF WORK

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- A. These specifications cover the pipes, fittings, and appurtenances used for reclaimed water distribution systems.
- B. The CONTRACTOR shall replace, at his expense, all materials found to be defective or damaged in handling or storage. The CONTRACTOR shall, if requested by PCU, furnish certificates, affidavits of compliance, test reports, or samples for analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated specifications.
- C. Pipe and fitting interior linings shall conform to ANSI/NSF 61 list of approved materials standard.
- D. Reclaimed water mains, water service piping, and connections shall be installed as indicated in the STANDARD DRAWINGS.
- E. Fire hydrant assemblies shall not be installed on any part of a reclaimed water system.

PART 18 - PRODUCTS

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18.01 PIPE MATERIALS

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A. PVC Pipe:

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CHAPTER 6 RECLAIMED WATER

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PVC reclaimed water distribution mains shall be manufactured in accordance with AWWA standard C900, C905, or C909, latest edition. Pipe that is 4 to 12 inches in diameter shall be C900 and have a dimension ratio of 18. Pipe larger than 12 inches in diameter shall be C905 or C909 and have a dimension ratio of 25. Pipe shall be pantone purple 522c in color.

B. Ductile Iron Pipe:

Ductile iron pipe shall conform to ANSI/AWWA A21.51/C151. Pipe shall be pressure class 350 for 3-inch to 12-inch, pressure class 250 for 16-inch to 20-inch, pressure class 200 for 24-inch, and pressure class 150 for 30-inch to 64-inch.

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C. HDPE Pipe:

HDPE pipe shall be in accordance with AWWA C906 and shall have an outside diameter equal to ductile iron pipe for the same size. Pipe shall have a minimum dimension ratio of 11 for use with ductile iron pipe fittings and have a working pressure of 150 psi. Pipe shall have integral pantone purple 522c in color identification stripping. All HDPE pipe and tubing shall be at least one pipe size larger than adjacent PVC and Ductile Iron Pipe.

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18.02 JOINT MATERIALS

A. PVC Pipe Joints:

1. PVC pipe shall have integral bell push on type joints conforming to ASTM D3139.
2. Fusible PVC pipe lengths, as used in horizontal directional drill applications only, shall be assembled in the field with butt fused joints. The CONTRACTOR shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed as specified by the pipe supplier and this MANUAL.

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B. Ductile Iron Pipe Joints:

Joints for ductile iron pipe shall be push-on or mechanical joints conforming to ANSI/AWWA A21.11/C111. Restrained or flanged joints shall be provided where called for in the PLANS. Flanged points shall conform to AWWA C115.

C. HDPE Pipe Joints:

HDPE joints shall conform to AWWA C906.

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18.03 FITTINGS

A. Ductile Iron and PVC Pipe:

Fittings shall be mechanical joint ductile iron compact fittings in accordance with ANSI/AWWA A21.53/C153.

B. HDPE Pipe:

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1. Fittings used with HDPE pipe shall be mechanical joint ductile iron compact fittings in accordance with ANSI/AWWA A21.53/C153 unless otherwise specifically approved by PCU.

18.04 COATINGS AND LININGS FOR DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe and fittings shall have an interior protective lining of cement-mortar with a seal coat of asphaltic material in accordance with ANSI/AWWA A21.4/C104. Exterior ductile iron pipe shall be coated with asphaltic material in accordance with a minimum one mil thick in accordance with ANSI/AWWA A21.51/C151.
- B. Additional Applied Exterior Coatings for Above Ground Pipe and Fittings
Pipe, fittings, and valves shall be thoroughly cleaned and given one field coat (minimum 1.5 mils dry thickness) of rust inhibitor primer in addition to the factory applied coat of rust inhibitor primer. Intermediate and finished field coats of Alkyd shall also be applied by the CONTRACTOR to a minimum 1.5 mil dry thickness for each coat. Primer and field coats as specified in the appropriate "Approved Materials Checklist" shall be compatible and be applied in accordance with the manufacturer's recommendations. The final field coat shall be Pantone 522c purple for finished reclaimed water.

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<#>Ductile Iron Pipe Fittings.¶
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<#>HDPE Pipe Fittings.¶
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18.05 POLYETHYLENE ENCASEMENT

- A. Polyethylene encasement shall be in accordance with ANSI/AWWA A21.51/C105 with wrapping colors to be Pantone 522c purple. Polyethylene encasements are required in accordance with C105 and when crossing, or adjacent to, power easements and gas easements.

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18.06 SERVICE PIPE, STOPS, FITTINGS, AND SERVICE SADDLES

- A. Service Connections at Main:
 - 1. Service connections of one and two-inches shall be brass body reduced port type corporation stops, equipped with connections compatible with the polyethylene tubing and threaded in accordance with specifications in AWWA C800, AWWA C901, and shall comply with NSF-61. One and two-inch services at the water main shall have connections for female iron pipe by female iron pipe thread, conforming to AWWA C509.
 - 2. Service connections, 4-inch through 12-inch, shall have iron body resilient seat gate valves.
 - 3. Service taps for air release valve installations shall utilize a 2-inch brass ball type corporation stop.
- B. Service Pipe:
 - 1. One-inch and two-inch service lines shall be Pantone 522c purple polyethylene tubing, conforming to specifications in AWWA C800, SDR 9, and AWWA C901.

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- 2. Service lines, that are 4, 6, 8, 10, and 12 inches in size, shall be as water main pipe.
- C. Service Control Valves at Property Line:

 - 1. One-inch and two-inch size service control valves shall be reduced port ball valves, made of brass, cast and machined in accordance with specifications in AWWA C800, AWWA C901, compliant with NSF-61 and compatible polyethylene tubing connections.
 - 2. For connections larger than two-inches, the CONTRACTOR shall provide resilient seat gate valves.
- D. Service Fittings:

 - 1. One-inch and two-inch fittings shall be brass, cast and machined in accordance with specifications in AWWA C800 and AWWA C901, and shall comply with NSF-61 with compatible polyethylene tubing connections.
 - 2. Fittings, that are 4, 6, 8, 10, and 12 inches in size, shall be the same as reclaimed water main fittings.
- E. Service Tapping Saddles:

 - 1. Stainless Steel Service Saddles:
Epoxy or nylon coated stainless steel, 18-8 type 304 straps, AWWA tapered threads, two inches to be iron pipe threads. Controlled OD saddles to be used on C900 and IPS OD PVC pipe, double straps to be 2-inch minimum width each, single strap to be minimum of three inches wide.
 - 2. Service Connections:

 - a. PVC and HDPE Pipe Service Saddle:

 - i. One-inch and two-inch services utilize brass body saddle with controlled OD.
 - ii. Four-inch or larger services shall be mechanical tapping sleeves, stainless steel sleeve for size on size taps, or epoxy coated sleeve with stainless steel hardware for all other sizes.
 - b. Ductile Iron Pipe Service Saddle:

 - i. One-inch and two-inch services shall use a controlled OD service tapping saddle with stainless steel straps and a ductile iron body that is either nylon or epoxy coated.
 - ii. Four-inch or larger services shall be mechanical tapping sleeves, stainless steel sleeve for size on size taps, or epoxy coated sleeve with stainless steel hardware for all other sizes.

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18.07 RESILIENT SEAT GATE VALVES

- A. Gate valves shall be resilient seat gate valves, manufactured to meet or exceed the requirements of AWWA C515, latest revision, and in accordance with these

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SPECIFICATIONS. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve. Valves shall have a minimum pressure rating of 150 psi.

- B.** Valves that are 16 inches and larger shall have side actuators. The valve body, bonnet, and bonnet cover shall be ductile iron ASTM A126, Class B. All ferrous surfaces inside and outside shall have a fusion-bonded epoxy coating in accordance with AWWA C 550. A two-inch wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C515.
- C.** Directional Opening:
All valves shall open left or counter clockwise.
- D.** The valves shall be non-rising stems with the stem made of cast, forged, or rolled bronze as specified in AWWA C515. Two stem seals shall be provided and shall be of the O-ring type. The stem nut must be independent of the gate.
- E.** The resilient sealing mechanism shall provide zero leakage at test and normal working pressure when installed with the line flow from either direction.

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18.08 BUTTERFLY VALVES

- A.** Typically, butterfly valves shall not be installed within any PCU system, except directly adjacent to storage tanks for isolation purposes or as specifically approved by PCU for control meter assemblies.
- B.** Butterfly valves and operators shall conform to the "AWWA Standard Specifications for Rubber Seated Butterfly Valves", Designation C504, latest version, except as hereinafter specified, shall be Class 150A or B.
- C.** The valve body materials shall be epoxy coated inside and out as per AWWA C550. The valve body shall be constructed of close grain cast iron per ASTM A126, Class B or equivalent material. All retaining segments and adjusting devices shall be of corrosion resistant material.
- D.** Valve seats shall be a natural rubber or synthetic rubber compound. Valve seats shall be field adjustable and replaceable without dismounting operator disc or shaft and without removing the valve from the line. All retaining segments and adjusting devices shall be of corrosion resistant material.
- E.** The face-to-face dimensions of valves shall be in accordance with above-mentioned AWWA specification for short-body valve.
- F.** Should PCU find it necessary to install butterfly valves along mains that are 16 inches in diameter or larger, a 6-inch minimum bypass with one gate valve shall be installed around each valve.
- G.** The valve shaft shall be turned, ground, and polished constructed of 18-8 stainless steel and designed for both torsional and shearing stresses when the valve is operated under its greatest dynamic or seating torque. Shaft shall be of either a one-piece unit extending full size through the valve disc and valve bearing or it may be of a stub shaft design.

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H. Valve Actuator:

In general, the butterfly valve actuators shall conform to the requirements of AWWA standard specifications for "Rubber Seated Butterfly Valves, Designation C504", insofar as applicable.

I. Directional opening:

All valves shall open left or counter clockwise.

18.09 VALVE BOXES

A. Standard Three-Piece Cast Iron Valve Box:

Three-piece valve boxes are required for mains less than six feet below finished grade as indicated in the STANDARD DRAWINGS. Valve boxes shall meet AWWA standards and be provided with suitable heavy duty ductile or cast iron bonnets and shall extend to such elevation at or slightly above the finished grade surface as directed by PCU. The barrel shall be screw type only and have a 5-1/4-inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers. Ductile or cast iron covers shall have "RECLAIMED" cast into the top for all water mains.

B. Valve Box Assembly:

Valve box assemblies, as indicated in the STANDARD DRAWINGS, are required for any size main whenever the top of the valve nut is six feet or deeper below the finished surface elevation that is directly above the valve location. Valve boxes shall be one complete assembled unit composed of the ductile or cast iron valve box with a 5-1/4 inch barrel shaft and steel extension stem that attaches to the valve body. All moving parts of the extension stem shall be enclosed in a housing to prevent contact with the soil. Valve box assembly shall be adjustable to accommodate variable depths.

C. The stem assembly shall be of a telescoping design that allows for variable adjustment length. The material shall be galvanized square steel tubing. The stem assembly shall have a built-in device that prevents the stem assembly from disengaging at its fully extended length. The extension stem must be capable of surviving a torque test to 1,000 ft-lb without failure.

D. Valve boxes, located in roadways with speed limits above 30 miles per hour or on mains that are 16 inches in diameter or larger, shall have locking lids utilizing a five sided nut with a special wrench needed to open. Valve lids to be made as shown in the STANDARD DRAWINGS.

E. A test station box shall be installed into the valve pad for the placement of the locating wire as shown in the STANDARD DRAWINGS. The test station box shall be as specified in the appropriate "Approved Materials Checklist".

F. Locating wire shall be 14-gauge single strand solid core copper wire with insulation. The color of the insulation shall be the same color as the color code for the pipe being installed.

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- G. Each valve marker shall be made of bronze with each specific valve's information clearly imprinted on its top surface, provided with a hanger pin, and installed in each valve collar as shown in the STANDARD DRAWINGS.

18.10 AIR RELEASE VALVES

- A. Valves for use in reclaimed water mains shall be single body type valves designed to release large quantities of air at start up, admit air on shut down and release air in operation. Automatic combination air and vacuum release valves shall be utilized to prevent both air locking and vacuum formation. Valves shall be made of either high strength plastic with corrosion resistant polymer materials or have a cast iron body, cover and baffle, stainless steel float, bronze water diffuser Buna-N or Viton seat and stainless steel trim. Valves must be installed in an above ground enclosure as shown on the STANDARD DRAWINGS. Fittings from the main to the air release valve in the enclosure shall be threaded and made of brass.

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PART 19 CONSTRUCTION

19.01 MATERIAL IDENTIFICATION AND TESTING

A. Pipe Identification and Location:

- 1. Each length of pipe shall bear the name or trademark of the manufacturer, the location of the manufacturing plant, and the class or strength classification of the pipe. The markings shall be plainly visible on the pipe barrel. Pipe, which is not clearly marked, is subject to rejection. The CONTRACTOR shall remove all rejected pipe from the project site within five working days.
- 2. All PVC pipe and other pipe that is factory color-coded on the outside surface of the pipe shall be identified and locatable as specified in the STANDARD DRAWINGS. All D I pipe, and other pipe not factory color-coded on the outside surface, shall be identified as specified in the STANDARD DRAWINGS. DI pipe shall meet all applicable requirements of AWWA C151. Where the above type of identification method is not considered to be practical by PCU, the pipe shall have a field applied three inch wide permanent Pantone 522c purple paint stripe down the top outside center of the pipe along its entire length.

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B. Material Testing Requirements:

- 1. If requested by PCU, a sample of pipe to be tested shall be selected at random by PCU or the testing laboratory hired by PCU.
- 2. When the samples tested conform to applicable standards, all pipe represented by such samples shall be considered acceptable based on the test parameters measured. Copies of test reports shall be available before the pipe is installed on the project.
- 3. In the event that any of the test samples fail to meet the applicable standards, all pipe represented by such tests shall be subjected to rejection. The CONTRACTOR may furnish two additional test samples from the same shipment or delivery, for each sample that failed and the pipe will be considered acceptable if all of these additional

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samples meet the requirements of the applicable standards. All such retesting shall be at the CONTRACTOR's expense.

- 4. Pipe, which has been rejected by PCU, shall be removed from the site of the work by the CONTRACTOR and replaced with pipe that meets these specifications.

19.02 SEPARATION OF MAINS

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- A. Separation shall be in accordance with the STANDARD DRAWINGS.

19.03 INSTALLATION OF VALVES

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- A. All valves shall be inspected upon delivery in the field to insure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of PCU before they are installed.

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19.04 NOTIFICATION OF CONNECTION TO EXISTING MAINS

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- A. PCU shall be notified at least five NORMAL WORKING DAYS in advance to schedule main connections and valve operations. All existing valves are to be operated only by PCU. All valves installed are to remain closed during construction.

The CONTRACTOR shall exercise extreme caution when excavating in proximity of PCU mains. PCU main locations shown on plans are not exact or guaranteed. The CONTRACTOR is responsible for field verifying existing utility locations. PCU dispatch operator shall be notified immediately in the event of a force main, water main, or reclaimed water main break or damage. The CONTRACTOR shall immediately repair all damage to PCU mains, at the CONTRACTOR's expense. If the repair is not made in a timely manner, as determined by the PCU Inspector, PCU may perform repairs and the CONTRACTOR will be charged for repairs.

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19.05 RECLAIMED WATER SERVICE LOCATION AND IDENTIFICATION

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- A. The location of all service lines shall be as shown on the STANDARD DRAWINGS. On curbed streets, the exact location of each service shall be adequately and permanently identified using durable plastic purple (pantone 522c) colored pavement markers that states "Reclaimed Water Service" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the curb in accordance with the manufacturer's guidelines approximately 6 inches from the top of the curb.

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- B. Where no curb exists, the exact location of each service shall be adequately and permanently identified using durable plastic purple (pantone 522c) colored pavement markers that states "Reclaimed Water Service" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the pavement in accordance with the manufacturer's guidelines

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approximately 6 inches from the edge of pavement.

19.06 RECLAIMED WATER VALVE LOCATION AND IDENTIFICATION

- A. The location of all service lines shall be as shown on the STANDARD DRAWINGS. On curbed streets, the exact location of each service shall be adequately and permanently identified using durable plastic purple (pantone 522c) colored pavement markers that states "Reclaimed Water Valve" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the curb in accordance with the manufacturer's guidelines approximately 6 inches from the top of the curb.
- B. Where no curb exists, the exact location of each service shall be adequately and permanently identified using durable plastic purple (pantone 522c) colored pavement markers that states "Reclaimed Water Valve" and "Call Before You Dig" as specified by the appropriate "Approved Materials Checklist". Each marker shall be securely attached to the pavement in accordance with the manufacturer's guidelines approximately 6 inches from the edge of pavement.

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CHAPTER 6

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- a. After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C600 shall apply.
- b. Allowable leakage in gallons per hour for pipeline shall not be greater than that determined by the formula:

$$L = \frac{ND(P)^{1/2}}{7.400}$$

Note:

L - Allowable leakage in gallons per hour.

N - Number of joints in the tested line,

D - Nominal diameter of the pipe in inches.

P - Average test pressure during leakage test in pounds per square inch gauge.

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6. Leakage is defined as the quantity of water to be supplied in the newly laid pipe or any valved off section under test, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any test of pipe laid disclose leakage greater than that allowed, the CONTRACTOR shall locate and replace or repair the defective joints, pipe or valve until the leakage from subsequent testing is within the specified allowance.

C. Hydrostatic Pressure Testing of HDPE and Fusible PVC Pressure Pipe:

1. After installation, the butt welded jointed pipe shall be tested in accordance with this MANUAL with the following modifications:
 - a. Test Duration: The total test time including initial pressurization, initial expansion, and time at test pressure, shall not exceed five hours. If the test is not completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to "relax" for a minimum of eight hours before it is brought back up to test pressure.
 - b. Prior to Hydrostatic Pressure Testing Procedure:
 - i. Hydraulically clean the main to be tested with a polypropylene swab (pig) to remove dirt, sand, and debris from the main prior to hydrostatic testing.
 - ii. Insure that main to be tested is restrained against horizontal and vertical movement. Exposing joints only is allowed.
 - c. Hydrostatic Pressure Testing Procedure:
 - i. Fill main slowly with water to remove air.
 - ii. Pressurize up to 1.5 times the Pressure Class of the pipe used at the lowest point of the main being tested.
 - iii. Maintain for 4 hours while adding water as needed in non-monitored amounts as pipe will expand while until pressure.
 - iv. Reduce pressure by 10 psi and monitor for 1 hour.

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- v. Main passes if there are no leaks within 5 percent of the remaining pressure after reduction.
- D. The CONTRACTOR shall furnish all necessary equipment and material, make all taps and furnish all closure pieces in the pipe as required. Equipment to be furnished by the CONTRACTOR shall include graduated containers, pressure gauges, hydraulic forces pumps, and suitable hoses and piping. The PCU representative shall monitor a satisfactory test.
- E. The CONTRACTOR may conduct preliminary hydrostatic tests after the trench has been partially backfilled with the joints left exposed for inspection for informational purposes only. The hydrostatic tests for acceptance shall only be conducted after the trenches have been completely backfilled and compacted as specified. Where any section of pipe is provided with concrete thrust collar, pressure test will not be made until at least five days have elapsed after the thrust collar is installed.
- F. The distribution system piping is to remain isolated and out of service until regulatory clearance is issued for the potable water system and the potable system is subsequently activated.

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PART 4 - ACCEPTANCE

4.01 LOCATE WIRE CHECK

- A. The locating wire will be inspected and tested for continuous continuity along the entire length of the main and correct material as specified in the appropriate "Approved Materials Checklist".
- B. Valve locations will be inspected for the proper installation of the locating wire in accordance with the STANDARD DRAWINGS and tested for continuity between the main and the valve.

4.02 VALVES

- A. Valves will be operated to verify a smooth and correct operation, plus the correct direction of opening. PCU shall confirm the location in accordance with the RECORD DRAWINGS and installed in accordance with the STANDARD DRAWINGS.

4.03 VALVE BOXES

- A. Valve boxes will be inspected to ensure they are clear of debris, centered over the operating nut, and installed with a collar as shown in the STANDARD DRAWINGS. The depth of the operating nut will be measured to finished grade to confirm that a riser is installed or not required. Valve boxes shall meet the material standards listed in the appropriate "Approved Materials Checklist".

4.04 SERVICE LINES

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- A. Service lines shall be properly identified, free from conflicts with any structure, installed as shown in the STANDARD DRAWINGS, and the number location and size is as shown on the RECORD DRAWINGS to serve all intended properties. The materials shall be as listed in the appropriate "Approved Materials Checklist".

4.05 AUTOMATIC AIR RELEASE VALVE ASSEMBLIES

- A. Valve assemblies shall be free from any conflicts with any structures, installed in accordance with the STANDARD DRAWINGS, and located as shown on the RECORD DRAWINGS tested to ensure correct operation and confirm materials as listed in the appropriate "Approved Materials Checklist".

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<#>Blow off valve assemblies shall be free from any conflicts with any structures, installed in accordance with the STANDARD DRAWINGS, located as shown in the RECORD DRAWINGS and tested to ensure correct operation. The materials shall be as listed in the appropriate "Approved Materials Checklist".¶

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CHAPTER 6

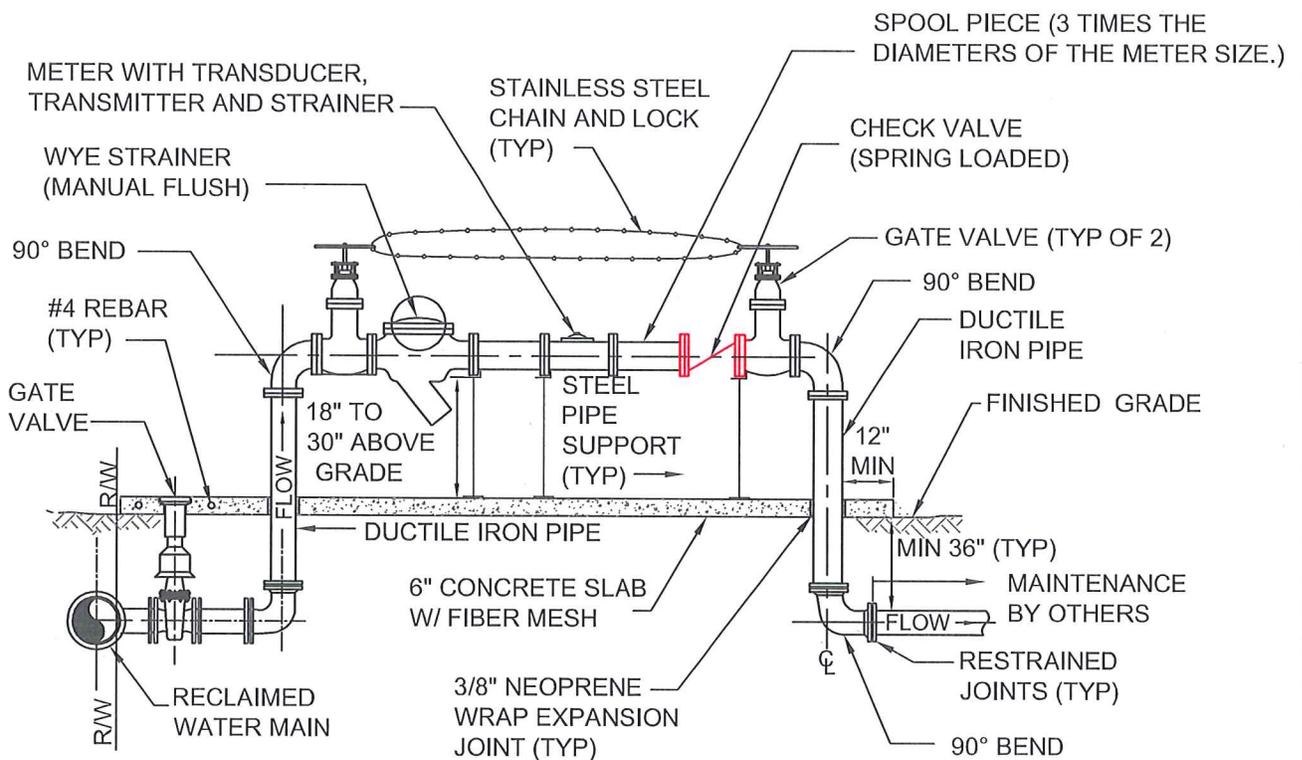
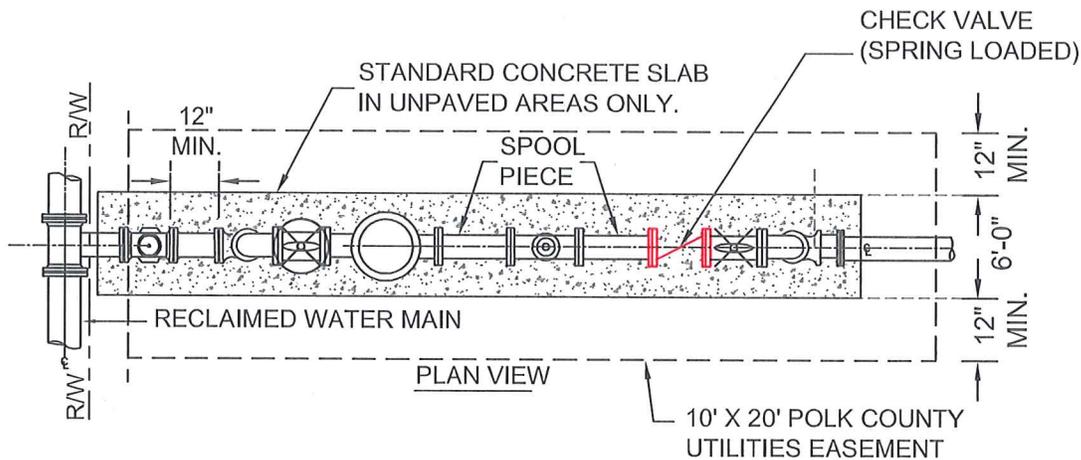
RECLAIMED WATER

Section 650

STANDARD DRAWINGS

December 2010

- RW-01 Reclaimed Water Signage (“Do Not Drink Water”)
- RW-02 Reclaimed Water Signage (“Do Not Drink / Do Not Swim”)
- RW-03 Reclaimed Water Master Meter Assembly



PROFILE VIEW

NOTES:

1. ALL PIPES AND FITTINGS ABOVE GRADE SHALL HAVE FLANGED ENDS.
2. ALL PIPES AND FITTINGS BELOW GRADE SHALL BE MECHANICAL RESTRAINED JOINT ENDS.
3. INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF CHAPTER 62-610 FAC.
4. PIPING AND APPURTENANCES SHALL BE PAINTED PANTONE PURPLE 522C. PVC PIPE SHALL BE COLORED FROM THE FACTORY WITH PANTONE PURPLE 522C USING LIGHT STABLE COLORANTS. PIPE SHALL BE MARKED TO PCU SPECIFICATIONS.
5. METER SHALL BE CAPABLE OF ACCURATELY MEASURING THE ENTIRE RANGE OF EXPECTED FLOWS AND THE TYPE AND MANUFACTURE SHALL BE APPROVED BY PCU.

RECLAIMED WATER MASTER METER ASSEMBLY (LARGER THAN 2 INCH)

**FIGURE
RW-03**

- **Utilities Reclaimed Water Policy Manual (6D)**
 - Availability of service, uses

RECLAIMED WATER POLICY MANUAL

December 2010

4.1 Availability of Service

Other than Bulk Users, reclaimed water service will not be provided to any customer that does not have an active potable water source in place. Single family residential lots shall have active potable water service prior to activation of reclaimed water service. The required distance for a development to construct an off-site reclaimed water main in order to connect to an existing reclaimed water system with available capacity shall be as specified in the LAND DEVELOPMENT CODE and the COMPREHENSIVE PLAN. A developer or other interested person, after contacting the PCU Capacity Engineer, shall refer to the effected Regional Utilities Service Area's current Master Plan to determine the time frame of reclaimed water service availability within a particular Regional Utilities Service Area.

4.2 Requirement to Install Onsite Distribution and Irrigation Systems

Where a proposed development or any parcel of land is to be served by a wastewater treatment facility that has available capacity to produce public access quality reclaimed water suitable for reclaimed water in areas of unrestricted public access as stipulated in Chapter 62-610, Part III, FAC, PCU shall require a developer or user, in accordance with the provisions of the LAND DEVELOPMENT CODE and the COMPREHENSIVE PLAN, to install, at his cost, the necessary onsite and offsite mains, valves, pumps, meters, common area irrigation systems, signage, storage facilities, and other appropriate appurtenances for the reuse of reclaimed water. Such installation shall be a condition of system acceptance or development approval and shall be completed prior to issuance of certificate of occupancy.

A development or other user may request to be excused from the requirement of reclaimed water usage only when he can establish to the satisfaction of PCU that reclaimed water is not reasonable for use on his property, such as proven environmental concerns or other considerations. A request for an exception from the requirements of this Section shall be in writing from the developer or property owner and shall set forth the reasons for the desired exception. In the event an exception is granted by PCU, which has been coordinated with the Growth Management Department, the developer or property owner may still be required, at their cost, to extend reclaimed water mains around or across his property and convey the necessary unencumbered Polk County Utilities Easements and/or public rights-of-way to the COUNTY to facilitate the transmission of reclaimed water to adjoining or nearby properties for reclaimed water reuse or disposal.

4.3 Requirements to Connect

It shall be unlawful to use the PCU potable water system for irrigation purposes after reclaimed water becomes available to a particular site. Customers with existing underground irrigation systems using the PCU potable water system shall be required to disconnect said systems from the PCU potable water system and connect to the reclaimed water system within 90 calendar days of written notice of availability.

RECLAIMED WATER POLICY MANUAL

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4.5 Limitations of Use

- A. Use of reclaimed water shall be limited to irrigation of residential lawns, golf courses, cemeteries, parks, greenways, common areas, open spaces, landscaped areas, decorative water features, highway medians, rights-of-ways, and other similar areas which the developer or user plans to irrigate; or other uses specifically approved by PCU and allowed under Chapter 62-610, FAC.
- B. Reclaimed water shall not be used inside any residential dwelling, or to fill swimming pools, hot tubs, spas, or wading pools or other open waters where human contact or immersion may occur.
- C. Reclaimed water shall not be applied to areas within 100 feet of any public outdoor eating, drinking, or bathing facility, unless aerosol formation is minimized.
- D. Reclaimed water shall not be applied to impervious surfaces that allow drainage to surface waters.
- E. Detailed limitations governing the use of Reclaimed Water are contained in the “Reclaimed Water Use Acknowledgment and Application,” that is located in the “Utilities Administration Manual”.
- F. Reclaimed water shall not be utilized for toilet flushing or fire suppression except in extreme emergency situations as required by the Fire Marshall and approved by PCU in accordance with Chapter 62-610.476, FAC.

4.6 Discontinuance of Service

PCU may discontinue reclaimed water service to any customer due to a violation of the provisions of this MANUAL or other COUNTY regulations, for non-payment of bills, for tampering with any service, for plumbing cross-connections with another water source, for acts detrimental to the system, or for the convenience of PCU. PCU has the right to cease service until the condition is corrected and all costs due PCU are paid. These costs may include delinquent billings and payment for any damage caused to the system. Should discontinued service be reconnected without authorization, then PCU shall remove the service and make such additional charges as are established by the COUNTY.

Reconnection of a reclaimed water system to a potable water system shall not be allowed except in extreme cases where PCU has made non-potable water service no longer available and there is a clear and necessary justification for doing so.

5.0 INSTALLATION OF IRRIGATION SYSTEMS

5.1 General

- **Utilities Industrial Wastewater Pretreatment Policy Manual (6E)**
 - **Wastewater Constituent Limitation**

INDUSTRIAL WASTEWATER PRETREATMENT POLICY MANUAL

December 2010

2.4 Local Limits

Local pollutant limits are established to protect against pass through and interference from IUs utilizing each individual receiving WWTF. No person shall discharge wastewater containing in excess of these local instantaneous maximum allowable discharge limits. Local limits apply at the point where the wastewater is discharged to the receiving WWTF. PCU has completed a Local Limits Needs Assessment. Based on evaluation of the technical data contained within this Needs Assessment, PCU has determined there is currently no existing requirement for imposing Local Limits. PCU shall perform Local Limits Needs Assessments periodically as needed in order to determine whether Local Limits should be established.

2.5 Right of Revision

Polk County reserves the right to establish, by ordinance or in wastewater discharge permits, more stringent standards or requirements on discharges to the WWTF.

2.6 Dilution

No user shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable pretreatment standard or requirement. PCU may impose mass limitations on users who use dilution to meet applicable pretreatment standards or requirements or in other cases when the imposition of mass limitations is appropriate.

2.7 Wastewater Constituent Limitations

(A) If any wastes are discharged, or proposed to be discharged, to a wastewater treatment plant which contain pollutants in excess of normal concentrations as defined in Paragraph B below, or possess characteristics which, in the judgment of PCU, may have a deleterious effect upon the wastewater treatment plant, or which otherwise create a hazard to life or constitute a public nuisance, the County may either alone or in combination:

1. refuse to accept the waste: or
2. require pretreatment to an acceptable condition for discharge to the wastewater treatment plant: or
3. require control over the quantities and rates of discharge: or
4. require payment of a surcharge to cover the added cost of handling and treating the wastes.

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INDUSTRIAL WASTEWATER PRETREATMENT POLICY MANUAL

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(B) Regular user charges shall apply to wastes that are at or below normal concentrations as follows:

1. BOD – 300 mg/L
2. Total Suspended Solids (TSS) – 300 mg/L
3. Nitrogen – 60 mg/L
4. Grease – 100 mg/L

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(C) Determination of abnormal strength waste.

1. The Director of PCU or his designee may initiate the sampling and testing of wastewater of non-residential users at least once per year, and more frequently at his discretion. Such sampling and testing shall be at the expense of the user. The analytical results from said sampling shall be used to determine the strength of the waste and to determine the surcharge for the high strength waste. Additional sampling and testing may be conducted on the request and at the expense of the user, as detailed in Paragraph 2 below.
2. The strength of the wastewater determined as a result of said sampling and testing shall be averaged with the results of the last sample and test to determine the surcharge for high strength wastes. The results of the averaged samples shall be presumed to be the strength of the waste until the next sample. Where continuous sampling and testing (more frequently than once per month) methods are used, the results of the sampling and testing for a 3-month period shall be averaged to determine the strength of the waste for the 3-month period. The surcharge for high strength wastes shall be based on said results. Ideally, a monitor program for surcharge testing will include the collection and averaging of 24-hour time composite samples collected at least four times per year, except for those pollutant analyses requiring grab sampling methodology. This increased sampling and averaging described herein does not preclude the Director of PCU from assessing a surcharge based on the analytical results of a single, annual sample as detailed in Paragraph 1 above.
3. All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this Section shall be determined in accordance with the latest edition of "Standard Methods of the Examination of Water and Wastewater," published by the American Public Health Association, from suitable samples taken at a said control manhole. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewerage works and to determine the existence of hazards to life, limb and property. The particular analysis involved will determine whether a 24 hours composite of all outfalls of a premise is appropriate whether a grab sample or other multiple samples should be taken.

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(D) Surcharge for high-strength wastes formula.

INDUSTRIAL WASTEWATER PRETREATMENT POLICY MANUAL

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1. Computation. The surcharge in dollars for BOD and TSS shall be computed by multiplying the total mg/L of BOD and Total Suspended Solids above 600 mg/L times the metered water used during the billing in millions of gallons times a treatment surcharge factor. The surcharge factor shall be derived annually from the following formula and shall be set forth in the schedule of fees:

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$$\frac{\text{Surcharge factor} = \text{Cost of Treatment Per million Gallons}}{600}$$

Where costs of treatment per million gallons equals operational costs of PCU's wastewater treatment plant(s) for the preceding fiscal year (including pro rata administrative costs) divided by the total sewage flow through all plants in millions of gallons. Six hundred (600) equals maximum normal BOD plus Total Suspended Solids content expressed in milligrams per liter.

2. The surcharge in dollars for fats, waxes, grease, oils and solvent-soluble substances shall be computed on a basis of \$0.02 per ppm over a maximum of 100 ppm.
3. The surcharge in dollars for nitrogen shall be computed on a basis of \$0.02 per ppm over a maximum of 60 ppm.

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(E) Samples shall be analyzed by a state certified or NELAC certified laboratory which is certified to perform the analysis for the analyte(s) of concern. Laboratory analytical work will be performed by the contract laboratory designated by PCU laboratory support contract. The associated costs for laboratory services shall be directly assessed to the customer. The customer can request that a split sample be drawn, provided that the customer ensures that split samples shall be analyzed by a state certified or NELAC certified laboratory which is certified to perform the analysis for the analyte(s) of concern.

(F) Fees, charges, surcharges, expenses, etc. referenced herein shall be assessed in accordance with below Section 12.2 of this MANUAL.

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3.0 PRETREATMENT OF WASTEWATER

3.1 Pretreatment Facilities

Users shall provide wastewater treatment as necessary to comply with this MANUAL and shall achieve compliance with all categorical pretreatment standards, local limits, and the prohibitions set out in Section 2.1 of this MANUAL within the time limitations specified by the EPA, the State, or PCU, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the user's

- **Water Conservation Manual (6F)**
 - **Cross reference to Reclaimed Water Policy Manual**
 - **Deletion of reference to Ord 03-21 (repealed) requirements**

WATER CONSERVATION POLICY MANUAL

April 2012

On March 5, 2003, the County adopted *Ordinance No. 03-21 the Polk County Utilities Code*, which included regional water conservation plans for the six (6) PCU's service areas. As indicated in the Introduction, this MANUAL is intended to be an updated replacement of the previous six regional plans.

PCU's Reclaimed Water Program continues to be an integral part of the Polk County's conservation efforts. Connection requirements related to the County's reclaimed water system may be found in the Reclaimed Water Policy Manual, Section 4.2: Requirement to Install Onsite Distribution and Irrigation Systems. The cost to the customer for using PCU's reclaimed water service is currently lower than for using potable water service.

Deleted: Polk County Ordinance No. 03-21 requires all new developments served by a wastewater treatment system that produces public access quality reclaimed water to install internal reuse distribution systems and to tie in when reclaimed water becomes available. Furthermore, the Ordinance prohibits the use of potable water for irrigation once reclaimed water becomes available at a particular location.

The Polk County Board of County Commissioners (BoCC) has also created a Water Policy Committee, whereby the BoCC will be able to take a leadership role in protecting and developing the County's water resources for the benefit of its citizens and environment. Since the adoption of the Water Policy Advisory Committee in early 2003, PCU has commenced metering and charging for reclaimed water, implementing a water shortage ordinance and coordinating The Heartland Water Alliance between Polk, Hardee, and Highlands Counties. In addition, the Polk County Water Alliance between the County and the municipalities within the County may further assist the water management districts in integrating the cities and utilities toward incorporating uniform guidance standards for water conservation efforts and future water supplies.

1.4.11 Financial Resources

PCU budgets considerable funds every year for water conservation activities. PCU also applies annually and receives Community Education Grants to help with the costs of public education events for water conservation awareness. To date, PCU has partnered with the SWFWMD and SFWMD on a number of Cooperative Funding agreements to fund reclaimed water ground storage reservoirs, transmission mains and pumping systems as well as a Low-Flow Toilet Rebate Program. The County will continue to explore such opportunities in order to fund additional projects.

1.4.12 Fiscal Structure

PCU has an inclining block water conservation rate structure. The current rate structure is provided as **Appendix A**.