

Lakeland Water Utilities

Water Operations

**Policies, Standards
And Specifications**

**Subdivisions and
Commercial Developments**

**Section 3.0
Of
City of Lakeland
Engineering Standards Manual**

September 14, 2015

WATER OPERATIONS
POLICIES, STANDARDS AND SPECIFICATIONS
FOR SUBDIVISION AND COMMERCIAL DEVELOPMENT

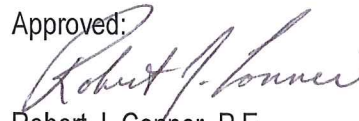
This information is provided as part of the Engineering Standards Manual referenced by Ordinance 3175, Passed and Certified February 5, 1990.

Water Operations has updated this information for the use of engineers and developers, and customers of the City of Lakeland's Water Utility. As Director, it is my goal that this information will assist each user to formalize their request and facilitate faster service from Water Operations.

Future revisions may be required and will be available. I would encourage the user to maintain the following revision log so that Water Engineering will be able to adequately address any concerns.

Please use this information and call Water Engineering if you need additional information or clarification.

Approved:



Robert J. Conner, P.E.
 Interim Director of Water Utilities

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These FDEP forms are available at: www.dep.state.fl.us

FDEP Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components Into Operation **(DEP Form 62-555.900 (9))**

FDEP Application For A Specific Permit To Construct PSW Components **(DEP Form 62-555.900 (1))**

FDEP Notice of Intent To Use The General Permit For Construction Of Water Main Extension for PWSs **(DEP Form 62.555.900 (7))**

APPENDICES

Appendix A Water Standard Details (Posted Separately on Web Site)

Water Meter Installation Details

WS 101 sh2	Double Meter Installation	
WS 102 sh1	Single Water Meter Assembly	¾ and 1-inch
WS 102 sh2	Double Water Meter Assembly	¾ and 1-inch
WS 102 sh3	Single Water Meter Assembly	1 ½ and 2-inch
WS 103	Singe Meter Bank	

Service Line Detail

WS 101 sh1	Single and Double Service Plan and Profile
WS 201	Short Side Service Detail
WS 201	Long Side Service Detail
WS 204	Polyethylene Tubing Service Detail

Backflow Preventer Installation Details

Traffic

WS 301	Single BFP Installation
WS 302	Sh 1 & 2 Double BFP Installation
WS 303	Sh 1 & 2 Domestic & Irrigation Sys.
WS 304	Fire Protection Systems

Non-Traffic

WS 302	Sh 1 & 2 Double BFP Installation
WS 303	Sh 1 & 2 Domestic/Irrigation Sys.
WS 304	Sh 1 & 2 Fire Protection System(Vertical)
WS 601	Backflow Prevention Devices Landscaping Plan & Elevation

Water Main Installation Details

WS 203	Flush Valve Detail
WS 401	Fire Hydrant Installation Plan & Elevation
WS 402	Temporary Jumper Detail
WS 403	Sh 1 & 2 Water Main Installation Elevation and Section
WS 404	Air Release Valve
WS 501	Sh 1 & 2 Tracer Wire Installation

Appendix B Utility Planning Service Area

Appendix C Forms (Posted Separately on Web Site)

- Certificate of Dedication (Corporation)
- Certificate of Dedication (Individual)
- Letter of Intent
- Water Utility Service Agreement
- Petition for Voluntary Annexation
- Water Operations Plan Review Checklist
- Water Operations As-Built/Record Drawing Checklist
- Water System Property Values
- Water and Force Main Pressure Test Report (DIP Pipe)
- Water and Force Main Pressure Test Report (PVC Pipe)
- Request for Hydrant Flow Test
- Agreement of Annual Testing & Maintenance Of Backflow Prevention Devices

FOREWORD

The following document provides a means by which the City of Lakeland's Water Distribution System may be connected to or extended. A determination of whether the City has permitted capacity or if the City's water service may be supplied to any development or area will be based on the City's Water Use Permit (SWFWMD) and/or the adequacy of the existing system to meet projected needs while maintaining acceptable service to existing customers, and the ability to provide the addition without creating financial burden to existing customers or the City of Lakeland. All capacity shall be approved by the Capacity Review Committee. No addition to the water system will be accepted that does not meet these criteria.

Initial acceptance of a design by Water Utilities Engineering does not imply that the design has been reviewed in full detail or has been reviewed for constructability or regulatory requirements. Should it be determined that changes are required at some time during the project due to changes to the enclosed guidelines, regulatory requirements, or other reasons after the initial project submittal, but prior to final acceptance, the changes must be made for the project to continue or to be accepted. The City of Lakeland reserves the right to refuse acceptance of any project or the granting of water service until complete compliance with all requirements, both written and verbal, are met.

Design and construction of a water system must be in conformance with the enclosed Lakeland Water Operations Policies, Standards, and Specifications. In general, the developer is responsible for all costs and installation of water systems within areas adjacent to and internal to the development, except for portions of individually metered service installations. Service lines are to be installed by the developer up to and including the terminal valve. The City will install all meters beyond that point once all fees and deposits have been collected. The developer will install all plumbing from the meter outlet.

DUE TO RECENT CHANGES TO THE SAFE DRINKING WATER ACT, AS OF JANUARY 4, 2014, ALL BRASS AND BRASS CONTAINING MATERIALS INSTALLED WITHIN THE CITY OF LAKELAND'S WATER UTILITIES SYSTEM SHALL BE LABELED WITH THE MANUFACTURER'S MARK INDICATING THAT THE MATERIAL IS "LEAD FREE OR NO LEAD". THE EXCEPTION TO THIS RULE SHALL ONLY BE AS FOLLOWS:

FIRE HYDRANTS
FIRE LINE BACKFLOW PREVENTERS

It is the sole responsibility of the owner/developer/engineer to insure accurate submittals and to identify and address all design conflicts prior to construction. Any costs incurred due to incorrect submittals or required design changes due to field conditions will not be the responsibility of the City of Lakeland. The design and construction of all water facilities must be in complete conformance with the enclosed Lakeland Water Operations Policies, Standards, and Specifications for Subdivision and Commercial Developments, Florida Department of Environmental Protection requirements, and any other applicable City, County, State and/or Federal Regulatory requirements. Where variances in requirements occur, the most stringent requirement shall be met. Where conflicts occur between Water Utility requirements and other agency requirements, the owner/developer/engineer shall bring the situation to the immediate attention of Water Utilities Engineering and request a variance prior to proceeding.

The enclosed information may be revised, without notice, at any time in whole or in part. For the latest requirements contact the City of Lakeland, Water Utilities Engineering Office at (863) 834-8316.

1.0 DEFINITIONS

The following definitions are given for use in these standards and specifications:

City The City of Lakeland Water Utilities. When applicable, specific divisions within Water Utilities will be referenced; e.g., Water Utilities Engineering Division, Water Distribution Division, or Water Production Division.

Developer - Any person or group of people developing any parcel of land of which the end result will produce more than one water customer, or any person or group of people developing any parcel of land for the purpose of resale to any eventual water customer. The developer is usually the property owner or a designated representative.

Fire Service Capacity (Impact) Fee - A single charge designed to recover a portion of the difference between existing customers' capital cost and the increased capital cost for future customers. This fee is assessed to meet the needs of new system customers that require fire protection services over and above those provided to the general public through the governmentally owned and operated fire hydrant system. The fire service capacity fees are based on flow requirements.

Off-Site Facilities - Water mains constructed to connect on-site facilities with the nearest point in the City's system at which adequate capacity is available to meet the requirements of the new services.

On-Site Facilities - The water mains, services, meters, and fire hydrants installed within a residential, commercial, or industrial development. It includes those facilities in peripheral streets and easements constructed wholly or in part for use by that development.

Oversized Facilities - A facility designed to be larger in size than required to serve the immediate project.

Permanent Utility Easement - The permanent utility easement is "a perpetual easement and right-of-way for the purpose of clearing, excavating, constructing, and maintaining public utilities in, upon, and through the described land". The easement is an encumbrance to the underlying fee title but does not acquire or convey the fee title. The effect of the permanent utility easement will be to restrict the underlying fee owner from uses which will conflict with the easement owner's (City) rights to maintain public utilities in the area. Uses which do not conflict will be permitted. The primary limitations are that no buildings, large trees, or substantial signs may be in the easement area but typical surface use such as ingress and egress parking, driveways, landscape fencing, small signs, etc., are permitted in instances where the easement is within the setback as required by zoning, the effect is reduced since these areas are already restricted as to buildings.

Subdivision - Any parcel being subdivided into lots or tracts for purposes of resale or rental. Subdivisions as used in this policy may refer to but are not limited to mobile home parks, apartment complexes, single family residential developments, duplex developments, triplex developments, quadplex developments, condominiums, zero lot line developments, commercial/industrial parks, industrial office parks, shopping centers, etc.

Terminal Valve - The valve installed at the end of a service line by the developer/contractor as part of the initial development construction. The terminal valve shall be brought to within five feet or less of the anticipated meter location. The valve shall have a valve box if under concrete or asphalt.

Water System Capacity Fee (Impact Fee) - A single charge designed to recover a portion of the difference between existing customers' capital cost and the increased capital cost for a future customer. This charge is typically assessed based on projected flow demand.

Utility Tampering - Water Utility Tampering shall be considered an act, by an individual, to unlawfully operate, modify, or cause damage to any part of the water system without the knowledge or authority of the City of Lakeland. Tampering shall also be considered connecting to or changing existing facilities to receive direct benefit from the water service or affect the water service of existing customers without the approval of the City of Lakeland. Tampering may or may not involve water flow from the system.

Unauthorized connection and/or use of water from a water system under construction, or system that has been cleared by the Health Department but not yet accepted for use by the City of Lakeland, may be considered as tampering.

Water Theft - Theft shall be considered as the taking of water, pipes, valves, hydrants, fittings or other related items from the City of Lakeland Water System by an individual without knowledge or approval of the City of Lakeland. Theft shall also be considered as bypassing or altering water flow to obtain water from an approved connection and hindering the City of Lakeland from metering or properly accounting for water. Theft shall also be considered as unlawfully taking water from an unmetered fire system for purposes other than fighting fires or performing normal maintenance of the fire system without prior approval of the City of Lakeland.

Note: Both Utility Tampering and Water Theft are subject to fines as detailed in City Ordinance No. 3975.

Approved Equal – The utility requires installation of specified materials. If these are not available, “approved equals” will be considered. Water Utilities Engineering will consider the request and must provide written approval before the item(s) are purchased.

2.0 DESIGN / PRE-CONSTRUCTION REQUIREMENTS

General

The City will furnish current blank copies of the "Letter of Intent", "Certification of Dedication", and/or "Water System Property Values" forms as needed for a project, which are to be executed by the owner/developer. A "Water Utilities Engineering Plan Review Checklist" may be furnished. The checklist is intended to advise the engineer of information required by Water Utilities Engineering for plans and designs.

The owner / developer shall only utilize forms furnished by the City for the subject project. The City may revise its forms as the need arises. The City may not accept any executed out of date forms and reserves the right, at its discretion to require the owner/developer/engineer to execute the correct form.

It is the sole responsibility of the owner/developer/engineer to insure accurate submittals, including verifying the location of all existing utilities, and to address all utility conflicts prior to construction. Any costs incurred due to incorrect submittals or required design changes due to field conditions will not be the responsibility of the City of Lakeland.

Approval from the City for water line extensions or water system designs will be valid for a period of one year from approval date. If construction has not commenced prior to the expiration date, plans shall be resubmitted for review.

The owner/developer/engineer is advised that portions of the existing water system were installed using asbestos cement (AC) pipe. Care must be taken to identify the material of construction and the location of all existing facilities during design. The developer must advise the contractor before construction activities begin if AC pipe is in the work area.

Permanent services for new construction will be locked off until all City requirements are met. The owner/contractor may contact Water Distribution if temporary water is needed and if available for new construction, at owner's/contractor's expense. Existing services may be left in service during remodeling and/or additions.

All City requirements must be met prior to release of hold on Certificate of Occupancy. If city wastewater service is required, permanent water service will be withheld until the wastewater system is accepted. The Water Utilities Engineering Division requires two working day's notice prior to construction through the Sunshine State One Call notification system, Inc. at 1-800-432-4770.

Water service may be turned on by authorized City personnel only.

2.1 Plan Submittals

2.1.1 Master Utility Plan

Projects greater than the equivalent of 150 single family connections (48,750 gpd), having multiple phases, or with extended construction schedules should contact Water Utilities Engineering to determine if a Master Utility Plan must be submitted prior to design.

2.1.2 Inside City Limits

Preliminary or conceptual plans for projects inside the city limits are to be submitted to the City of Lakeland Building Inspection Division, 228 South Massachusetts Ave., Lakeland, Florida 33801.

If the project is inside city limits, Water Utilities Engineering will complete a review within twenty (20) working days of receipt in Building Inspection Division or Community Development. Water Utilities Engineering will return any comments or identify requirements via written response to the developer/engineer and will send a copy of the response to the City Building Inspection Division or Community Development.

2.1.3 Outside City Limits

Plans for projects that are outside the city limits, but within the City's water service territory should be submitted directly to Polk County Development Services. Water Utilities Engineering will complete a review by the due date assigned by Polk County. Water Utilities Engineering will return any comments or identify requirements in writing to Polk County Development Services.

2.1.4 Plan Submittal Procedure

If service from the City water system is determined to be feasible, the following procedure shall be followed:

Two (2) complete sets of fully dimensioned plans of the development design and proposed water system, signed and sealed by an engineer registered in the State of Florida, on 24-inch by 36-inch paper drawn to appropriate scale (not smaller than 1 to 40, unless not legible because of the amount of details, when other utilities are shown) shall be forwarded to Water Utilities Engineering from the appropriate agency.

These plans shall include all information outlined in the Water Operations Plan Review Checklist . If the proposed development is to be phased, the overall property development plan shall also be submitted.

Two (2) sets of final engineering plans of the water system shall be forwarded to Water Utilities Engineering for final approval, and will become the approved construction drawings.

2.2 Requests for Service

All requests for service shall be initially directed to Water Utilities Engineering. The engineering staff will evaluate the technical feasibility, and calculate charges for connection to the system. Where appropriate, the requests will also be evaluated by the Office of Community Development for Annexation and Zoning.

2.2.1 Inside the City Limits

Where the property in question is already incorporated into the City of Lakeland, upon determination of the availability and cost of connection, Water Utilities Engineering shall review the connection for approval.

2.2.2 Outside (Contiguous) to City Limits

If the property in question is outside of the City of Lakeland, a petition for voluntary annexation and a water service agreement are required. The connection request shall be reviewed by the director for approval. If the property is contiguous, the City Commission may elect to annex the property without delay or postpone the action. Should the Commission elect to postpone action; the agreement will be recorded on the deed(s).

2.2.3 Non-Contiguous Unincorporated Properties

Where the property is not incorporated and is not adjacent, a water service agreement and a petition for voluntary annexation shall be required. The application for service shall be reviewed by the City Commission for approval. The annexation agreement will be recorded on the deed(s). The City will execute the agreement at such time as it desires and it is legal and appropriate to do so.

2.2.4 Service Agreements

An executed copy of the current City of Lakeland Water Service Agreement(s) must be submitted with the application for service by any customer to be located outside the Corporate Limits of the City. The agreement will be specific to either residential use or commercial/industrial use of the property. Where a development has both uses, separate agreements will be provided for the separate uses. A current copy of the standard Agreement(s) can be obtained from the Department. For complex or unusual connections, specific terms of these agreements may be negotiated.

2.2.5 Looping of Water Lines

Development and growth are welcomed by the Utility. However, once a residential development has built out, the residents ultimately become customers of the Utility (City) and expect reliable service.

The Utility requires that new residential systems provide reliable service.

The Utility has considered FDEP guidelines and established, by this engineering standard and by administrative policy that the maximum number of "residential customers" to any water line that has only one point of connection to the Utility system, to be 350.

Once the actual or proposed customers reach 350 or the equivalent of 150 single family homes, the design must provide for a second connection to the Utility water system for reliability.

2.2.5.1 Looping Connections

Main extensions or stub-outs intended to support looping may be installed for "future use". The future connection shall maintain the original main size.

2.3 Letter of Intent

A formal request for water service, "Letter of Intent", shall be signed and submitted to Water Utilities Engineering at the initial submittal for review by the City. The City shall consider the "Letter of Intent" prior to entering into any obligation to provide water service. A signed "Letter of Intent" must be received before any work will be initiated

2.4 Required Submittals

Project Checklists will be issued to the owner/engineer/developer listing items required by the City at various stages during the design and construction process. It is required that the owner/engineer/developer convey these requirements to the contractor and insure compliance of the listed items. Non-compliance with any of the items listed may result in the holding of building permits, certificate of occupancy, or letter of completion.

2.5 Permits

Prior to the commencement of any construction, all required water facility permit applications must be completed and submitted to Water Utilities Engineering for signature. The Developer's Engineer is responsible for obtaining and submitting all permits. The City reserves the right to not sign any permit application(s) or allow construction to begin if all permits and supporting paperwork are not received.

The City shall return the signed permit application(s) within five (5) working days after meeting all requirements and being approved by Water Utilities Engineering. When City, County or State Road Use Permits or CSX Railroad Permits are required, proof of insurance and indemnification must be submitted for the contractor performing the work before these permit application(s) will be signed. The owner/developer/contractor is responsible for all permit fees. The owner/developer/contractor shall be responsible for all restoration costs and must comply with all restoration requirements before final acceptance or granting of service.

The following is a list of possible Water Facility permits that may be required:

1. FDEP Water System Construction Permit
2. FDEP General Permit
3. City, County, or State Road Use Permits
4. CSX Railroad
5. Utility Easements
6. Dredge & Fill
7. Wetlands Permits
8. Wellhead Protection Permit (any construction within 500 ft. of a public supply well)

Note: construction permits, required by other agencies may be needed before general construction may start.

2.6 Insurance and Indemnification

Contractors working in Right-of-Way, easements dedicated to the City or on facilities intended for conversion to public maintenance shall carry insurance, as specified by the City's Department of Risk Management. The owner/contractor shall indemnify the City against losses, and satisfy all Risk Management requirements before starting construction.

2.7 Design Specifications

Water system installations shall be by the developer's contractor following City specifications and subject to City inspection.

2.7.1 Water Line Placement

In order to reduce future operating costs for relocation, the City desires to avoid placing structures within City, State, County or Federal collector road rights-of-way. Construction in the rights-of-way will be permitted only after all reasonable efforts to obtain sufficient easements have been made. Easements shall be executed and submitted to the City for approval prior to full acceptance of the water facilities or providing water service.

All water lines shall be installed a minimum of five (5) feet from the back of curb or edge of private property unless approved by Water Utilities Engineering. Water lines may be located under parallel sidewalks, as part of a new, narrow right of way as defined by the city. Alignment shall remain constant unless prevented by construction, and approved by the City. Street tree location may impact water main location and should be shown on roadway cross-sections to assist in water main placement.

Water lines installed under parking areas, roadways, or other paved/concrete areas shall be ductile iron pipe.

The City shall be granted a minimum fifteen-foot utility easement (centered on the pipeline) for water lines crossing private property. Twenty-five feet is required for water lines 20-inch diameter and larger. The easement shall be for system maintenance/operations. Additional easements may be required for larger pipeline sizes, working conditions, etc.

Service lines are to be installed by the developer up to and including the terminal valve. The City will install meters within five feet of the terminal valve once all fees and deposits are collected. Additional cost may be assessed to adjust the terminal valve or to install the meter greater than five feet from the terminal valve.

The developer/customer is responsible for maintenance of piping down stream of the meter.

2.7.2 Connections to Existing Systems

All connections to an existing City water main shall be performed by the City at the developer's expense. In the event there is an existing stub from previous construction, the connection may be made by the contractor, under the City's supervision. However, the connection can not be made until the City grants approval. All connections shall be made in a thorough manner using proper materials, fittings, and labor practices to suit the actual conditions.

2.7.3 Utility Separations

The Water Utility must maintain and access its facilities. Florida Statute 62-555 allows the utility to determine separation distances. Based upon 62-555 and the need to protect and maintain its facilities, the Water Utility shall require 10 feet horizontal and 18 inch vertical separation from its facilities to all storm sewers. This separation shall also be maintained between Water Utility facilities, (water to sanitary sewer, (force mains or gravity). The Water Utility may reduce separation requirements based upon a specific conflict at a specific location. However, the separation shall not be reduced less than the 6 feet referenced in 62-555. Water Utility Engineering shall review and approve all requests for reduced separation.

In order to protect the water supply facilities, the locations of utilities must be field verified by the developer/engineer during design and/or before construction. The following minimum separations must be maintained from all water mains.

Table 2.1 Utility Separations

Utility	Horizontal	Vertical
Gas	5 ft.	12 in.
Telephone	2 ft.	12 in.
Cable TV	2 ft.	12 in.
Fiber Optics	2 ft.	12 in.
Reclaim Water	6ft.	18 in.
Wastewater/Storm Main, if Water above	10 ft.	18 in.
Wastewater/Storm Main, if Water below	10 ft.	18 in.
Sewer Lateral	10 ft.	12 in.
Electric:		
Underground	5 ft.	12 in.
Utility Poles	2 ft.	N/A
Storm Water Structures/Manholes (Storm or Wastewater)	18 in. See Detail WS-403 sheet 2 of 2	18 in.

When the minimum separation requirements for the City, the Polk County Health Department, or other agencies differ, the more stringent requirement must be met.

Any variances to the distances shown in Table 2.1 must be submitted by the engineer and approved by Water Engineering and the Polk County Health Department prior to construction.

Trees are not to be placed over water lines and there must be a 5-ft horizontal separation between small trees and water lines, and 8-ft between large trees and water lines. The City reserves the right, when necessary, to require additional separation depending on the circumstances.

Note: Per Article 33, landscaping requirements, and this section, small trees are designated as A or B and large trees have a C designation.

2.7.4 Hydrant Placement

Lakeland City Code 603.1.3.2 dictates hydrant location as follows: The location and number of hydrants shall be designated by the fire official, but in no case shall distance between installed fire hydrants exceed 1,000 ft (305m). Maximum distance from the nearest hydrant to the most remote exterior point of any building shall be 500 ft (152m). The distance shall be measured on a roadway surface meeting the Fire Department access requirements of City Code 602.6.

Hydrants installed outside city limits must comply with Polk County spacing requirements.

Per FDEP 62-555, a fire hydrant must be connected to at least a 6-inch water main. FDEP permit guidelines state that if a fire hydrant is placed within fifty (50) feet of the right of way on a dedicated water main, it does not require permitting, but must be disinfected and pass sampling criteria. As long as the hydrant is accessible by the fire department and the Utility for operation and maintenance (see Table 2.1) and the hydrant, including the water main are in a utility easement, the Utility may accept ownership of the installation.

If the hydrant is not accessible or is located beyond fifty feet of the right of way, the City may have the hydrant remain the responsibility of the property owner and will require FDEP permitting if necessary and installation of a backflow preventer per Utility guidelines.

The engineer/developer is solely responsible for compliance with all current applicable fire codes and obtaining approval from the appropriate fire protection agency. Developments outside the City limits must comply with the County requirements. The City reserves the right to require additional hydrants if it is deemed necessary for the water system, or in conjunction with the vent for an air release valve.

2.7.5 Valve Placement

The location and number of valves shall be designed to allow isolation of branch lines, phased construction, proper pigging / flushing, and testing of the new main. Gate valves shall be used in all pipelines up to twelve (12) inch. Butterfly valves shall be used in pipelines sixteen- (16) inch and larger (see Material Specifications).

Valves shall be installed in the vertical position. Valves in straight runs of pipe shall be installed no further than 800 feet apart unless approved by Water Utilities Engineering. All valves shall be field-tested and any deficiencies corrected by the contractor.

All valves installed under asphalt or concrete shall have a valve box installed. Distribution valves installed in unpaved areas shall have a valve box with a 2 ft- square by 4-inch thick concrete collar placed around the valve box at final grade. When all work is completed, the valve box shall be in a vertical position over the operating nut providing clear access and free operation using a valve key.

Valves installed greater than five (5) feet below final grade shall have approved valve extensions attached to the valve operating nut and installed in the valve box.

Each fire hydrant shall have a six (6) inch gate valve as close to the watermain as possible and on the piping leading to the hydrant with restrained fittings per W.S. 401. Where other services are connected, another valve(s) shall be provided to isolate each service and the hydrant.

The use of air release valves, (per FDEP or BMP) air/ vacuum valves, pressure reducing valves, check valves, etc., shall be shown on all drawings with a note explaining the purpose and function for each. A valve pit shall be required for maintenance functions. Any variance shall be approved by Water Utilities Engineering. Manufacturer and model shall be subject to approval by Water Utilities Engineering and Water Distribution.

Some areas of the City of Lakeland may experience pressures greater than 80 psi. The Florida Plumbing code requires devices to be installed on the water service pipe as necessary to control high pressures on the service.

All valves shall be properly located on as-built drawings.

2.7.6 Water Service Lines

The water system installation shall include service stubs at alternate lot lines or other locations as shown on the water service line detail (W.S. 101 sh 1) and in the sizes indicated. Water service shall extend past the swale edge of drainage ditches. Water service lines should not be located under proposed driveways. The location of service stubs shall be noted on as-built drawings with distances from edge of pavement, lot lines, etc. In cases where conflicts in separation occur between buried electric lines, transformer pads, and water service lines, the alternate service detail (W.S. 101 sh 2) shall be used. All service line conflict locations must be clearly noted on the as-built drawings submitted to the City.

In cases where conflicts occur between sanitary sewer or storm drains, proper clearances (as shown in Table 2.1) must be maintained. If clearances can not be maintained, water service lines must be installed using galvanized pipe.

In all cases, a gate valve shall immediately join the main connection and a second gate valve equivalent in size to the service shall be provided at line termination adjacent to the property line or other specified point. This valve shall be 12" deep to the top of the valve.

The Utility will not accept 3-inch pipe (any material) as a service line to a meter.

See 2.7.17 and details sheets for tracer wire installation.

2.7.7 Pipe Restraint

Any new water line construction requiring the installation of bends, fittings, or dead-ends shall require the use of retainer glands or tie-rod restraints. The lengths of piping to be restrained shall be clearly indicated on all design and as-built drawings at each location of restraint. The limits of restraint shall be calculated using best engineering practices.

The pipe restraints shall be clearly indicated on design drawings at each location. Submittal of restraint charts or general restraint notes on drawings is not acceptable. Type and location shall also be noted on as-built drawings.

Where any connection to existing water lines are made that would require additional restraint of the existing line, the contractor shall supply such restraint at no cost to the City, and shall be done in the presence of the City's Water Line Inspector.

Thrust blocks shall **not** be used to restrain pipe, fittings, etc.

2.7.8 Line Termination

No distribution lines shall be terminated in a dead-end without a hydrant or a flush valve prior to the last in-line valve. The required sizes of flush valves are outlined in Section 5.1.10, (Table 5.3).

The last in-line valve shall be installed for future expansion. The valve shall be plugged or a stub installed to allow for a future connection without disturbing the water system.

All stubs are to be restrained, using retainer glands, prior to the valve for the required distance to be determined by best engineering principles. The distance of restraint shall be clearly noted on the design and as-built drawings at each point.

2.7.9 Corrosive / Contaminated Soils

In corrosive soils (dump areas, swamps, marshes, alkaline soils, cinder beds, etc.), metallic pipe and fittings shall be protected by encasing in a polyethylene tube (8 mil thick) or sheet material to be installed in accordance with Ductile Iron Pipe Research Association (DIPRA) specifications. An FDEP permit may be required. Gaskets, seals etc. shall be made to resist the corrosive soils, i.e. Vitron and must be approved by the pipe manufacturer and Water Utilities Engineering.

The design and as-built drawings shall clearly indicate the location of the corrosive/contaminated soil, the type of pipe installed, the length of pipe encased, and the type of encasement used.

Petroleum contaminated soils should be remediated per State of Florida guidelines. If the level of contamination is below the threshold for remediation but is still detectable, PVC or HDPE pipe shall **not** be installed.

2.7.10 Above Ground Obstructions

The construction of any structures or walls which cross existing or planned water lines will not be permitted unless the water lines are protected within steel sleeves which extend a minimum of 10-ft. either side of the structure's footers. The requirements for steel sleeves shall meet FDOT Standards (Section 5.1.4).

Construction of any structures which do not cross existing or planned water lines but which are within 10-ft. of water lines at any point may require similar protection for the water line. The City shall determine the type and extent of required protection, and this protection shall be provided prior to providing water service.

If any structures or walls are to be constructed which requires the City water main to be protected, they must be clearly shown on the design drawings. Any required sleeves must also be noted on the plans.

The City reserves the right to require the sleeving of water lines at a date after their installation due to the subsequent construction of walls or other above ground structure. In order to protect public property, the City may request the relocation of the water lines at the developer's expense.

The City accepts no liability for any damage to structures or obstacles constructed above or within 5-ft. of a water line.

2.7.11 Meter Flow Rates

Listed below are design flow rates for various meter sizes. Water Utilities Engineering will provide flow rates for larger meters and information regarding meter type and usage. The City does not guarantee any particular flow rate on any meter due to the dynamic properties of the water system and the various conditions under which each meter is installed.

<u>Meter Size</u>	<u>Flow Rate</u>
3/4 inch	20 GPM
1 inch	50 GPM
1-1/2 inch	90 GPM
2 inch	160 GPM

Meters larger than one (1) inch are prohibited where the street main is two (2) inches or less. Backflow prevention devices, when required, may affect meter flow rates.

2.7.12 Master Metering

To promote conservation and accountability of the end user, individual meters shall be installed for each structure for billing. Individual meters shall be installed for each unit within a structure if each unit is owned by an individual (condominium, town houses, etc.)

This shall apply except for the following, which may be master metered: (a) high rise buildings (b) recreational vehicle parks (c) hospitals (d) nursing homes (e) living facilities located on the same premises as and operated in conjunction with a nursing home or other health care facility offering at least the same level and type of service as a nursing home (f) convalescent homes (g) facilities certified under Chapter 651, Florida Statutes (h) college dormitories, convents, sorority houses, fraternity houses (i) hotels, motels and similar facilities. Any other type of structure or development that, at the discretion of the Director of Water Utilities, shall be master metered for practical or economic reasons.

The City will not provide master metered water for new non-franchised systems formed within the City's water service territory.

2.7.13 Meter / Backflow Set Bypass

Water Distribution is required to perform annual maintenance of backflow preventers. It is also required to perform periodic maintenance of meters. These functions typically require a minimum of one (1) hour to test. Additional time may be needed for repair.

Free access for maintenance of the backflow device is a condition of service and for the city to accept the device. Denied access, or placing the device within a structure shall require the owner to accept full responsibility and liability, and perform annual testing by a currently certified backflow device technician.

To facilitate this and limit the impact to the customer, any facility that will be “open for business” twenty four hours per day; provides critical health care; service interruption would affect a manufactured product or create a safety concern; or is identified as a critical service by Water Utilities Engineering, will be required to install a bypass around the meter and backflow preventer.

The bypass line must contain isolation valves and a backflow preventer, and typically the bypass backflow preventer will be one-half the size of the full service backflow preventer. Consult with Water Utilities Engineering first to verify appropriate size of bypass. The bypass valves shall be closed and/or locked off by the City and only opened by City personnel.

At any time after initial installation, it is determined that the bypass has been opened other than by the City for maintenance and water has been consumed, a meter may be installed in the bypass line at the customer’s expense.

2.7.14 Separate Residential Irrigation Meters

The City of Lakeland will not install a separate irrigation meter(s) at a single parcel for a single-family residence if domestic service is available. Because of the “cap” on City of Lakeland wastewater charges, there is no economic incentive for a separate irrigation meter. Variations to this rule would only be for designated developments with a non-potable irrigation distribution system supplied with alternative source water supplied by the City of Lakeland.

2.7.15 Remote Metering

If remote metering is required, it is the responsibility of the contractor/developer to install appropriate electrical conduit with “pull strings”. The conduit is to be installed in a location approved by Water Utilities Engineering.

2.7.16 Flushing - Pigging Plans

New water systems, equal to or greater than 6 - inch pipe size shall require flushing using poly pigs. The engineer is to develop and submit a pigging plan to Water Utilities Engineering for review for the new facilities. Short pipe lengths (i.e. stubs) may be flushed without poly pigs with prior approval by Water Utilities Engineering.

The pigging plan shall require swab type B1 or equal. A minimum of two swabs shall be used for each section / run to be pigged and marked for retrieval. The two swabs shall not be inserted at the same time unless there is sufficient distance between them to inhibit contact. The next size swab larger than the pipe size shall be used (i.e. an 8-inch swab in a 6-inch pipe).

Insertion or removal fittings that will remain in the water system shall be noted on as-built drawings indicating the type and location. Water Utilities Engineering shall be notified two working day’s notice in advance of any pigging/flushing. The inspector will be on site during the pigging procedure.

2.7.17 Tracer Wire

A blue coated number (#) 12 gauge UF (Underground Feeder per National Electric Code Article 339) solid strand tracer wire and joint seal (Kearney Aquaseal, Bishop or approved equal) shall be installed along all pipe and services and must be taped below the spring line of the pipe and stubbed up at hydrants and valves. At each valve, the wire shall be installed along the outside of the valve box to the adjustable top piece (see W.S. 501). Sections of wire shall be spliced together using Buchanon connectors. Twisting the wire together is not acceptable. For directional bores, two number (#)4 gauge UF tracer wires shall be used. The tracer wire must provide full signal conductivity (including splices), for line locating equipment.

2.8 Drawing Requirements

All water design plans submitted shall conform to the requirements outlined in the Water Operations Plan Review Checklist. All requested information must be present in the plan package before approval will be granted.

2.9 Oversizing Developments

If the City determines a need to oversize a water line, the developer shall pay the base cost and the City shall pay the differential cost associated with oversizing.

Three (3) approved estimates for the cost of the oversizing must be submitted to the City and approved prior to construction before an oversize cost amount will be approved. The City shall pay for the lowest evaluated "lump sum" cost. However, the "lump sum" cost shall also be shown as materials cost and labor cost. Cost differential shall not include service connections, or engineering and administrative cost. Payment by the City to the owner / developer shall be made after acceptance of the main by Water Utilities.

Unless approved by Water Utilities Engineering, the City shall not be liable for any labor or material cost increases, design or field changes to the oversizing once the bids have been accepted.

2.10 Off-Site Line Extension

The developer/owner shall provide the entire off-site line extension from existing City facilities to the development at his expense.

The City may propose to install any Off-Site line extension for the developer; however, the developer must pay the City in advance for any installations.

The City is in no way obligated to participate in any off-site line extension. Participation is at the sole discretion of the City of Lakeland Water Utility.

If the City participates in construction cost, (over sizing) the developer shall submit three (3) estimates for the portion of the water line extension eligible for the cost share. These estimates must be provided for review and approval prior to construction. The city shall reimburse the developer for over sizing cost when the project is finally accepted.

2.11 System Pressure

The design of the City's Water System requires that both water treatment plants discharge at a constant pressure. However, changes in elevation will affect that pressure. Developers shall verify the pressure at their site and consider the specific pressures in the design of the development.

The developer/engineer shall comply with plumbing codes if pressure is greater than 80 p.s.i.

2.12 Pre-Construction Conference

The design engineer shall conduct a pre-construction conference that shall include the design engineer, the project construction manager, the contractor, and representatives of affected utilities, City Water Inspector and at least one staff member from Water Utilities Engineering. The scope of the work shall be discussed fully to ensure all work is conducted in accordance with City standards.

3.0 CONSTRUCTION REQUIREMENTS

General

The contractor shall furnish all labor, equipment, materials, and perform all operations in connection with the installation of a complete water distribution system ready for use in accordance with the specifications, either specific or implied. The approved construction plans, and all other terms and conditions of this policy/specification, shall include any and all restoration necessary to duplicate original site conditions prior to the commencement of construction. All excavation, trenching, and backfill for the installation of all underground piping systems shall be conducted as specified in this manual (Section 5.0).

The contractor selected to install the water system shall have a good working knowledge and experience in installation of potable water systems and have all appropriate licenses. Proper equipment required to excavate and handle materials shall be used and the contractor shall exercise all required safety precautions. At the City's discretion, pre-construction submittals may be required of the contractor(s), which demonstrate the abilities of the contractor(s) to perform the work in question.

The name of the contractor to perform the construction, the construction project manager, competent person for trench work, and emergency telephone numbers at which they can be reached must be submitted to the City prior to commencing construction.

The construction project manager, or designee, shall be responsible for communicating with all subcontractors. The construction project manager shall insure that contractors and subcontractors comply with all terms and conditions of this specification.

Before construction begins on portions of the project in a right-of-way, where the City is signer or co-signer to the use permit (i.e. Polk County, FDOT, etc), the contractor shall submit proof of insurance meeting the requirements of the City of Lakeland Risk Management Department. The City must be listed as an additional insured party on the contractor's policy.

The contractor should contact the City of Lakeland, Department of Risk Management (863) 834-6783 for all insurance matters prior to construction.

The owner/developer/contractor shall be responsible for contacting E&W Customer Service for temporary construction water. If water facilities are available, the City will provide the appropriate temporary water service upon payment of all fees and charges.

3.1 Installation Responsibility

The Developer shall be totally responsible for all installation within and/or adjacent to his property and all costs incurred except for any cost previously agreed upon by the City. The City may reimburse the developer for the documented cost differential directly attributable to over-sizing or additional facilities of benefit only to the City. Cost differential shall not include engineering fees, permit fees or administrative cost. The determination of that portion of the cost paid by the City shall be made from a minimum of three (3) bids, submitted for evaluation by the City. The installation, materials, and inspection shall be as described in this policy.

3.2 Construction Safety

The contractor shall remain solely and exclusively responsible for compliance with all safety requirements and for the safety of all persons and property at the project site. The contractor shall at all times have on site a Competent Person, as required by the Occupational Safety and Health Administration (OSHA). The contractor shall comply with all federal and state Occupational Safety and Health Act (OSHA) Standards and any other rules and regulations applicable to construction and/or maintenance activities in the State of Florida. The contractor shall also comply with Chapter 442, Florida Statutes (Toxic Substances in the Work Place), and City, County, or all other agency's rules and regulations regarding safety.

A contractor working with or removing existing asbestos cement pipe must be so licensed and meet all training and safety requirements of Florida Statutes/CFR.

The contractor working in FDOT/Polk County right-of-way must follow FDOT Maintenance of Traffic (MOT) guidelines.

The City's safety personnel, inspector, or any supervisor may inform the on site supervisor of any condition of immediate danger. It is the responsibility of the contractor to comply with all safety regulations. If the condition is not corrected, the inspector, City's Safety Dept., or OSHA shall issue a stop work order.

Nothing contained herein shall be construed to shift responsibility or risk of loss for injuries or damage sustained as a result of a violation of this article from the contractor to the City. The City shall not be liable for any cost incurred due to work delays caused by safety violations or actions required of the contractor to resolve safety concerns.

3.3 Inspection

Water Utilities Engineering Division inspectors shall be available approximately one-hour per day to inspect all construction, installation, and materials to ensure that City construction standards are being followed. Additional inspection is subject to availability of inspectors and charges.

Water distribution piping shall remain uncovered until inspected and approved. Specifically, the inspector shall verify that City approved tracer wire has been installed per section 2.7.17, and is functional, as well as retainers, fittings, etc. have been properly installed. The wire shall be tested again for the fieldwork punch list.

Inspection limits shall be in the right of way, in an easement and up to and including the backflow prevention device(s).

Notification must be given to Water Utilities Engineering by the developer/ contractor at least two (2) working days prior to commencing work or schedules a specific task (jack & bore, pressure test, etc). Any time the contractor suspends work for a period greater than two (2) working days, Water Utilities Engineering shall be notified prior to returning to work.

The inspector may reject materials or suspend work until issues or conflicts can be resolved by the engineer of record and the Director of Water Utilities. Any materials which do not meet inspection requirements shall be replaced at the owner / contractor's expense.

The inspector is not authorized to revoke, alter, or waive any requirement issued by the City but is authorized to call to the contractor's attention any violation.

Any FDEP regulatory infraction(s) found by the inspector may result in a stop work order. The engineer shall be required to resolve the infraction before the contractor can proceed with the water distribution system installation. Resolution may require re-design of the area, but at a minimum shall require written approval from the Polk County Public Health Unit, and City of Lakeland Water Utilities Engineering.

In any case, the inspector shall not perform work for the contractor nor furnish any materials. The inspector shall not interfere by directing the contractor's employees. Any advice given shall in no way be considered as binding to the City or release the contractor from any requirement of the plans or specifications.

Prior to final acceptance by the City, a final inspection shall include, but not be limited to, review of the inspector's (City, County, and State) project comments, an inspection of above ground facilities, and an inspection of site restoration and general cleanup.

3.4 Field Work Punchlist

The developer / contractor shall advise the inspector in advance of the expected project completion date. At that time, a walk through inspection will be scheduled by Water Utilities Engineering. This inspection shall be attended by the contractor, the design engineer or his representative and the inspector. A fieldwork punch list shall be developed based on the inspector's comparison of the project design to actual installation. Any deficiencies in scope, noncompliance with regulatory requirements, below standard workmanship, or items which will affect the service life shall be noted. Other items may be listed based upon the specific project and / or circumstances.

The inspector shall provide the developer / contractor with a copy of the punch list at the completion of the walk through inspection. The developer / contractor will review the punchlist and advise the inspector of the compliance schedule.

The project will not be considered complete until all items on the punch list are corrected at the developers/contractors expense.

3.5 Unaccepted Facilities

At the discretion of the Water Utility, facilities that are properly cleared may be placed in service to provide fire protection. No metered or un-metered domestic water consumption is authorized until all requirements are met and ownership of facilities is accepted by the City, the developer/contractor is fully responsible to maintain, repair and comply with locate requests as needed.

Once accepted, the agreed upon warrantee period shall begin and the developer/contractor shall be responsible to address facility issues per the terms of the warrantee.

Maintenance bonds may be posted for phased projects or instances that a warrantee is not appropriate.

4.0 POST-CONSTRUCTION REQUIREMENTS

4.1 Tests and Charges

Relocation of water facilities that result from changes to approved plans (e.g. changes of plats, lot locations or dimension, etc.) by the developer, which result in relocation of water facilities, shall be done at the developer's expense.

Upon acceptance of the facilities, all warranties, maintenance information, and spare parts required by the specifications shall be forwarded to Water Utilities Engineering. Once accepted, the facilities shall then be considered to be the property of the City of Lakeland.

Water service may be turned on by authorized City personnel only. Tampering of water by unauthorized personnel is a violation of a City ordinance and subject to penalties.

Certified reports on pressure tests, leak tests, and line disinfection tests shall be submitted by the engineer of record to Water Utilities Engineering.

If not metered, the developer may be charged for three (3) times the volume of the installed water system for all water used for flushing, pressure testing, and disinfection of the system. Water shall be charged at the established water rate for permanent service for each series of flushing, testing and disinfection. Inspectors shall be scheduled two working days before tests.

If re-testing is required more than 2 times on the same system/phase, the city shall charge time, equipment and material costs for each subsequent test. In the case of two-day bacteriological samples, re-testing beyond 2 times of the two day samples shall be charged.

If a temporary construction water meter has been installed, the developer shall be charged for actual water used at the current rate, and shall be responsible for the meter if damaged or stolen.

4.1.1 Notice

A two working day notice must be provided to the Water Utilities Engineering inspector prior to flushing or testing. A Water Utilities Engineering inspector must be present during pressure testing, disinfection, pigging, and water sampling.

4.1.2 Flushing

Flushing of the system and control of the tie in valve is under the direct control of the City's representative.

After installation of mains less than 6- inch is completed, the system shall be filled with water and flushed at a minimum of 2-1/2-feet per second or the highest obtainable velocity at the farthest points without causing the City's main pressure to fall below 35 PSI. If sufficient velocities cannot be obtained, poly pigs may be required to properly clean the system of construction sand and debris.

After installation of mains greater than or equal to 6-inch is completed, the system shall be filled with water and flushed using poly pigs which have been marked for retrieval, and without causing the City's main pressure to fall below 35 PSI. Pigging plans shall be submitted to Water Utilities Engineering for approval.

Any piping in this size range, but in short runs (i.e. stubs) may be flushed without poly pigs with prior approval by Water Utilities Engineering.

All air must be expelled using either method.

All connections and pipe for fire service must be flushed prior to entering the structure. No flushing is to take place through the backflow preventer.

4.1.3 Pressure Test

The contractor shall conduct pressure and leakage test as required by City standards, the engineer of record, and conforming to approved federal, state, and local standards. A copy of the pressure test form with pre-test data shall be provided to Water Utilities Engineering two working day's notice prior to the test.

First, a pressure at least equal to the City's existing system pressure must be maintained for a period of two (2) hours. Should the new system appear to be tight, the pressure test may begin. The contractor will pump pipe lines to a pressure equal to 150 psi. Should pressure fall to 145 psi before the test period ends, the pipe lines shall be repressurized to 150 psi and amount of leakage computed by the engineer of record or his designee. Test period shall be for two (2) hours unless otherwise specified by the City.

The amount of water forced into the line during the two-hour test shall be taken as a basis to compute the leakage for a 24-hour period. Allowable leakage shall be computed on the appropriate pipe materials water and forcemain Pressure Test Report Form by the engineer of record. The Water Utilities Engineering inspector shall witness the test and initial the form. For lines to be maintained by the City of Lakeland, the pressure test will not be accepted by the City of Lakeland if not witnessed by the Water Utilities Engineering Inspector. The engineer of record shall supply the City a completed and signed copy of the pressure test form and the test must conform to PCHU/DEP requirements. HDPE piping shall be tested per manufacturer's specification submitted to Water Utility Engineering prior to testing.

4.1.4 Leaks

For all leakage amounts greater than "allowable leakage", all leaks shall be uncovered and repaired and all pipes, valves, and fittings and other materials found defective under the test shall be removed and replaced at the contractor's expense. Tests shall be repeated until leakage has been eliminated and the system passes a pressure test.

4.1.5 Tracer Wire

The wire shall be as specified in 2.7.17, be installed along all pipe and service lines, and must be taped to the lower side of the pipe and stubbed up all at hydrants and all valves. The City inspector or distribution employee shall test all portions for line tracing capabilities, proper installation, and accessibility. Any defects will be repaired at the developer's expense.

4.2 Disinfection

The contractor shall conduct disinfection operations as required by the City and the engineer of record, and shall submit bacteriological samples to the Polk County Health Department for approval.

Disinfection of all equipment, pipelines, and other parts of the project with which water comes into contact and which have been contaminated by the contractor's operations shall be accomplished after completion of construction and immediately before the system or unit is placed into operation.

Disinfection tests shall be conducted in accordance with current Polk County Health Department standard specifications prevalent at the time of testing. The developer shall pay for all water used for construction, flushing, and disinfection of the system, and shall dispose of chlorinated water per local state and federal guidelines.

4.2.1 Agents

The disinfection agent shall be liquid chlorine or sodium hypochlorite solution conforming to Federal Specification 0-S-602b Sodium Hypochlorite, Grade D. Dry Hypochlorite similar to "HTH": may also be used as the disinfection agent, upon approval by the City.

4.2.2 Methods

The new piping shall be disinfected by introducing the disinfection agent into the water that is being pumped into the system in such a manner that the entire system will be filled with water containing a minimum chlorine concentration of greater than 50 ppm, but less than 150 ppm, at any point. This water shall be allowed to remain in the system for a contact period of time of at least 24 hours.

4.2.3 Residual Chlorine Tests

After disinfection agents have been permitted to remain for the specified contact periods, the pipeline and valves shall be thoroughly flushed with water until the residual chlorine is not less than 0.2 ppm or greater than 3.0 ppm in each instance. The determination of the amount of residual chlorine in the system shall be made at such points and in accordance with the required tests by means of a standard chlorine test kit for monitoring free chlorine.

4.2.4 Bacterial Tests

After the water system or any unit or portions of the project have been disinfected and thoroughly flushed, samples of water shall be taken from several points as directed by the Polk County Health Department. If repeated tests of such samples show the presence of coliform organisms, the disinfection procedure shall be repeated and continued until tests indicate absence of pollution.

Per the Health Department, Bacteriological samples on two consecutive days shall be satisfactorily completed and written notice given to the Polk County Health Department. Bacteriological sample(s) are only valid for sixty (60) days.

At no point is water to be used from the system (except for flushing and chlorination of the system being tested) prior to satisfactory bacteriological results and "Approval for Public Use" notification issued from the Polk County Health Department.

The City will take check samples at the same locations as required by the Polk County Health Department. The check samples shall be analyzed at the City's State Certified Laboratory. If a check sample does not meet applicable health criteria, second day, additional samples may be required at the affected locations.

4.2.5 Approval

The disinfection program and methods followed, especially if different from those specified, shall be in accordance with directives of the State of Florida Department of Health and Rehabilitative Services,

Division of Health (Polk County Health Department), and all methods employed shall meet with their approval.

Approved bacteriological test results must be received from the Polk County Health Department and a copy of the "Public Use" notification form stating the pipeline has been cleared for public use must be provided to the City prior to release of the system.

Water service may be turned on by authorized City personnel only after the system has been released by the Health Department; other city conditions must be met before final service is made available. Final acceptance of the water system, or use of a sewer system cleared by FDEP will be granted when ALL conditions are met.

4.3 "As Built" Drawings

One set of reproducible mylar plans stamped "as-built" or "record drawings", two sets of blue line plans, stamped "as-built" or "record drawings" and signed and sealed by the engineer of record and one electronic copy in AutoCAD Release 14 or greater, or Microstation version 7 or 8 format shall be submitted to Water Utilities Engineering once preliminary as built drawings have been approved by the City. The record drawings submitted are to be in conformance with City of Lakeland as-built requirements and must be substantially complete in accordance with the approved plans and details, and any deviations noted on those plans. Any notation that renders the engineer's certification ineffective shall not be accepted.

The City of Lakeland Department of Water Utilities defines "as built" drawings as follows: A complete and accurate visual representation of the exact location of any and all facilities installed for use by the City of Lakeland, Department of Water Utilities. The visual representation shall be in the form of blue lines and reproducible mylars as indicated by the City's project manager and shall include, but not be limited to the following.

- A. An accurate scale, fully legible.
- B. All dimensions necessary to easily locate all facilities. Measurements shall be from a permanent, above ground structure to the City's facility or a point above ground directly adjacent to the City's facility. All valves, services valves, meters, hydrants, transformers, secondary pedestals, etc. shall be indicated by accurate dimensions.

- C. For underground facilities, depth from final grade or other fixed point or reference shall be shown. Any depths greater than the standard three (3) feet should be shown in detail; show all fittings, changes in depth or direction, etc. Depths shall be referenced on USGS datum to depth from final grade.
- D. Location dimensions on pipe runs shall be indicated as necessary to accurately define the permanent location, at termination, and at any deflection, vertically or horizontally.
- E. All utility easements shall be clearly identified and dimensioned. Blanket easements are not acceptable.
- F. A cross section of all directional and jack and bores.

4.4 Certificate of Dedication and Property Value

A signed Certificate of Dedication and a Water System Property Values shall be submitted prior to acceptance of the system. Water System Property Values submitted by the developer shall show actual construction costs relating to pipe, valves, hydrants, water meter services, flush valves, casing pipe, water mains, backflow preventers, and meters as they appear on the as-built drawings.

Upon completion and final acceptance by the City, the City will assume full ownership and maintenance of all such distribution systems. A written notification of acceptance by the City Water Utilities Engineering Group shall be issued evidencing the formal date of acceptance.

4.5 Warranty

All portions of the installed water system and site restoration shall be fully guaranteed by the developer against material defects or improper workmanship for a period of one year from acceptance by the City. During this time any necessary repairs will be made by the developer at no cost to the City. Any repairs made by the City during this period shall be charged to the developer. All repairs will be overseen by the City.

When a development inside the City of Lakeland limits is covered by a maintenance guarantee, bond or similar instrument, the warrantee period shall not end prior to the ending of the maintenance period.

Extended warrantee periods or maintenance bonds may be required because of soil conditions, continual failures, etc.

4.6 Certifications

The engineer's certification shall be submitted to the City using the latest effective date of FDEP form Number 62-555.900 (9) entitled Certification of Construction Completion and Request for Clearance to place permitted PWS components into operation. This form must be submitted in duplicate with all signatures executed. One copy, signed by the City, will be returned to the engineer of record. The engineer of record shall forward the certification to the Polk County Health Department.

This certification certifies that the project has been substantially completed in accordance with approved plans and City specifications, or that the deviations noted do not prevent the system from functioning when properly operated and maintained, and that the system complies with the requirements of Chapter 62-555 Florida Administrative Code (FAC). In addition, this certification certifies that the system has passed the pressure and bacteriological tests that were conducted in accordance with American Water Works Association (AWWA) standard. This certification is based upon site observation of construction scheduled and conducted by the engineer of record or by a project representative under the engineer's direct supervision.

The City of Lakeland cannot accept nor place any system into service until the Letter of Release has been received from the Polk County Health Unit regarding the water system, and FDEP regarding the wastewater system, if applicable.

4.7 Conveyance of Easements

All facilities that are accepted by the City for public ownership and maintenance shall be constructed within the public right-of-way or in easement granted to the City. Where all or portions of any system being placed into service are not either in an already recorded right-of-way or easement, or are upon properties owned or controlled by persons other than those receiving service, appropriate easements shall be conveyed. The easement shall be of sufficient size and configuration to allow maintenance and repair of the facilities contained within the easement. Executed easements conveyed to the City prior to acceptance of the system shall be general public utility easements, not strictly water easements. Where private facilities cross property of others, the City shall receive copies of the recorded easements. All easements obtained shall be recorded by the City.

5.0 DETAILED SPECIFICATIONS

5.1 Materials

Please refer to the City of Lakeland Water Utilities Department's Water Materials Specification Manual for detailed materials requirements.

5.1.1 Air Release Valve Boxes/Vaults

See detail drawings WS404-1.

5.2 Construction

The contractor shall maintain water service to existing connections during construction under any and all conditions and at no additional cost to the City.

Whenever it is required to interrupt water supply to residences or businesses, the contractor shall obtain prior approval from the City and notify all concerned parties or agencies at least 24 hours in advance of such cut-off. In cases where a connection is to be made to an existing fitting in the line, the contractor shall schedule his work so that the excavation and location of the existing fitting is completed prior to starting trench work on the new line.

5.2.1 Pipe and Fittings

Permitting through the City of Lakeland, Department of Public Works may be required. For construction activities within the City of Lakeland right-of-ways, the contractor shall notify the City of Lakeland Department of Public Works, Right-of-Way Permitting Section, prior to commencing work.

Not all utility companies are members of the "One Call" system (the utility notification system). It is the contractor's responsibility, therefore, to notify all utilities prior to construction. The contractor shall notify their engineer immediately should conflicts arise with existing utilities. Design changes or adjustments to the water system must be approved by Water Utilities Engineering.

Pipe and fittings for the water main shall be strung out along the route of construction with the bell joints pointing in the direction of construction. Pipe shall be placed where it will cause the least interference with traffic. Pipe shall be handled in a method as recommended by the manufacturer.

Before pipe is lowered into the trench it shall be swabbed or brushed out to ensure that no dirt or foreign material enters the finished line. Trench water shall be kept out of the pipe and the pipe kept closed by means of a test plug whenever work is not in progress. Dewatering may be required if in the opinion of the City's inspector the trench contains excessive water. The contractor shall provide the means for dewatering the trench and the cost thereof shall be included in the price of installing the pipe.

Deflections from a straight line or grade made necessary by vertical curves or horizontal curves or offsets shall not exceed the manufacturer's recommendations. If the specified or required alignment requires deflections in excess of those recommended, the contractor shall either provide special bends as approved by the City or a sufficient number of shorter lengths of pipe to provide angular deflections within the required limit.

Pipe shall be laid in a level trench. Irregularities shall be smoothed out or filled in with sand and tamped prior to pipe laying. A hole shall be scooped out where the joints occur leaving the entire barrel of the pipe bearing on solid ground. Backfilling and earth cover shall conform to standards as specified under Section 5.2.2 - Excavation and Backfilling.

Laying of the pipe shall commence immediately after the excavation has started and every means shall be used to keep pipe laying closely behind the trenching. The City may stop the trenching when, in its opinion; the trench is open too far in advance of the pipe laying operations. The pipe laying method shall, however, be in accordance with the manufacturer's instructions and recommendations.

Damaged or unsound pipe or fittings shall be rejected. Before joining the pipe, all lumps, blisters, excess coating material, or oil shall be removed from the ends of pipe. Bleached pipe, or pipe damaged or weathered in any other way which renders illegible the specifications on the pipe shall be rejected.

Installation and restoration of excavation across roads, shoulders, and other level areas shall be performed in accordance with all City, county, and state requirements which may apply.

Unsuitable or unstable subgrade materials shall be replaced with materials suitable for preparing stabilized bedding for the pipe.

Extreme caution shall be exercised when working with or near asbestos cement (AC) water lines. Should it be necessary to excavate, make emergency repairs, or do planned improvements to AC water lines, all work shall be performed by City crews at the developer's expense, or by City approved qualified personnel under close inspection by the City.

5.2.2 Excavation and Backfill

5.2.2.1 Trenches

The width of trenches for installation of water mains and domestic service lines shall be in accordance with pipe manufacturer's specifications and OSHA safety requirements, and all applicable codes of the City, county, and state. A "Competent Person", trained in trench safety, shall be on-site at all times during trench excavation and pipe installation.

Banks more than five (5) feet high shall be shored, and laid back to a stable slope. If this is not possible, then some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Refer to Table 5.4 as a guide in sloping of banks. Trenches less than five (5) feet in depth must also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.

Sides of trenches in unstable or soft material, five (5) feet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them.

Sides of trenches in hard or compact soil, including embankments, must be shored or otherwise supported when the trench is more than five (5) feet in depth and eight (8) feet or more in length. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to prevent collapse, but must not be steeper than a 1-foot rise to each 1/2-foot horizontal. When the outside diameter of a pipe is greater than six (6) feet, a bench of 4-foot minimum must be provided at the toe of the sloped portion.

Depth of water main and domestic service lines shall be a minimum of 36" to the top of the pipe as measured from the finish grade, except as provided in Standard Details WS-404. Also, the approach and departure from a terrain crest with an ARV requires greater than 36" cover, and shall be approved by Water Utilities Engineering. The depth of the water main below ditches or swales shall be a minimum of 36". Water main and service line trenches shall be excavated in a manner that will provide a uniform and continuous bearing and support of the pipe barrel on solid and undisturbed ground at any point between the couplings.

Table 5.4 Angles of Repose for Excavation Side Slopes

Materials	Approximate Angle	
	(Ratio)	(Degrees)
Solid rock, shale, or cemented sand and gravel	N/A	90
Compacted angular gravel	0.5:1	63
Recommended for average soils	1:1	45
Compacted sharp sand	1.5:1	34
Well rounded loose sand	2:01	27

NOTE: Clays, silts, loam, or non-homogeneous soils require shoring and bracing. The presence of ground water requires special treatment.

5.2.2.2 Sheeting and Shoring

Contractors shall furnish, put into place, and maintain such piling, sheeting, bracing, etc., as is required by the safety requirements relating to building and construction work of the applicable area. All shoring installed in place shall be maintained as required to support the sides of the excavation to prevent any movement which would cause injury to persons, structures, utilities or property either public or private, or any portion of the work being performed for the entire period of the required excavation.

Trench sheeting, if required, shall remain in place until the pipe has been installed, accepted, and replaced if necessary, and the backfill compacted to a depth of one foot over the top of the pipe. Upon completion, all sheeting must be removed.

5.2.2.3 Backfilling

The contractor shall obtain a well-compacted bed and shall carefully fill and compact along the sides of the pipe in six-inch layers to a point at least one-foot above the top of the pipe. Where no pavement is to be constructed or vehicular traffic is to pass over the pipe, such as road shoulder and grass median strip areas, backfill material above one foot over the top of the pipe shall be compacted to a firmness approximately equal to that of the soil adjacent to the pipe trench excavation.

When pavement is to be constructed over the pipe, backfill material above one foot over the top of the pipe shall be placed in a manner and compacted to a degree required to meet the minimum requirements for compaction as specified by the FDOT or as specified by the engineer.

The City reserves the right to reject any portion of backfill material that is not appropriate or is improperly placed. The contractor will be required to reopen the trench at those rejected locations and replace the backfill in a proper manner.

5.2.3 Ditch Crossing

5.2.3.1 Permits

The owner, contractor, or agent shall obtain the necessary permits from the governing authorities. The contractor shall not begin work on any ditch crossing until Water Utilities Engineering receives a copy of the approved permits. The work shall be subject to any additional requirements of the governing authority.

5.2.3.2 Crossings

Ditch crossings shall be constructed in the locations and accordance with the detail shown on the drawings with 3-ft. minimum cover relative to finished grade. Pipe, fittings, and connections shall be the size and type shown on the drawing or as specified. All joints shall be restrained. Ductile iron pipe and fittings shall conform to the specifications for the pipe and fittings as contained herein.

5.2.3.3 Restoration

Ditch banks and bottoms shall be restored to the original condition under the direction of the City and meeting the requirements of the permitting agency. The project warrantee also applies to restoration.

5.2.4 Siltation and Bank Erosion

The contractor shall take adequate precaution to minimize siltation and bank erosion in crossing canals or ditches, in discharging well point systems, or during construction activities. The contractor shall repair all damage including siltation and bank erosion caused by construction as required by the City.

5.2.5 Highway Crossings

All pipe crossings under a highway shall be installed in accordance with FDOT requirements governing the method and the materials of the construction. All permits or approvals shall be obtained prior to highway crossings.

Jack and bores are preferred, however, directional bores may be used to cross private roads, driveways, etc., only when pre-approved by the property owner and Water Utilities Engineering because of specific conflicts.

All jack and bores or directional bores shall be done in accordance with City of Lakeland standards. Water Utilities Engineering Inspectors must be present to inspect all jack and bores or directional bores. The contractor shall supply end of casing location dimensions or directional profile measurements to assist in locating. A minimum of two working days prior notice shall be given to Water Utilities Engineering.

5.2.6 Joints

All joints shall be installed according to manufacturer's recommended practices and any leaks or defects discovered shall be reported to the City and shall be immediately repaired to the satisfaction of the City. Installation of fittings and pipe joints shall be in strict accordance with the manufacturer's recommendations.

Where water mains are stubbed out with a reducer and valve, the stub out shall be restrained using good engineering practices.

5.2.7 Pipe Restraint Methods

Any new water line construction requiring the installation of bends, tees, fittings, or dead-ends, shall require the use of retainer glands or tie-rod restraints. The lengths of piping to be restrained shall be clearly indicated on all design and as built drawings at each location of restraint. The limits of restraint shall be calculated using best engineering practices.

Other methods of restraint, including thrust blocking, are strictly prohibited unless specifically approved by Water Utilities Engineering. Alternate methods of restraint will only be approved in cases where the above methods are not possible and supporting data is provided to the City. Variances will be considered on a case by case basis and should be obtained prior to implementing any alternate methods of restraining. It shall be at the City's sole discretion to approve or disapprove any alternate method of restraint.

5.2.8 Valves and Valve Boxes

Before installing any valve, care shall be taken to ensure that all foreign material is removed from the interior of the body and the valve is opened and closed to see that all parts are in proper working condition.

Valves shall be set plumb with valve boxes placed vertically over the valves. After being correctly positioned, fill shall be carefully tamped around the valve box. Clear access and free operation of the valve must be maintained.

Valve box extensions shall be approved by Water Utilities Engineering and installed on any valve deeper than five (5) feet below finished grade.

5.2.9 Hydrant Settings

Hydrants shall be connected to the mains with ductile iron or C900 PVC and a 6-inch gate valve. Hydrants shall be set at the bury line with a minimum of 18" clearance from hose connection to the finished grade. Hydrant valves shall be attached directly to the water main by a gland, swivel tee or a tapping saddle as approved by the City. Restraining rods shall be at least 3/4" stock and shall be thoroughly protected by painting with acid resistant paint or may be galvanized.

All backfill around hydrants shall be thoroughly compacted to the surface of the ground. No. 57 rock shall be placed around the hydrant barrel as shown on WS-401. Before installing any hydrant or valve, care shall be taken to see that all foreign material is removed from the interior of the barrel. All nozzles shall be tightened and the hydrants or valves opened and closed to see that all parts are in proper working condition.

5.2.10 Cover

All pipes shall be installed with 3-ft. minimum cover relative to finished grade unless otherwise stipulated and authorized by the City. Depths greater than 5-ft below finished grade shall be approved by Water Utilities Engineering. Depths at crossings, valves, intervals along the main and specifically any depth greater than 5-ft below finished grade shall be noted on as-built drawings.

5.2.11 Boring and Jacking

General

All pipe crossings under a highway shall be installed in accordance with FDOT requirements governing the method and materials of the construction. All permits and/or approvals shall be obtained by the engineer of record prior to highway crossings.

Directional bores may be proposed for pressurized systems when crossing private driveways, roads, etc. Final approval shall be by Water Utilities Engineering.

All jack and bores and directional bores shall be done in accordance with City of Lakeland Standards. Water Utilities Engineering Inspectors must be present during all jack and bores or directional bores. The contractor shall supply end of casing location dimensions or directional profile measurements to assist in locating. A minimum of 48-hours prior notice shall be given to Water Utilities Engineering. The Department shall receive a copy of the bore log.

5.2.11.1 Jack and Bore

The requirements herein described are for the installation of casing pipe by the boring and jacking method to accommodate water pipelines. This method shall be used under City or County streets, state highways, and railroads unless otherwise approved in advance by the agency having jurisdiction, and Water Utilities Engineering.

Reference Lakeland Water Utilities – Jack and Bore Standards.

5.2.11.2 Directional Bores

Reference Lakeland Water Utilities Directional Bore Design, Requirements and Post-Construction Standards.

5.2.12 Casings

The following shall apply whether the casing is installed by jack and bore, open cut or other method. Casings shall be installed accurately to grade, and shall meet all requirements of the owner of the right-of-way. All casing pipes shall be new welded steel pipe conforming to ASTM A-139. They shall be jig cut square, beveled and welded so that the entire length of the casing will be straight and true. Butt welds shall be multipass with no intrusion of weld metal into the bore of the casing or shall be a coupling lap welded to both lengths of casings.

All casing welds shall be performed by an American Welding Society certified welder. Welder certifications must be provided to the City of Lakeland Water Utilities Department prior to work performance.

Installation of the casing shall not disrupt traffic nor damage roadway grade or surface.

5.2.13 Spacers

The annular space between the pipe and casing shall be sufficient to allow insertion and extraction of the carrier pipe, with appropriate restraining devices attached. To reduce pipe deflection, appropriately sized spacers shall be securely attached to the pipe prior to its insertion.

The materials, configuration, and installation of the spacer will be obtained from the City of Lakeland *Wastewater Construction Materials Specification*, Section 9.0 or the policies of the agency having jurisdiction over the roadway. Wooden skids shall not be used.

6.0 CROSS CONNECTION CONTROL POLICIES

The procedures for cross connection control described in this section conform to the "Safe Drinking Water Act" as described by Florida Statute 403.850-864 and Chapter 62-555.360 and 62-550 of the Florida Administrative Code (FAC), and to the American Water Works Association Manual of Water Supply Practices - Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA M14).

All backflow prevention assemblies shall meet the performance standards established by the American Water Works Association (AWWA), the American National Standards Institute (ANSI), The Foundation for Cross Connection Control and Hydraulic Research, University of Southern California (USC), or as required by the City.

All backflow prevention assemblies shall be equal in size to the water meters unless a variance is approved by Water Utilities Engineering prior to installation. Pressure loss through backflow prevention devices should be considered when sizing the device.

Whenever possible, the backflow prevention assemblies shall be installed directly after the water meter. When it is not possible to install the backflow prevention devices directly after the water meter, prior approval from the City must be obtained. (See Section 6.1.6.)

All Materials must be new, of top quality, as noted in Materials Standards, and shall conform to the appropriate ANSI/ASTM/NSF/AWWA standards. Any later revisions shall automatically supersede standards enumerated herein. See Section 5.0 for detailed specifications. **See Water Material Specifications for further material requirements.**

Two working day's notice to Water Utilities Engineering is required prior to the installation of any backflow prevention device. The following criteria must be met before final approval and acceptance will be given by Water Utilities Engineering and water service granted:

- Approved location for backflow preventer unit
- Appropriate height/width of unit and posts
- Approved backflow preventer unit landscaping plan shown on site plans
- Proper documentation received by Water Utilities Engineering (i.e. Letter of Intent, Annual Maintenance Agreements, Recorded Easements, etc.)
- Proper assignment of maintenance and testing responsibility for non-accessible backflow units

The City reserves the right to modify existing or institute new procedures or requirements which it deems necessary to insure the protection of its water system, or meeting changing requirements of the Department of Environmental Protection.

6.1 Services

6.1.1 Domestic

Single family and single story, multi-family residences are exempt from the cross-connection control policy at this time unless:

1. There is or was an auxiliary water supply (well) on the premises.
2. There is an existing water source with a history of cross-connection.
3. Regulated chemicals are used or stored.
4. There is an alternative water supply source for the irrigation system.

Multi-family residences with one meter per structure shall have backflow prevention devices. Individually metered units shall be exempted from backflow prevention devices for the 1st and 2nd floor units except as in cases listed in items 1-4 above.

All residences, four stories or higher shall have backflow prevention devices.

Residential customers that operate a commercial activity from their residence, part or full time, shall be classified a commercial customer. Facilities associated with residences within a development, i.e. coin operated laundry, recreational areas/swimming pool, etc., shall be addressed as a commercial facility.

The City shall evaluate the customer's premises at an existing – i.e., previously constructed – service connection whenever the customer connects to a reclaimed water distribution system, whenever an auxiliary water system is discovered on the customer's premises, whenever a prohibited or inappropriately protected cross-connection is discovered on the customer's premises, and whenever the customer's premises is altered under a building permit in a manner that could change the backflow protection required at or for a service connection to the customer.

6.1.2 Commercial Customers

All commercial customers shall have backflow prevention devices installed to provide premise isolation.

Separate backflow prevention devices shall be required on each metered service. The size of the backflow device shall be the same as the meter size. Water Utilities Engineering shall approve any variance.

6.1.3 Irrigation Systems

The City of Lakeland will not install a separate irrigation meter(s) on the potable supply system at a single parcel for a single-family residence if domestic service is available. However, the City will install a separate irrigation meter(s) for residential units if an alternate water supply source is available from the City of Lakeland. **All irrigation meters must have backflow prevention devices Installed per Table 6.1.**

Commercial customers must have a separate irrigation meter with the appropriate backflow prevention device when water is provided by the City of Lakeland for irrigation purposes. Approved irrigation shall be subject to Impact Fees.

6.1.4 Fire Protection Systems

The Fire System engineer shall submit two (2) copies of the finalized fire system design, hydraulic calculations specifying the flow and pressure requirements, and a statement whether the system is to have a chemical injection system or chemical additives in the lines, to Water Utilities Engineering for review. The flow requirements will determine the fire capacity (impact) fee, which must be paid prior to connecting to the City's water main.

1. A double detector check backflow prevention assembly (BFP-DDC) will be required on all low hazard sprinkler systems as recommended by AWWA M14 for Class 1-3 systems. All BFP-DDCs shall be equipped with a detector meter (3/4") and a double check by-pass. Per Table 6.1, the smallest DDC shall be three (3) inches.

2. All sprinkler systems listed in AWWA M14 as Class 4-6 shall be equipped with a backflow preventer - reduced pressure zone detector check assembly (BFP-RPZDC), with a detector meter (3/4") and a 3/4" BFP-RPZ on by-pass.
3. Any fire sprinkler system which is to have a chemical injection system, or chemical additives introduced into the lines at any time must have a reduced pressure detector check zone assembly installed.
4. The City of Lakeland will determine the requirements to be met for the proposed fire protection system, and which backflow prevention assembly is acceptable.
5. All back flow prevention assemblies shall be listed for fire protection service by a nationally recognized testing laboratory, such as Underwriters Laboratories (UL) or Factory Mutual (FM) approval.
6. All double detector check or reduced pressure zone detector check backflow prevention assemblies shall meet all performance standards established by the AWWA, ANSI, or as required by the City.
7. Two UL listed ball valves or OS&Y indicating type resilient seated gate valves, necessary for periodic testing, shall be attached directly to the inlet and outlet flanges for the backflow preventer assembly. In addition, another gate valve must be installed upstream of the unit on all lines where the backflow preventer is to be 4-inches or greater (WS-304). Other valve arrangements will be considered by the City upon request. The inlet valve shall include an approved test cock on the upstream side. A detailed drawing must be provided for fire service units.
8. Large industrial facilities may be required to meter the fire service if continuous use of the fire service exceeds normal testing and maintenance. The metered water consumption shall be billed at the existing rate.
9. No domestic (potable) use shall be permitted from any system designed as a Fire System.
10. If a fire line booster pump is required, a flow control valve, restrictor plate, or other method to limit flow, shall be installed to prevent reduction of City main pressure below 20 psi. It should be noted that the city's systems static pressure may fluctuate, therefore whenever possible some higher pressure limit should be used for design purposes.
11. **When determined by the City Water Utilities any fire line must be metered due to onsite activities appropriate space shall be provided for a meter to be installed by the City at the developer's expense. The spacing required for a meter, or a spool piece if it is determined the fire line may be metered in the future, shall be determined by the City.**

6.1.5 Approved Units

Only those backflow prevention devices listed in Table 6.1 shall be approved and accepted by the City of Lakeland for installation in the appropriate application. Only those devices listed are approved for installation. The use of any other backflow prevention assembly must be approved by Water Utilities Engineering.

6.1.6 Installation of Backflow Prevention Assemblies

All backflow prevention assemblies must be installed in accordance with the manufacturer's installation instructions and City of Lakeland requirements. All work must be performed in coordination with City personnel, who will be assigned prior to any installation.

ANY VERTICAL INSTALLATIONS OF BACKFLOW PREVENTION DEVICES MUST HAVE PRIOR APPROVAL BY THE CITY OF LAKELAND WATER UTILITIES ENGINEERING DEPARTMENT. Where a vertical installation is approved by Water Utilities Engineering, please refer to WS Detail # 304-2.

6.1.6.1 Location of Backflow Prevention Devices

Where landscaping is possible, the backflow preventer unit shall be located approximately 5 1/2 feet from the meter and/or the Right-Of-Way line unless prior approval is granted from Water Utilities Engineering. This distance is required as to accommodate any required landscaping plan. The owner shall be responsible for piping between the meter and backflow preventer, and for the piping after the backflow prevention device. (See spec drawing WS-601).

If the unit is proposed to be located inside of the building or in another inaccessible location for City of Lakeland personnel to perform routine maintenance and repairs, then the backflow preventer unit shall be considered to be privately owned and maintained by the property owner and the following documentation must be completed and filed with Water Utilities Engineering as a condition of service:

- Letter of Intent
- Agreement of Annual Testing and Maintenance of Backflow Prevention Devices

The Letter of Intent is required whenever the backflow unit will be in a location other than adjacent to the water meter and/or the Right-Of-Way line (more than 5 1/2 feet). In these instances, there must be an easement granted to the City for access by City personnel and vehicles for routine testing and maintenance. By signing the Letter of Intent, the owner agrees that there will be no connections made between the meter and the backflow unit, and also agrees to be responsible for maintenance and repair of the service line from the meter to the actual backflow device.

The Agreement of Annual Testing and Maintenance of Backflow Prevention Devices form covers ownership and maintenance of the service line between the meter and the backflow unit and the actual unit itself. By signing the form, the property owner, its heirs and assigns, agrees to be responsible for all maintenance, operation, and annual repair and testing of the backflow device and the service line downstream of the meter. Proof of current, approved certification must be submitted on behalf of the individual performing the device testing and accompany each test results. (Please refer to sample AA+MBPD for owner's responsibilities and obligations).

Any future additions to the property which create a barrier to the backflow preventer or restrict access by City of Lakeland personnel for routine maintenance and testing will be viewed as a request by the owner of the property to transfer ownership of the backflow preventer to private ownership. The owner will assume responsibility for maintenance, yearly testing and notifying the City that the unit has been tested and is functional.

Where severe logistical issues exist within the downtown area alternate installation locations may be allowed per Administrative Policy.

6.1.6.2 Landscaping Requirements

For all projects inside the City limits requiring a backflow prevention device, refer to the City of Lakeland Landscape Ordinance through Community Development. Site plans that are received by the Building Inspection Department will be required to show an appropriate landscaping plan before approval is granted.

All projects that are located outside of the City limits will require landscape hedging around the backflow prevention unit comparable to what is proposed for the property. Backflow units must be landscaped on 3 sides, leaving the service side open for maintenance and repair accessibility. The landscape hedging must be located a minimum of 1 ½ feet from the concrete pad. Please refer to Water Standard Detail WS-601 for examples and distance requirements.

6.1.6.3 Concrete Pads & Posts

Backflow preventer installations shall require a concrete pad and may require posts following the guidelines outlined below:

1. Concrete pads must be poured under the unit and must extend 1 foot around the perimeter of the device.
2. If backflow preventer is adjacent to traffic flow, posts are required. Posts shall be schedule 40, galvanized steel and **filled** with concrete. The top of the posts are to be a maximum of 3-inches above the 90 degree elbows of the backflow prevention device. Adjacent shall mean the device is not separated from the normal traffic flow by a sidewalk, curb, ditch, structure, or by less than two car lengths.
3. Backflow preventers 2" in size and smaller, require 2" **galvanized sch 40** posts.
4. Backflow preventers larger than 2" in size require 4" **DIP or galvanized sch 40** posts.

6.1.6.4 Reduced Pressure Zone Backflow Prevention Assemblies

A typical installation of a reduced pressure principal backflow prevention assembly is illustrated in detail drawings WS-301 through WS-304.

1. Pipelines shall be thoroughly flushed to remove foreign material and debris before installing the assembly.
2. If not already provided, shut-off valves shall be installed at each end of the assembly for testing and servicing purposes.
3. The assembly shall be placed in the horizontal position unless otherwise specified by the manufacturer's instructions and approved by the City.
4. The assembly must always be installed in an accessible location, approved by the City, to facilitate testing and servicing.

5. The assembly shall be installed 12" min. – 14" max. above the concrete pad or maximum flood level, whichever is highest, in order to prevent any part of the assembly from becoming submerged.
6. Reduced Pressure Zone backflow preventers are not to be installed in pits.
7. The relief valve discharge pipe must be terminated 12" min. – 14" max. above ground, or the maximum flood level, whichever is highest, and located so that it is clearly visible and accessible.
8. The assembly shall be adequately supported to prevent the assembly from sagging.
9. Any RPZ backflow prevention devices which are installed inside of a building must have a drain line properly sized according to Table 6.2 which exits the building in a visible location and approved by Water Utilities Engineering. Per Section 2.7.13, the owner shall accept full responsibility for the device and drain system.

6.1.6.5 Drains

The following is a list of flow rates for corresponding drain diameters that are to be used for backflow preventers installed inside buildings.

Table 6.2 Approved Drain Sizes

Drain Diameter	Flow Rate
2"	55 GPM
3"	112 GPM
4"	170 GPM
5"	350 GPM
6"	450 GPM
8"	760 GPM

6.1.7 Freeze Protection Valves

Freeze protection devices are required on all new backflow preventer installations. The freeze protection valves are to be installed downstream of the backflow preventer. Freeze protection devices shall be Dole model FP-45, manufactured by Eaton Controls Division, (Carol Stream, Illinois.)

6.1.7.1 Approved Units

See table 6.1 approved backflow prevention devices.

6.1.7.2 Installation Specifications

All freeze protection devices must be installed in accordance with the manufacturer's installation instructions and, at a minimum, according to the following City of Lakeland Water Utilities Engineering requirements. All work must be performed in coordination with City personnel, who will be assigned prior to any installation.

1. Install in a location where, during operation, the warmer supply water first passes through the collectors and/or pipe to be protected, and then through the valve.
2. Select a mounting position where valve will sense coldest anticipated ambient temperature. Do not mount in a position where the valve will be exposed to or subjected to an unnatural heat source.
3. The system must be subjected to normal operating pressures of between 20 and 125 psi at all times. Do not shut off water supply to the collectors or isolate the collectors from the City water supply.
4. Water flow must be prevented from "by-passing" the collector.
5. Do not insulate the freeze protection valve or exposed pipe between the collector and the freeze protection valve. Sections of exposed pipe where no water flow exists during valve operation should be heavily insulated. Valves should be mounted close to collector to minimize length of exposed pipe.
6. Install by applying torque with a wrench to the square metal inlet flange. Do not install by applying torque to the plastic body.
7. Install in a vertical position with discharge port down.
8. Allow plastic discharge tube to drain freely and avoid water traps in the discharge tube that could freeze and prevent drainage.
9. Do not attempt to disassemble the top cover. The inlet retention flange can be removed to inspect screen for periodic cleansing or replacement.
10. During cold weather spells it is normal for the valve to dispense water from its discharge port, even when ambient air temperatures are several degrees above freezing.

6.2 Water Main Jumper Connection for Subdivisions & Line Extensions

1. The City of Lakeland Water Utilities isolation and testing procedures for uncleared water mains shall be used unless otherwise noted, however, in certain circumstances a temporary jumper assembly (Standard Detail No. WS-402) may be required at connections between existing active water mains and proposed new water mains. The use of a temporary jumper will be determined by Water Utilities Engineering upon initial plan review. It may be used for:
 - A. Filling new water mains of any size from existing active water mains
 - B. Flushing and pigging of new water mains
 - C. Pulling bacteriological samples from new water mains of any size
2. Connection to an existing water main and normal maintenance of the temporary jumper assembly and associated backflow prevention device, fittings, valves, etc., shall be the responsibility of the City of Lakeland Water Operations Group for an additional charge.
3. All operation of valves in the existing active system and the temporary jumper shall be performed by City of Lakeland personnel.
4. The tie in valve shall be operated and pressure tested by City of Lakeland Water Utilities Engineering to verify water tightness prior to connection to the new water main. Valves that are not watertight shall be replaced, or a new valve installed immediately adjacent to the leaking valve. The tie in valve shall then be locked closed by the City of Lakeland.
5. The City of Lakeland Water Distribution Group shall ensure that the reduced pressure backflow prevention device has been tested and is in good working order at the time of installation.
6. Adequate supports and/or restraints shall be provided temporarily by the City of Lakeland Water Distribution Group, as required.
7. Any damages occurring to the temporary jumper or associated piping shall be the responsibility of the Contractor/ Developer/ Owner.
8. A pressure gauge shall be installed upstream of the temporary jumper connection during flushing operations. The City main pressure must be maintained above 35 psi. If the pressure gauge indicates the City main pressure has dropped to 35 psi, flushing shall be immediately stopped.
9. Flushing of 10" diameter and larger water mains may be performed through the tie in valve under very controlled conditions. The use of the tie in valve will occur only under the supervision of the City of Lakeland. After flushing, the tie in valve shall be closed and locked.
10. Upon acceptance of the installation by the City of Lakeland Water Distribution Group, FDEP, and other pertinent agencies, the City of Lakeland Water Distribution Group shall remove the temporary jumper, connecting valves shall be closed and plugged, and the tie in valve shall be opened.

6.3 Backflow Prevention Assemblies Testing

6.3.1 All newly installed and replaced backflow devices shall be tested after installation by a City, University of Florida TREEO Center Certified Backflow Prevention Assembly Tester. Thereafter all devices shall be tested annually at a minimum by a City certified tester.

6.3.2 Prior to each field test the City Certified Tester must take the following steps:

1. Notify the Customer that the water service will need to be shut-off during the test. If a fire protection system will be affected, Water Utilities Meter Office and the Fire Department must be notified. Testing shall be coordinated with the Customer.
2. Identify that the correct assembly is being tested by checking the identification tag and meter number.
3. Inspect the assembly for minimum clearance and properly located shut off valves and test cocks.
4. Observe the assembly and surroundings for signs of leakage, vandalism, or alterations.
5. Flush testcocks
 - a. Open in reverse order 4, 3, 2, 1
 - b. Close in order 1, 2, 3, 4
6. Install fittings.
7. Inspect the test kit, and then close all needle valves.

6.3.3 Testing Procedures

6.3.3.1 Test Requirements RPPA's & RPDA's

1. Observe Check Valve 1
 - 1) Attach high hose to testcock 2
 - 2) Attach low hose to testcock 3
 - 3) Open testcock 3 slowly then open low bleed
 - 4) Open testcock 2 slowly then open high bleed
 - 5) Close bleeds – high first, low last
 - 6) Close outlet shut-off valve
 - 7) Observe Check Valve 1 – Record as “Closed Tight” or “Leaking”
2. Record Relief Valve
 - 1) Open the high control valve one full turn
 - 2) Open low control slightly – no more than quarter turn
 - 3) Record Relief Valve Opening “> or = 2.0 psi”
 - 4) Close low control
3. Observe Check Valve 2
 - 1) Bleed vent (By-pass) hose
 - 2) Attach vent hose to testcock 4
 - 3) Close vent (By-pass) control
 - 4) Open testcock 4
 - 5) Reset gauge – (Low Bleed) to re-establish differential pressure across CV #1
 - 6) Open vent control one full turn

- 7) Observe whether or not relief valve vent drips
 1. If the relief valve drips – reset gauge (low-bleed)
 2. If the relief valve drips a second time, then check valve 2 has failed and must be repaired.
 3. Close vent (By-pass) control only if Check Valve 2 leaks
 4. Record as “Closed Tight” or “Leaking”
4. Record Check Valve 1
 - 1) Reset gauge – (Low Bleed) to relieve disk compression
 - 2) Record Check Valve 1 Differential (must be minimum 5.0 and > Relief Valve opening)
5. Record Outlet Shutoff Valve
 - 1) Close Testcock 2
 - 2) Wait and check gauge for leaks in outlet shutoff valve
 - 3) Record as “Closed Tight” or “Leaking”
 - 4) If there is no flow through the assembly, continue to the next test.
6. Record Check Valve 2
 - 1) Close vent control
 - 2) Close testcocks 3 and 4
 - 3) Remove vent hose from testcock 4
 - 4) Move low hose to testcock 4
 - 5) Move high hose to testcock 3
 - 6) Open testcock 4 slowly then open low bleed
 - 7) Open testcock 3 slowly then open high bleed
 - 8) Close high bleed first, then close low bleed slowly
 - 9) Record Check Valve 2 differential “> or = 1.0 PSI
7. Final
 - 1) Close testcocks – remove all equipment
 - 2) Open all needle valves on test kit
 - 3) Open outlet shut-off valve slowly

6.3.3.2 Test Requirements for DCVA's & DCDA's

1. Check Valve 1
 - 1) Install compensating tee (Bleed Valve) on testcock 2
 - 2) Install short tube on testcock 3
 - 3) Open testcock 3
 - 4) Open testcock 2 slowly
 - 5) Open high bleed – bleed air from gauge
 - 6) Close high bleed
 - 7) Close outlet shutoff valve
 - 8) Close inlet shutoff valve
 - 9) Open testcock 3 (Testcock 2 must be open)
 - 10) Note: gauge must read 1.0 psi or greater to pass
 - 11) Record value of Check Valve 1

2. **Check Valve 2**
 - 1) Close testcock 2 and testcock 3
 - 2) Move short tube from testcock 3 to testcock 4
 - 3) Remove high hose from testcock 2
 - 4) Open inlet shutoff valve
 - 5) Attach high hose to testcock 3
 - 6) Open testcock 4 to fill tube
 - 7) Close testcock 4
 - 8) Open testcock 3 slowly
 - 9) Open high bleed – bleed air from gauge
 - 10) Close high bleed
 - 11) Close inlet shutoff valve
 - 12) Open testcock 4 (Testcock 3 must be open)
 - 13) Note: gauge must read 1.0 psi or greater to pass
 - 14) Record value of check Valve 2
3. **Final**
 - 1) Close Testcocks – remove all equipment
 - 2) Open inlet shutoff valve
 - 3) Open all needle valves on test kit
 - 4) Open outlet shutoff valve slowly

6.4 Backflow Device Repairs

All backflow devices that have been accepted into the City water distribution system are tested annually, maintained, and repaired by University of Florida TREEO Center Certified Backflow Prevention Assembly Testers employed by the City. All certifications are kept current in accordance with TREEO Center guidelines.

In the event that City elects not to provide testing and maintenance services (See 2.7.13 for conditions); it shall be the duty of the Customer to conform to scheduled testing. If deficiencies are noted during the test, such assemblies shall be repaired, overhauled, or replaced at the expense of the Customer by a Certified Cross Connection Control Assembly Repairer preapproved by Water Utilities Distribution Division. All Materials must be new, of top quality, as noted in Materials Standards, and shall conform to the appropriate ANSI/ASTM/NSF/AWWA standards. Any later revisions shall automatically supersede standards enumerated herein. See Section 5.0 for detailed specifications.

After each test the Certified Tester shall supply the owner and Water Utilities Distribution Division with a copy of the approved Test and Maintenance Report within 10 calendar days, or a retest will be required.

If an existing assembly needs to be taken out of service for repair, the assembly and installation shall meet all current policies, standards, and specifications as set forth in this Manual, before it is returned to service.

If an existing assembly or device needs to be replaced, the Customer shall contact Water Utilities Distribution Division before any work is done. At this time the assembly or device with its associated piping, valves, and fittings shall be brought up to current standards and specifications and must be inspected by Water Utilities Distribution Division before it is returned to service.

The Tester and Repairer shall furnish records of such test, repairs, and overhauls to the City and the customer. Upon completion of any repair, overhaul, or replacement of an assembly or device, an operational test shall be made before the system is put back into service.

6.5 Backflow Prevention Assemblies Inventory & Record Keeping

6.5.1 Backflow Assemblies Device Inventory

A complete inventory of all backflow prevention devices required by the City is maintained by Water Utilities Water Distribution Division. The facility is located at 1025 East Parker Street, Lakeland, Florida 33801. The office may be reached at (863) 834-8714 Monday through Friday (Except holidays) from 7:30 am to 4:30 pm.

6.5.2 Backflow Assemblies Device Test Records

All records of backflow prevention devices installations, testing, repair, and replacement are maintained by Water Utilities Water Distribution Division. The facility is located at 1025 East Parker Street, Lakeland, Florida 33801. The office may be reached at (863) 834-8714 Monday through Friday (Except holidays) from 7:30 am to 4:30 pm.

Records prior to August 1, 2015 were maintained in paper format. Records from August 1, 2015 forward are maintained in electronic format. All records regardless of format are maintained for a minimum of 10 years in accordance with Rule 62-555, F.A.C.

Table 6.1 Approved Backflow Prevention Devices

APPLICATION	TYPE REQUIRED	MANUFACTURER	MODEL	SIZE	DRAWINGS
RESIDENTIAL IRRIGATION (Internally Connected To The Customer's Plumbing System)	INTERNAL BACKFLOW PROTECTION REQUIRED UNDER THE FLORIDA BUILDING CODE OR PREDECESSOR STATE PLUMBING CODE				
DOMESTIC / COMMERCIAL IRRIGATION SYSTEMS	REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLIES (RPZ)	FEBCO	LF825Y LF825YA LF880V LF860	3/4" - 2" 3/4" - 2" 3" - 10" 3" - 10"	WS-301 WS-302 WS-302
		WATTS	LF909	3/4" - 10"	
FIRE PROTECTION SYSTEMS **(see note below)	DOUBLE DETECTOR CHECK ASSEMBLIES (DDC)	WILKINS	975XL2 375	3/4" - 2" 3" - 10"	
		FEBCO	876VST 856ST	3" - 10" 3" - 8"	WS-304 WS-304 WS-601
		(DETECTOR SIDE)	805Y	3/4"	
		WILKINS (DETECTOR SIDE)	950DA/350DA 950XL	3" - 10" 3/4"	
		FEBCO	826YD	3" - 10"	WS-304
	REDUCED PRESSURE ZONE DETECTOR CHECK BACKFLOW PREVENTION ASSEMBLIES (RPZDC)	WILKINS	975DA/375DA	3" - 10"	WS-304
		WATTS	909RPDA	3" - 10"	WS-601

Note: Freeze protection devices are required on all new backflow preventer installations. The freeze protection valves are to be installed downstream of the backflow preventer. Freeze protection devices shall be Dole model FP-45, manufactured by Eaton Controls Division, (Carol Stream, IL.)

Note: Any vertical installations of backflow preventer devices must have prior approval by City of Lakeland Water Utilities Engineering.

7.0 WATER RATES, CHARGES and FEES

Any payment due for services rendered by the City must be paid prior to the City performing the work. Contact Water Utilities Engineering (863) 834-8316 for current charges and fees. All charges and fees are subject to Ordinance.

7.1 Service Connection Charges – Ordinance #2751 and 4149

7.1.1 Policy

Applications for water service and proof of an existing plumbing permit must be taken to the Lakeland Electric Customer Service Office. Full payment of charges and deposits is required before installation can be made.

7.1.2 Service Connection Charges

Charges for connecting new water service facilities are established by the size of the meter that shall provide the water service. The meter shall be placed on or about the property line.

The water service connection charge for connections involving water meters larger than 2 inches will be determined by City of Lakeland Water Utilities Engineering. The charge shall be based upon the actual cost of making such connections, including, but not limited to, cost of the meter and water pipe necessary to make the connection, and any restoration charges.

No service or meter over 1-inch in size shall be installed where the street main is 2-inch or less in size.

Fees will vary if a by-pass or dual meter arrangement is requested. The cost will be determined at the time of the request.

Permanent services for new commercial construction will be locked off until all City requirements are met. The owner/contractor may contact Water Distribution if temporary water is needed for new construction, at owner/contractor's expense.

Existing services, with no history of cross connection or supplying commercial customers in operation, may be left in service during remodeling and/or additions. However, all City requirements must be met to continue water service after remodeling or additions are complete.

7.1.3 Separate Residential Irrigation Meters – by Policy

The City of Lakeland will not install a separate irrigation meter(s) at a single parcel for a single-family residence if domestic service is available. Because of the "cap" on City of Lakeland wastewater charges, there is no economic incentive for a separate irrigation meter.

7.1.4 Master Metering – by Policy

See Section 2.7.12

7.2 Water Rates - Ordinance # 3915

7.2.1 Policy

The monthly customer meter charge plus the metered flow, per 1000 gallons at the current rate shall determine charges for water consumption.

7.3 Water Line and/or Fire Service Connection Charges

Charges for connecting water lines to the City of Lakeland's system are established by contacting Water Utilities Engineering.

The work included in this charge shall only be for excavation and tapping into the water main. Any other work or requirements determined necessary by the City shall be paid by the customer.

7.4 Fire Protection Service Capacity Fees

7.4.1 Capacity Fees – Ordinance #2620 and #2868

This fee is imposed on each new connection to the water system to support a fire protection. This capacity fee applies to all connections whether directly or indirectly connected to the City's water system.

The Fire Protection Service Capacity Fee will only be quoted after Water Utilities Engineering has reviewed a copy of the final calculations for the planned fire protection system in order to verify the new fire flow demand (i.e. - Fire Flow Classification) imposed upon the municipal water system.

7.4.2 Policy

Plans, specifications and hydraulic calculations for installation, modification, or alterations of any fire service main or fire hydrant shall be submitted to Water Utilities Engineering for review. All installations must conform to the City of Lakeland Fire Department Standard Fire Prevention Code and Water Utilities Engineering requirements.

Where the City installs water lines for Private Fire Protection Service, it shall charge the expense incurred in installing and maintaining such service. The appropriate monthly charge to the customer shall pay for water provided through such service for fire system maintenance and fire fighting activities. Water shall not be used from the connection for purposes other than fire protection.

The City of Lakeland shall consider use of water by the customer from his private fire protection system for purposes other than fire protection or fire system testing to be abuse on the part of the customer. At its sole discretion, the City of Lakeland may require that the customer pay for the water used, and/or install a separate metered domestic water service, or a fire flow rated water meter and reduced pressure zone (RPZ) backflow preventer on the fire line at his/her expense if the customer repeatedly abuses water through his private fire protection system. Failure on the part of the customer to either terminate the abuse or to install the separate metered domestic water line, if required to do so, shall constitute adequate grounds for the City of Lakeland to terminate water service to the private fire protection system.

7.4.3 Private Fire Protection Monthly Service Charges

Monthly rates are established for the availability of such service.

7.5 Charges for Changes in Size of Meter Service-Ordinance #2751 & #4149

7.5.1 Policy

Applications for changes in service and meter size are taken at the Lakeland Electric Customer Service Office. Full payment is required before work can be performed.

7.5.2 Charges for Changes in Size of Meter Service

Charges for increasing the size of a water service connection and meter may include a complete new installation from main to meter. If the new location is appreciably different from the original meter, it will be considered a new installation with credit being given for the removal of the existing meter.

Charges for increasing the size of a water service connection and meter from $\frac{3}{4}$ through 2-inch are standard charges and shall be available from Water Utilities Engineering.

Charges for a change in a water meter size to that greater than 2 inches in meter size will be determined by Water Utilities Engineering based upon the actual cost of making such connection, including, but not limited to, the cost of the meter and pipe necessary to make the change.

Increases in meter size shall also be subject to System Capacity Fees.

The amount of the System Capacity Fee will be the difference in the capacity fees in effect at the time of the meter change, for the two meter sizes.

7.5.3 Charges for Decrease in Size of Meter Service

Reducing meter sizes 2 inch, 1 1/2 inch, or 1 inch are standard cost for labor and material but do not include restoration.

No refund or transfer of System Capacity Fees will be made as a result of a reduction in meter size. However, should a customer increase the service line and meter back to their original sizes, there will be no additional System Capacity Fees charged.

7.6 Water Main Adjustment Charges

7.6.1 Policy

The City will charge a fee to raise, lower, move, or otherwise adjust the location of water lines as a result of customer actions, or requests. The charges will be the actual cost, including overhead costs, required for the relocation. This shall include the direct cost for contractors, City personnel, equipment, materials, and any other cost related to the relocation including asphalt, concrete and landscaping costs incurred as a result of the relocation.

7.7 Water Meter Relocation Charges

7.7.1 Policy

The City of Lakeland may relocate water meters and meter service lines for its customers upon request. Water Utilities Engineering shall be contacted for requesting meter relocation. Full payment for this service is required before work will be performed.

7.7.2 Water Meter Relocation Charges

The City of Lakeland will relocate any meter, 2 inches or less in size, up to 20 feet from its present service location. Relocations will only be performed on the same parcel for the owner. Meters moved to new parcels will incur the City of Lakeland's System Capacity Fees in effect at the time of the relocation. The customer shall be responsible to relocate their piping down stream of the meter.

Any additional work or expenses beyond the basic standard relocation described above will be charged to the customer at Lakeland's cost. Examples of additional work are relocations beyond 20 feet, removal and replacement of concrete sidewalks, driveways, grading and/or landscaping required above the Standard Meter Relocation Work.

The charge for relocating water meters larger than 2 inches will be determined by Water Utilities Engineering.

7.8 Water System Capacity Fees – Ordinance #3118 and #3123

7.8.1 Policy

Each customer shall pay a System Capacity (Impact) fee prior to connecting to the City's water system. For single family residential customers (detached single family homes), the impact fee shall be based on 325 gpd average.

Attached single family homes and multi-family dwelling units (townhouses, condominiums, apartments, duplexes, etc.), and mobile homes equal 244 gpd (does not include irrigation).

Hotels, motels, dormitories, and assisted living facilities equal 150 gpd/per room (does not include food service or irrigation).

Commercial and industrial customer impact fees are based upon the expected / designed water flow. Plumbing fixture unit count may be used if required. The City shall monitor actual flows for two years. If any six-month rolling average is greater than the purchased capacity, the customer shall be assessed additional Impact Fees.

7.8.2 System Capacity Fees for Separating Master Meters – Ordinance #2620

In situations where multiple locations are being serviced from one “Master Meter” and the Master Meter was originally subject to a System Capacity Fee, there shall be a System Capacity Fee charged when the water service is separated and additional meters are set. The fee for additional meters, for units which were originally served by the Master Meter, as well as credits for removal of the Master Meter, will be charged at the System Capacity Fee in effect at the time the Master Meter was set and converted to average gallon per day flow. No refund of the System Capacity Fee shall be paid as a result of such meter separations.

At locations where service was provided prior to the implementation of System Capacity Fees, the System Capacity Fee will not be assessed as long as new services are provided from the existing service line. If a new service line is installed, System Capacity Fees will be assessed at the amount in effect at the time the new service line is connected to the City of Lakeland’s system.

7.8.3 Special System Capacity Fee Guidelines

The capacity fee is based on the granted capacity by the Capacity Review Committee. In determining the appropriate GPD for the establishment, the guideline below is provided:

<u>TYPE OF ESTABLISHMENT</u>	<u>GPD UNIT</u>	<u>GPD FACTOR</u>
<u>Commercial</u>		
Auditorium	Seat	5.5
Barber/Beauty Shop	Oper. Sta.	97.5
Bowling Alley	Lane	108.0
Sales	Toilet	325.0
<u>Food Service</u>		
Restaurant/Cafeteria	Seat	32.5
Restaurant (24 Hours)	Seat	54.0
<u>Industrial Building</u> (Not including food service or industrial)		
Without Showers	Employee	16.0
With Showers	Employee	38.0
<u>Laundry - Self Service</u>		
	Machine	433.0
<u>Office Building</u>		
	200 Sq. Ft.	22.0
<u>Service Station</u>		
Add	Per Bay	325.0
Add	Per Wash Bay	1040.0
Add	Per Toilet	325.0
<u>Theater</u>		
	Seat	5.5
<u>Dentist Office</u>		
	Per Dentist	271.0
	Per Wet Chair	217.0
<u>Doctor Office</u>		
	Per Doctor	271.0
<u>Church</u>		
	Seat	5.5
<u>Warehouse</u>		
	1000 sf	15.0

7.8.3.1 Sewer Lift Stations

A sewer lift station is a situation where the standard capacity fee is not practical. The use is typically for maintenance and is minimal per month.

Sewer lift stations that require “wash down” water shall install a meter and backflow preventer. The meter installation cost (section 7.1.2) and the backflow device shall be installed at prevailing cost. However, the Capacity Fee shall be reduced based upon the expected low or expected impact on the City water system.

7.9 Hydrant Flow Test Fee

7.9.1 Policy

When the City of Lakeland performs flow tests at the request of a customer, the customer shall be charged.

7.10 Hydrant Use Permits

7.10.1 Policy

Where the City provides an avenue for commercial customers that provide a service, (i.e. lawn spray, pest control) to acquire water from various fire hydrants within the City system, there will be a monthly charge. Through a Fire Hydrant Use Permit, a customer may fill a tank truck from almost any convenient fire hydrant, providing the vehicle is properly plumbed with an “air-gap”, and has been inspected and accepted annually by the City of Lakeland Water Utility.

Each vehicle’s permit must be renewed annually, including inspection. The permit should remain with the vehicle at all times so that City Inspectors can verify a vehicle complies with this policy if checked while filling from a City hydrant.

Monthly billing will be made to the customer’s commercial “home” or office utility account.

7.11 Construction Hydrant Meter Set

Where the City sets a Hydrant Meter for temporary/construction use there shall be a deposit and a charge. Water used shall be billed to the customer of record at the appropriate commercial rate in effect at the time the bill is rendered. This is intended to be a temporary service, typically 180 days. After 180 days, the Water Utility may remove meter(s) if the customer is using the hydrant meter as a “permanent” source of water.

Hydrant meter sets may be used to maintain pressure only on uncleared water mains under specific conditions and with approval of Water Utilities Engineering.

7.12 Temporary Water Main Jumper Set

7.12.1 Policy

In an effort to protect the City water system during construction activities associated with a distribution water main extension or installation, a temporary water main jumper may be required. The jumper shall be used for all filling, flushing, pigging, testing, chlorinating, etc., of any new water main (up to 8-inches) from the existing water system during construction.

At no time shall water from the jumper be used for domestic use.

The City shall supply the temporary jumper and the charge shall be based on the size required to obtain adequate flushing or pigging of the new water main.

The jumper shall remain in service until all permit requirements have been met and the Polk County Health Unit has cleared the new system for use.

The jumper may also be used for filling, and testing of 10-inch lines. However, if the main line tie in valves are required for flushing or pigging, operation is to be approved by Water Utilities Engineering, and the valves are only to be operated by City personnel.

Note: Pipe Lines 12-inch and larger are considered transmission lines and will be administered through Water Utilities Engineering separately.

7.12.2 Installation and Maintenance

The City, upon payment of all jumper charges, shall install the temporary jumper per WS-402. The contractor shall connect new piping as shown and shall be responsible for disinfecting all fittings and piping. The contractor shall also be responsible for properly restraining the new piping.

All valves on the City system shall be pressure tested by the City to ensure they are water tight before the contractor makes a connection. The valves on the City system shall only be operated by City personnel.

Water consumed during construction will be billed at the current rate.

Any repair of jumper equipment due to damage or vandalism shall be charged to the contractor. Any repair or replacement due to equipment failure shall be corrected by the City at its expense.

Upon completion of construction and clearance, the City shall remove the jumper as part of the basic charge. The City and the contractor shall plug their appropriate tap valves.

7.12.3 Jumper Installation Charge

The charge to install the temporary jumper is based upon labor and material cost to make a wet tap to the existing water system, one tenth the cost to construct the jumper assembly, and time for City crews to install and remove the jumper.

There are no costs associated with valve operation, inspections, repair from damage or vandalism, or site restoration. These are the responsibility of entity requesting the jumper.

7.13 Theft and Tampering

Operation and control of the water distribution system is the sole responsibility of the City of Lakeland's Water Utility. Unauthorized operation, tampering, or theft of water shall be subject to charges.

These FDEP forms are available at: www.dep.state.fl.us

FDEP Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components Into Operation **(DEP Form 62-555.900 (9))**

FDEP Application For A Specific Permit To Construct PSW Components **(DEP Form 62-555.900 (1))**

FDEP Notice of Intent To Use The General Permit For Construction Of Water Main Extension For PWSs **(DEP Form 62.555.900 (7))**

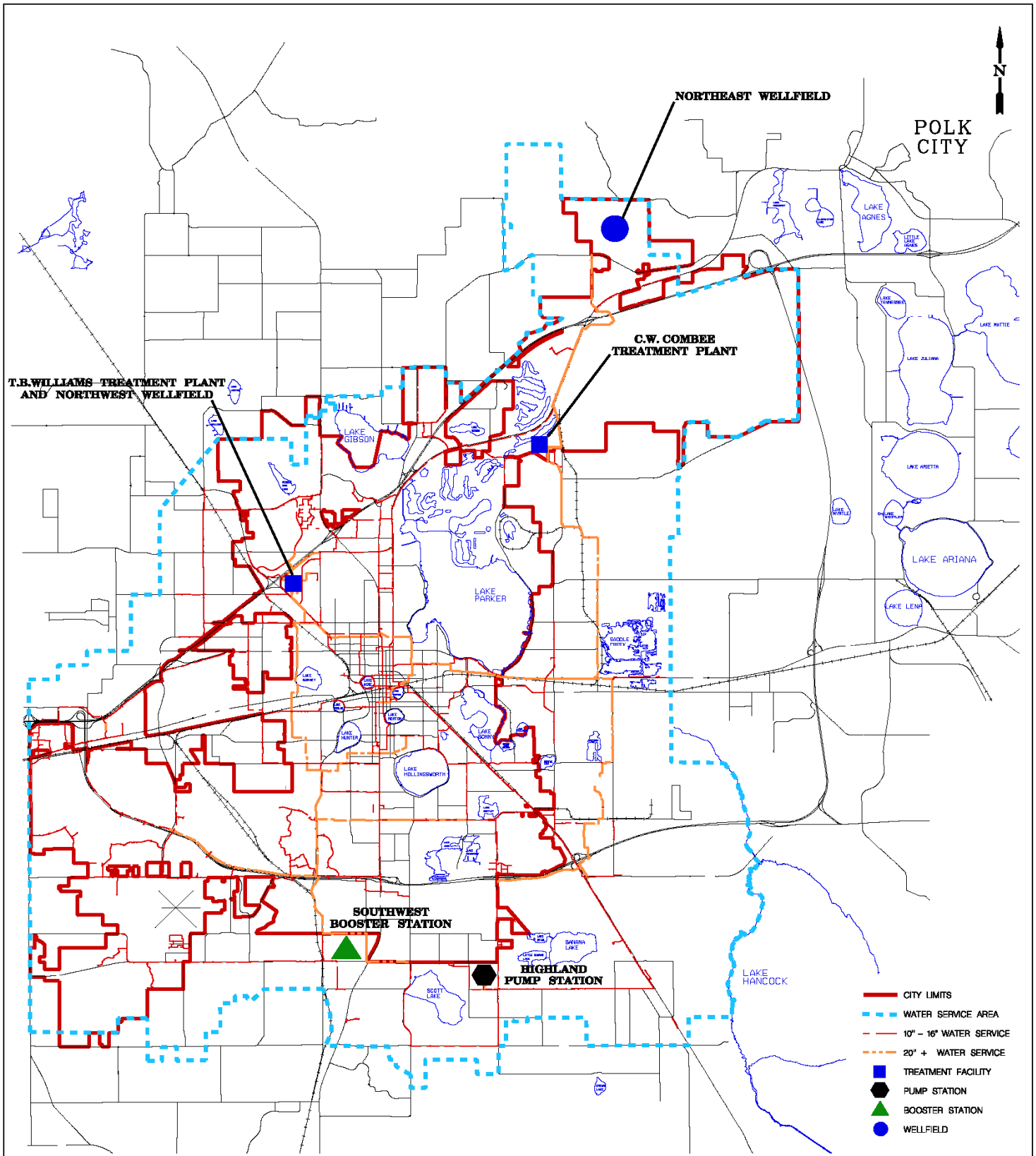
WATER OPERATIONS
POLICIES, STANDARDS AND SPECIFICATIONS
FOR SUBDIVISION AND COMMERCIAL DEVELOPMENT

Appendix A

Water Standard Details

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Appendix B
Utility Planning Service Area



**LAKELAND WATER SYSTEM
EXISTING FACILITIES
2007**

Appendix C

Forms

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