

**APPENDIX G**

**TOHOPEKALIGA WATER AUTHORITY DEVELOPMENT PLAN REVIEW  
PROCESS**

# Private Development Outline



bringing you life's  
most precious resource



# Toho Water Authority Private Development Outline

Thank you for your interest in developing a project within TWA's water, sewer, and reuse service area. To help ensure the acceptance process proceeds as efficiently as possible, this document, in conjunction with TWA's Standards and Specifications Manual, was developed to assist engineering firms and consultants, developer's, contractors, and builders through the private development process from initial construction plan submittal to final project acceptance. If after reviewing this document you still have questions or concerns, please feel free to contact TWA Engineering with any questions at 407.944.5000 Ext. 7.

## Private Development Process Outline

The outline below lists the general steps required to receive water, wastewater, and/or reuse services and final project acceptance from TWA. All projects to be serviced by TWA must adhere to this procedure, although not all steps shall be required by every project.

### 1. Pre-Construction

- a. Pre-Design Meeting
- b. Construction Plan Review
- c. System Development Charge and Fee Assessment
- d. Developer's Service Agreement Execution
- e. Construction Plan Acceptance
- f. FDEP Permit Application Approval
- g. Shop Drawing Acceptance
- h. Pre-Construction Meeting

### 2. Construction

- a. Notification of TWA Inspector
- b. Construction Inspection and Testing
- c. FDEP Clearance Application Approval
- d. Final TWA Inspection

### 3. Post-Construction

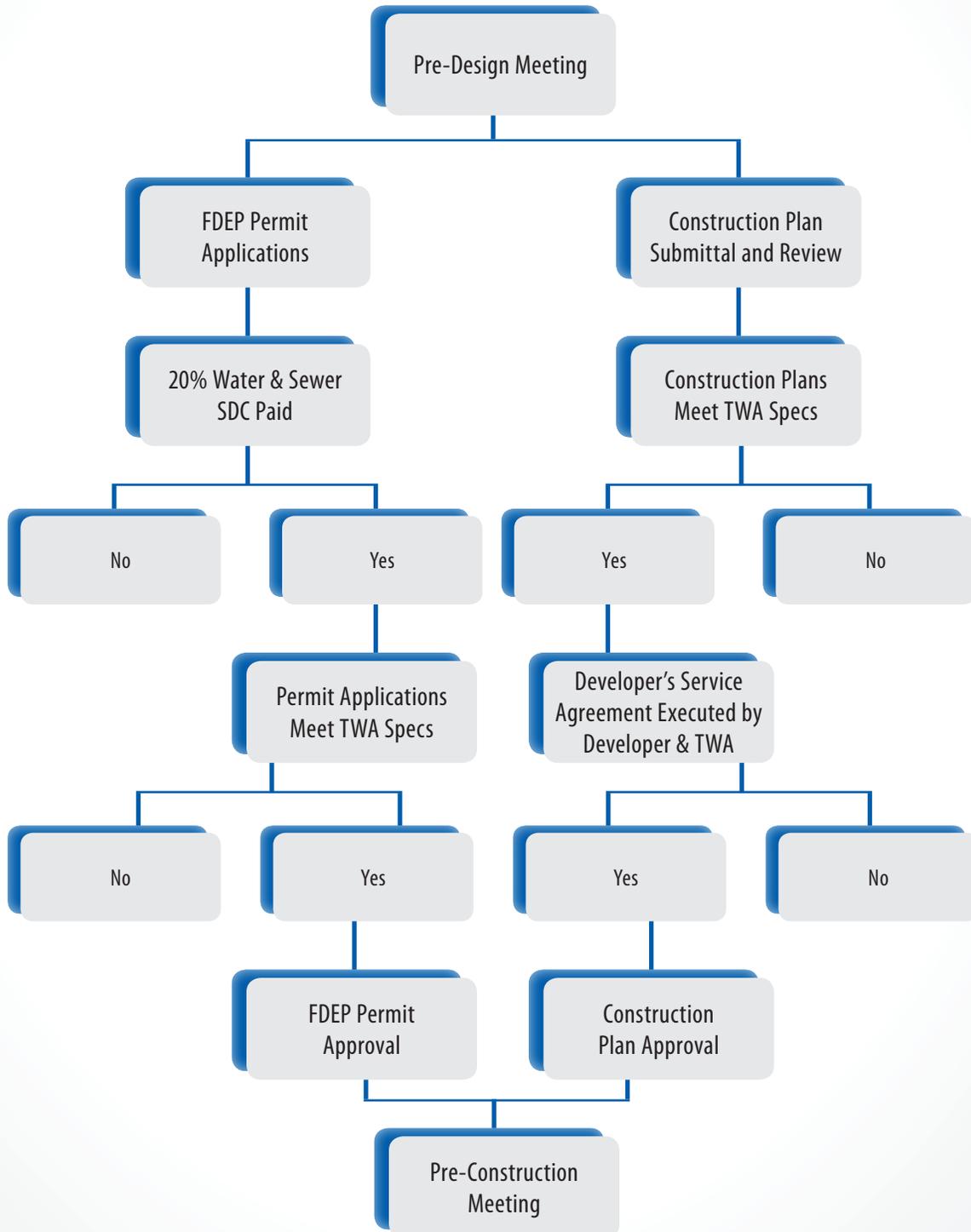
- a. Certification of Cost
- b. Record Drawings
- c. Recording of Easements
- d. Payment for all Outstanding Fees
- e. Water Meter Release and Installation
- f. Final Project Acceptance

TWA encourages a pre-design meeting be held between the design engineer and TWA's project engineer and development project manager for all projects. Engineers who are not familiar with TWA requirements and processes are also encouraged to schedule a pre-design meeting, regardless of the size or scope of the project.

All multi-phase, large scale or Development of Regional Impact (DRI) projects are required to submit and obtain TWA approval of a water, sewer and reuse master plan prior to submitting site specific plans.

# Pre-Construction

## TWA Private Development Pre-Construction Process



# Construction Review

Construction plans submitted to TWA for review must be signed and sealed by a Professional Engineer registered in the State of Florida. First submittals must also include email addresses for the engineer of record, developer/owner, and underground contractor if known at the time.

Comment letters based on the construction review(s) will be mailed via hard copy and electronically to the engineer of record and copied to the developer/owner, when requested.

Plans being approved by Lake, Orange, Polk, or Osceola Counties, or the City of Kissimmee will also require TWA acceptance if the project will receive water, sewer and/or reuse service from TWA.

All projects within City of Kissimmee limits are coordinated through the Development Services Department and shall adhere to the City's schedule for construction plan review and approval/acceptance.

All project within unincorporated Lake, Orange, Polk, or Osceola Counties and within TWA's service area shall be submitted directly to TWA for review and acceptance. The plan review period for projects in these areas is ten (10) business days.

## Construction Plan Review Checklist

The following checklist is used by TWA staff to review all construction plans. Although the checklist was developed for TWA's use, it provides the engineer with a detailed guide of TWA's design review process. TWA recommends the engineer use the checklist in conjunction with TWA's Standards and Specifications to develop complete designs complying with TWA requirements.

### General / Miscellaneous

- Two sets of plans
- Cover sheet with project name, location, vicinity map, Parcel ID, and engineer & owner contact info
- Site survey with existing utilities
- Demolition plan with affected utilities
- Landscape & Irrigation plan
- New wells for irrigation are not allowed under any circumstance as a condition of TWA service
- Interior plumbing plan for projects with the potential for hazardous waste
- Current TWA Standard Construction Notes
- Current TWA Standard Details
- Email addresses for the owner/developer, general contractor, utility contractor and project engineer
- Residential Projects are required to meet Florida Water Star. Add a comment to plans to have the developer contact the Water Conservation Coordinator to discuss.

### Existing Utilities

- Proposed storm, sanitary, water, reuse, irrigation, cable, telephone, or gas lines in conflict with existing utilities
  - Storm, sanitary, reuse & water crossings and parallel runs should adhere to FDEP crossing standards as described in Florida Administrative Code 62-555.314 (Standard Detail TWA-16)
  - Gas crossings should utilize PVC pipe or PE wrapped D.I. pipe
  - Crossings should be measured from outside edges of pipe
  - Pipe encasement not permitted for conflict crossings
- Proposed landscaping in conflict with existing utilities: 5' minimum horizontal separation required for trees

**Existing Utilities (continued)**

- Proposed wall or fence in conflict with existing utilities: Unavoidable crossings require casing as defined by Standard Detail TWA-21
- Proposed storm or sanitary structure in conflict with existing utilities: 6’ minimum horizontal separation required, more dependent on depth of structure and existing utility
- Proposed pole (sign, traffic, light, power) in conflict with existing utilities: 5’ minimum horizontal separation required, more dependent on depth of existing utility
- New roadway, turning lane, or other paved surface in conflict with existing utilities: 3’ minimum depth of cover from bottom of road base
- Valve cans and sanitary manholes within the limits of construction shall be brought to grade via TWA approved methods (Standard Details TWA-07 & TWA-17)
- Proposed building in conflict with existing utility: 10’ minimum separation required, more dependent on depth of existing utility
- Existing utilities slated for relocation
  - Work shall be done at night
  - 48 hours advance notice to affected customers
  - Existing pipe shall be restrained per Standard Detail TWA-20

**Sanitary Sewer – Gravity Sewer**

- Connection to sanitary sewer is not permitted without connection to water
  - Proposed connections to existing manholes
  - Existing rim & invert elevations
  - Core drill
  - Laterals shall match crown elevation of existing discharge invert
  - Drop connections permitted only when unavoidable conflicts exist
  - Drop connections require a minimum 5’ (60”) diameter manhole
- Proposed connections to existing mains
  - Proposed line must be 6” lateral, no 8” connections directly to mains are permitted
  - Where possible, laterals should connect directly to manholes
  - Wet tap or cut in wye with Fernco adapters
  - Connection to VCP must use ridged adapters for PVC transition
- Connections within a proposed system shall comply with Standard Details TWA-05, TWA-07, & TWA-08
  - Where possible, laterals should connect directly to manholes
  - Drop connections permitted only when unavoidable conflicts exist
  - Drop connections require a minimum 5’ (60”) diameter manhole
- Minimum pipe slope
  - Measure slopes of pipe and ensure consistency throughout plans
  - 1.0% for sanitary laterals (6”)
  - 0.7% for sanitary mains (8” or more)
  - Minimum slope can be altered as long as the following criteria are met

Peak Flow (GPD)	Minimum Slope	Minimum Slope w/ Site Constraints
0 - 82,800 (0-75 SFH)	0.70%	0.55%
82,801 - 93,840 (76-85)	0.65%	0.55%
93,841 - 110,400 (86-100)	0.55%	0.50%
Over 110,401 (Over 100)	0.40%	0.40%

### **Sanitary Sewer – Gravity Sewer (continued)**

- Measure lengths of pipe and ensure consistency throughout plans
  - Mains not to exceed 400' between manholes
  - TWA owned laterals not to exceed 100'
- Rim & invert elevations are consistent throughout plans
- All lots & buildings are provided with sanitary sewer services
- Proposed storm, sanitary, water, reuse, irrigation, cable, telephone, or gas lines in conflict with proposed sanitary sewer
  - Storm, sanitary, reuse & water crossings and parallel runs should adhere to FDEP crossing standards as described in Florida Administrative Code 62-555.314 (Standard Detail TWA-16)
  - Gas crossings should utilize PVC pipe or PE wrapped D.I. pipe
  - Crossings should be measured from outside edges of pipe
  - Pipe encasement not permitted for conflict crossings
- Proposed sanitary sewer shall be located within an existing or proposed utility easement or right-of-way
- Proposed building in conflict with proposed sanitary sewer: 10' minimum separation required, more dependent on depth of proposed sanitary sewer
- Proposed landscaping in conflict with proposed sanitary sewer: 5' minimum horizontal separation required for trees
- Proposed wall or fence in conflict with proposed sanitary sewer: Unavoidable crossings require casing as defined by Standard Detail TWA-21
- Proposed storm or sanitary structure in conflict with proposed sanitary sewer: 6' minimum horizontal separation required, more dependent on depth of proposed structure and sanitary sewer
- Proposed pole (sign, traffic, light, power) in conflict with proposed sanitary sewer: 5' minimum horizontal separation required, more dependent on depth of proposed sanitary sewer
- Proposed sanitary sewer mains and laterals shall not be permitted under dumpster or air conditioning pads
- TWA owned sanitary sewer mains shall be 8" minimum
- TWA owned sanitary sewer laterals shall be 6" minimum
- Hazardous waste review
  - Sizing calculations for the structure
  - Architectural floor & plumbing plans
  - 750 Gallon minimum, 1,250 Gallon maximum for the largest chamber for grease and oil interceptors
  - Silver recovery shop drawings
  - Sand/mud traps upstream of oil interceptor where applicable
- Dumpster drains connecting to sanitary sewer shall require a minimum 1,250 gallon grease interceptor and locking drain cap
- Sanitary sewer lateral cleanouts shall be provided at the edge of property lines, easements, or rights-of-way
- Sanitary sewer stub-outs shall terminate with a manhole at least 4' beyond the edge of curb or pavement
- All manholes within 400 linear feet of a drop connection or within 400 linear feet of a lift station junction manhole shall be coated with a TWA approved liner
  - New manholes require cast-in-place HDPE
  - Existing manholes can use spray-in liner
- Pool leachate drains shall not connect to the sanitary sewer

### **Sanitary Sewer – Force Mains**

- Connection to sanitary sewer is not permitted without connection to water
- Minimum TWA owned force main size is 4"
- Minimum privately owned force main size is 2" at the connection point to the TWA system
- 90° bends are not permitted on the force main

## Sanitary Sewer – Force Mains (continued)

- Proposed connections to existing manholes
  - Existing rim & invert elevations
  - 5' minimum diameter manhole, larger dependent on piping size and quantity of drop connections
  - Connection shall be via core drill
  - Connection manhole and all manholes upstream and downstream within 400' of connection manhole shall be coated with an approved liner system
- Proposed connections to existing mains
  - Connection shall be via wet tap
  - Size on Size taps and taps to asbestos cement pipe shall utilize a full body ductile iron mechanical joint tapping sleeve and valve.
- Proposed force main roadway crossing
  - Gate valves shall be provided on each side of the crossing
  - Open cut shall adhere to Standard Detail TWA-15 and any applicable regulatory agency standards
  - Jack and bore shall adhere to Standard Detail TWA-21
    - Pipe casing material and thickness
    - Carrier pipe shall be restrained C-900 PVC
  - Directional boring
    - DR17 HDPE DIP size or CertainTeed C-900 PVC or approved equivalent
    - Interior pipe diameter of HDPE shall match interior pipe diameter of connecting pipe
- Proposed storm, sanitary, water, reuse, irrigation, cable, telephone, or gas lines in conflict with proposed force main
  - Storm, sanitary, reuse & water crossings and parallel runs should adhere to FDEP crossing standards as described in Florida Administrative Code 62-555.314 (Standard Detail TWA-16)
  - Gas crossings should utilize PVC pipe or PE wrapped D.I. pipe
  - Crossings should be measured from outside edges of pipe
  - Pipe encasement not permitted for conflict crossings
- Gate valves are required at a maximum distance of 2,000' along roadways
- Proposed force main shall be located within an existing or proposed utility easement or right-of-way
- Proposed building in conflict with proposed force main: 10' minimum horizontal separation required, more dependent on depth of proposed force main
- Proposed landscaping in conflict with proposed force main: 5' minimum horizontal separation required for trees
- Proposed wall or fence in conflict with proposed force main: Unavoidable crossings require casing as defined by Standard Detail TWA-21
- Proposed storm or sanitary structure in conflict with proposed force main: 6' minimum horizontal separation required, more dependent on depth of proposed structure and force main
- Proposed pole (sign, traffic, light, power) in conflict with proposed force main: 5' minimum horizontal separation required, more dependent on depth of proposed force main
- Proposed force mains shall not be permitted under dumpster or air conditioning pads
- Force mains 16" or larger
  - Adequate cover shall be provided for proper gate valve operation
  - Side actuated valves shall provide adequate horizontal separation
- Lift station/force main calculations
  - Manufacturers pump curve with plotted system curve
  - System curve calculations
  - Pump cycle times, average and peak
  - Buoyancy calculations
  - Consistency in pump selection, size, wet well, etc. with plans.
  - A "C" factor of 100
  - Flow demands consistent with plans and TWA Standards

### **Sanitary Sewer – TWA Lift Stations**

- Design of lift station yard shall adhere to Standard Detail TWA-30
  - Easement width equal to 2x depth of lift station plus wet well diameter
  - Single gravity connection to wet well, multiple connections shall be through the junction manhole
  - Gravity connection to wet well shall be 180° to the outlet piping
  - Pipe between junction manhole and wet well shall be DR-11 HDPE
  - 2" water service with 2" RPZ backflow
- Design of lift station wet well shall adhere to Standard Detail TWA-30
  - Minimum 8' diameter
  - Influent invert and bottom of wet well shall have 4.5' minimum separation
  - Alarm on elevation shall be equal to or less than influent invert
  - Top elevation shall be at least 6" above the surrounding grade and shall be above the 100 year flood plane
- Elevations included on the LS detail elevation table
  - Top
  - Bottom of wet well
  - Pumps off
  - Lead pump on
  - Lag pump on
  - Alarm on
  - Influent invert
- Pumps shall be 5 hp minimum and manufactured by Flygt, ABS, or Wilo-EMU
- Stations within 50 feet of a habitable structure or with a pumping capacity exceeding 1,500 GPM shall require an odor control unit
- Cross section of driveway complying with Section 46.13 of TWA Standards & Specs
- Lift station/force main calculations
  - Manufacturers pump curve with plotted system curve
  - System curve calculations
  - Pump cycle times, average and peak
  - Buoyancy calculations
  - Consistency in pump selection, size, wet well, etc. with plans.
  - A "C" factor of 100
  - Flow demands consistent with plans and TWA Standards

### **Sanitary Sewer – Private Lift Stations**

- Top elevation of wet well shall be at least 6" above the surrounding grade and shall be above the 100 year flood plane
- Service contract with manufacturer or approved repair/maintenance facility
- Ensure the lift station is equipped accordingly
  - Emergency pump-out
  - Audible alarm
  - Visible sign with responsible party and owner contact information
  - Auto-dialer programmed with the responsible party's 24-hr/day phone number
- Provide a shut-off valve at the property line, utility easement line or right-of-way
- Private lift stations shall only serve a single property owner; multiple owner sanitary sewer connections at the lift station are not permitted.
- Private lift stations will not be permitted for residential projects, including single family subdivisions, multi-family complexes, timeshares, short term rental communities, or condominiums.

## Reuse Mains

- All residential and large commercial projects are required to install a reuse system regardless of reuse availability
- Other alternative water supplies shall be investigated by the owner as a primary source of irrigation water, reuse should be a secondary option, and potable water third
- All reuse services shall be metered
- Proposed connections to existing mains
  - Connection shall be via wet tap
  - Size on Size taps and taps to asbestos cement pipe shall utilize a full body ductile iron mechanical joint tapping sleeve and valve.
- Reuse services smaller than 2"
  - Double strap tapping saddle
  - Corporation stop
  - Purple PE tubing
  - No fittings allowed between corp. stop and curb stop
- Proposed reuse main roadway crossing
  - Gate valves shall be provided on each side of the crossing
  - Open cut shall adhere to Standard Detail TWA-15 and any applicable regulatory agency standards
  - Jack and bore shall adhere to Standard Detail TWA-21
    - Pipe casing material and thickness
    - Carrier pipe shall be restrained DI
  - Directional boring
    - DR11 HDPE DIP size or CertainTeed C-900 PVC or approved equivalent
    - Interior pipe diameter of HDPE shall match interior pipe diameter of connecting pipe
- Proposed storm, sanitary, water, reuse, irrigation, cable, telephone, or gas lines in conflict with proposed reuse main
  - Storm, sanitary, reuse & water crossings and parallel runs should adhere to FDEP crossing standards as described in Florida Administrative Code 62-555.314 (Standard Detail TWA-16)
  - Gas crossings should utilize PVC pipe or PE wrapped D.I. pipe
  - Crossings should be measured from outside edges of pipe
  - Pipe encasement not permitted for conflict crossings
- Gate valves are required at a maximum distance of 500' in subdivisions and residential and commercial complexes
- Gate valves are required at a maximum distance of 1,000' along roadways
- Proposed reuse main shall be located within an existing or proposed utility easement or right-of-way
- Proposed building in conflict with proposed reuse main: 10' minimum horizontal separation required, more dependent on depth of proposed reuse main
- Proposed landscaping in conflict with proposed reuse main: 5' minimum horizontal separation required for trees
- Proposed wall or fence in conflict with proposed reuse main: Unavoidable crossings require casing as defined by Standard Detail TWA-21
- Proposed storm or sanitary structure in conflict with proposed reuse main: 6' minimum horizontal separation required, more dependent on depth of proposed structure and reuse main
- Proposed pole (sign, traffic, light, power) in conflict with proposed reuse main: 5' minimum horizontal separation required, more dependent on depth of proposed reuse main
- Proposed reuse mains shall not be permitted under dumpster or air conditioning pads
- Reuse mains 16" or larger
  - Adequate cover shall be provided for proper gate valve operation
  - Side actuated valves shall provide adequate horizontal separation

### **Reuse Mains (continued)**

- Valves shall be provided at all crosses and tees where the reuse system is looped
- Valves are required on the downstream side of crosses and tees where the reuse system is not looped
- Minimum TWA owned reuse main size is 4"
- All lots & buildings are provided with reuse services
- Backflow prevention is not required unless chemical injection is used or an alternate water source is connected to the same system
- Reuse stub outs
  - Terminate with a gate valve, cap or plug, and 2" blow-off assembly
  - Terminate at least 4' from the edge of curb or pavement
- Cul-de-sacs require a 2" loop that adheres to Standard Detail TWA-04, hydro-guard not required
- Meter flow range calculations to justify the size requested
- All single family residential developments require an un-billed master meter at the entrance(s) for reuse consumption tracking
- Hydraulic calculations for subdivisions, large commercial, and multi-family projects

### **Water Mains**

- All water services shall be metered
- Individual tenants, spaces, and units shall be individually metered, master meters are permitted on timeshares, short-term rentals, and multi-family buildings with 4 stories or more
- One or two meters shall be designed per Standard Details TWA-01 and TWA-01.1
- Three or more meters shall utilize CDR meter vaults per Standard Details TWA-03.0, TWA-03.1, and TWA-03.2
- Proposed connections to existing mains
  - Connection shall be via wet tap
  - Size on Size taps and taps to asbestos cement pipe shall utilize a full body ductile iron mechanical joint tapping sleeve and valve.
- Water services 2" and smaller
  - Double strap tapping saddle
  - Corporation stop
  - Blue PE tubing
  - No fittings allowed between corp. stop and curb stop
- Proposed water main roadway crossing
  - Gate valves shall be provided on each side of the crossing
  - Open cut shall adhere to Standard Detail TWA-15 and any applicable regulatory agency standards
  - Jack and bore shall adhere to Standard Detail TWA-21
    - Pipe casing material and thickness
    - Carrier pipe shall be restrained DI
  - Directional boring
    - DR11 HDPE DIP size or CertainTeed C-900 PVC or approved equivalent
    - Interior pipe diameter of HDPE shall match interior pipe diameter of connecting pipe
- Proposed storm, sanitary, water, reuse, irrigation, cable, telephone, or gas lines in conflict with proposed water main
  - Storm, sanitary, reuse & water crossings and parallel runs should adhere to FDEP crossing standards as described in Florida Administrative Code 62-555.314 (Standard Detail TWA-16)
  - Gas crossings should utilize PVC pipe or PE wrapped D.I. pipe
  - Crossings should be measured from outside edges of pipe
  - Pipe encasement not permitted for conflict crossings

## Water Mains (continued)

- Gate valves are required at a maximum distance of 500' in subdivisions and residential and commercial complexes
- Gate valves are required at a maximum distance of 1,000' along roadways
- Proposed water main shall be located within an existing or proposed utility easement or right-of-way
- Proposed building in conflict with proposed water main: 10' minimum horizontal separation required, more dependent on depth of proposed water main
- Proposed landscaping in conflict with proposed water main: 5' minimum horizontal separation required for trees
- Proposed wall or fence in conflict with proposed water main: Unavoidable crossings require casing as defined by Standard Detail TWA-21
- Proposed storm or sanitary structure in conflict with proposed water main: 6' minimum horizontal separation required, more dependent on depth of proposed structure and water main
- Proposed pole (sign, traffic, light, power) in conflict with proposed water main: 5' minimum horizontal separation required, more dependent on depth of proposed water main
- Proposed water mains shall not be permitted under dumpster or air conditioning pads
- Water mains 16" or larger
  - Adequate cover shall be provided for proper gate valve operation
  - Side actuated valves shall provide adequate horizontal separation
- Valves shall be provided at all crosses and tees where the water system is looped
- Valves are required on the downstream side of crosses and tees where the water system is not looped
- Dedicated fire hydrant services lines require a valve only at the tee/tap
- Fire Department Connections (FDC) shall be located downstream of the fire line backflow device
- Minimum TWA owned water main size is 4"
- All lots & buildings are provided with water services
- Backflow prevention
  - All water services except residential services 2" and smaller
  - Sites with existing wells to remain in service
  - Commercial sites with unknown uses require RPZ devices minimum
  - All potable irrigation services require double check devices minimum
  - Dedicated fire lines require DCDA devices minimum
- Water stub outs / Dead ends
  - Terminate with a gate valve, cap or plug, and 2" blow-off assembly
  - Terminate at least 4' from the edge of curb or pavement
  - Dead ends should be avoided where possible
  - Dead ends require hydro-guard devices
- Cul-de-sacs require a 2" loop that adheres to Standard Detail TWA-04
- Meter flow range calculations to justify the size requested
- Hydraulic calculations for large subdivisions, large commercial, and multi-family projects
  - Max day + fire flow meeting 20 PSI minimum
  - Peak day meeting 40 PSI minimum
  - Fire flow test report or confirmed minimum starting pressure of 45 PSI
  - ISO fire flow calculations
  - A "C" factor of 120
  - Consistency in pipe size and layout with construction plans

# System Development Charge & Fee Assessment

During construction plan review, TWA will perform a System Development Charge and Fee assessment if sufficient information is available. All fee assessments will be based upon TWA Resolution No. 2010-021. A copy of this Resolution is available online at [www.tohowater.com](http://www.tohowater.com). Below is a list of all fees assessed by TWA:

- 1.** Water Reservation Fee: 20% of the total water System Development Charge. Payment of this fee is required prior to processing FDEP water and/or sewer permit applications.
- 2.** Sewer Reservation Fee: 20% of the total sewer System Development Charge. In conjunction with the water reservation fee, this fee is required prior to processing FDEP water and/or sewer permit applications.
- 3.** Water and Sewer SDC Balance: The remainder of the water and sewer System Development Charges shall be due prior to building permit approval or meter release, whichever comes first.
- 4.** Sewer Connection Fee: This fee is based on any number of factors as shown in Resolution 2010-021 and will not be accepted by TWA prior to approval to release meters.
- 5.** Water Meter Fee: These fees are due prior to releasing meters and will only be accepted upon notification by TWA staff that the meters are approved for release. Approval for meter release is contingent upon receiving FDEP water and sewer clearances, notification of passing test results for all applicable tests and inspections, payment of all other outstanding fees, and all other applicable TWA requirements.
- 6.** Inspection Fee: This fee is based on the Certified Cost of Construction provided by the engineer of record. As such, it will not be accepted prior to construction completion and review and approval of the Certified Cost by TWA.

## Developer's Service Agreement

A Developer's Service Agreement (DSA) must be fully executed by the developer/owner and TWA prior to plan approval. A DSA will be included with the first or second construction review letter and may be postponed by TWA subsequent to any unresolved project issues. In any case, TWA will not accept final construction drawings prior to receiving an approved and fully executed DSA.

## Accepted Construction Plans

TWA accepted construction drawings must be kept at the site at all times. Commencement of construction without accepted construction drawings will result in a Work Stoppage order by TWA.

## FDEP Permit Applications

FDEP permits or Letters of Determination are required prior to commencing construction. Commencement of construction without FDEP permits or Letters of Determination will result in a Work Stoppage order by TWA. Plan review and FDEP permit review can take place simultaneously.

## Shop Drawing Review

Shop drawing acceptance for all materials, mechanical equipment, and structures is required prior to commencing construction. A minimum of three (3) sets of drawings are required for review and TWA will retain two (2). All sets shall be complete and shall include only applicable water, sanitary sewer, and reuse items. All shop drawings are to be reviewed and accepted by the engineer of record prior to submitting to TWA. Installation of any materials, mechanical equipment, or structures without acceptance by the engineer of record and TWA shall be at the developer's/owner's risk.

## Pre-Construction meeting

A mandatory pre-construction meeting will be held after construction plans have been accepted and FDEP permits have been obtained, but prior to commencement of construction. Representatives for the owner/developer, engineer of record, underground contractor and contractor's surveyor are required to attend this meeting. Other project contacts as well as other jurisdictional entities are welcome to attend the meeting. The underground contractor shall be required to furnish a copy of the Florida Underground Utility License or a license if self-performing. The TWA development project manager shall be contacted to schedule this meeting, but it will be the responsibility of the person requesting the meeting to ensure all required attendees are notified.

# Construction

## Notice to Inspector

The TWA inspector will attend the pre-construction meeting. The underground contractor will be required to notify the inspector a minimum of 72 hours prior to commencement of any water, sanitary sewer, and/or reuse utility construction.

## Construction Testing

All necessary utility testing shall include, but is not limited to:

- Low-air pressure testing, line lamping, televising of gravity sanitary sewers
- Hydrostatic pressure testing of pressure mains
- Chlorination, flushing, and bacteriological testing of water and reuse mains
- Sanitary sewer manhole and liner inspections

A copy of passing backfill density test reports shall be provided to the inspector prior to performing or witnessing any tests. Signed and sealed copies of passing density reports shall be provided to the TWA development project manager as the project progresses and as the reports become available. Failure to provide density reports in a timely manner will delay project acceptance and release of water meter(s) and certificate(s) of occupancy.

## FDEP Water and Sewer clearance

The engineer of record will submit FDEP clearance applications to TWA with all necessary documentation including as-builts showing utility crossing clearances and all relevant passing test reports witnessed by TWA. TWA will review all items submitted and determine if TWA Standards and Specifications are met. All other necessary construction testing shall be completed prior to TWA signing the clearance application(s). The engineer of record will be responsible for submitting the completed clearance application and necessary documentation to FDEP for final approval. As-builts submitted for clearance are not reviewed or accepted as final record drawings needed for project acceptance and release of water meters.

## Final Inspection

After a pre-final inspection and tracer wire test are completed, the contractor shall schedule a final inspection with the TWA development project manager. Prior to scheduling the final, the following must be complete:

- Final grade is evident
- All construction testing
- Passing Density Reports
- All Appurtenances set to final grade
- Completed Water Services set with 7" of final grade
- All Manholes, Sewer Mains, and Laterals are complete, dry, and clean
- A hard copy of final record drawings has been provided to the development project manager

The contractor shall be responsible for coordinating the final inspection which will include TWA's development project manager, TWA's inspector, the engineer of record, and the underground contractor. The contractor will be required to furnish the following equipment as well as the manpower required:

- Valve key for exercising underground valves
- Manhole hook for accessing manholes
- Probing rod for hydrant sheer pad inspection
- Light source for manhole inspection
- A hydrant wrench to flow all fire hydrants

The final inspection and the completion of all resulting punch list items shall be required prior to project acceptance and release of certificate(s) of occupancy.

# Post Construction

## **Certification of cost**

Upon completion of all fieldwork, the engineer of record must provide TWA with a Certified Cost of Construction. This cost shall include all water, sanitary sewer, and reuse utility work and any TWA related change orders required for completion of the project. The certified cost must be signed and sealed by the engineer of record.

A one year maintenance bond in the amount of 10% of the Certified Cost must be provided to TWA. The maintenance bond can be supplanted with an irrevocable letter of credit or cash to guarantee the materials, workmanship, structural integrity, functioning, and maintenance of the required improvements for a twelve (12) month period following project acceptance. The bond shall expire one year after project acceptance by TWA, not project completion on the part of the contractor, and shall include a ninety-day extension option. The issuing bank of a Letter of Credit must maintain an office in Osceola County and name the Tohopekaliga Water Authority as the sole beneficiary.

An inspection fee in the amount of 2% of the Certified Cost shall be due for all projects that TWA will own and maintain. A 1% inspection fee shall be due for all private projects.

## **Record Drawings**

Two hard copies and one electronic copy of record drawings must be provided to TWA. Record drawings shall adhere to Section 11.6 of TWA's Standards and Specifications Manual. This shall include providing horizontal (northing and easting) and vertical (elevation) information on all TWA owned mains, fittings, structures, and appurtenances. Record drawings must be signed and sealed by a Professional Engineer licensed in the State of Florida. The electronic copy of the record drawings must be tied to the State Plane Coordinate System and shall include PDF and TIFF scans of the signed and sealed drawings as well as original CAD versions with all related XREF's. The Engineer of Record and Contractor's surveyor are strongly urged to review the record drawing checklist in Appendix I of TWA's Standards and Specifications.

## **Easements**

Rights-of-way or easements necessary for the operation and maintenance of water, sanitary sewer, and/or reuse utilities shall be provided by the developer/owner prior to project acceptance. If easements are provided by plat, provide a copy of the recorded plat. If easements are provided by "blanket" or legal description, provide an executed TWA standard easement for review and approval prior to recording. Recording of easements is the developer's/owner's responsibility and must be completed prior to project acceptance.

## **Meter release**

Installation of a domestic water meter initiates water and sewer service by TWA. All businesses shall be required to complete a Kissimmee Utility Authority (KUA) Business Application prior to releasing meters. These applications can be found at the TWA Customer Service Department or at KUA's Administration Building. TWA will accept payment for meters upon completion of the project completion checklist (see attached).

Water meters will be set within 10-15 business days of payment which should be incorporated into the construction schedule. In order to provide fair and efficient service to all TWA customers, meters are set on a first-come first-served basis. TWA engineering staff has no control over meter set times after payment has been accepted and meters have been released.

## **Project Acceptance**

After all files have been reviewed to ensure compliance with the Project Completion Checklist, a copy of which is attached and supplied at the mandatory pre-construction meeting, the TWA Director of Engineering will execute the Project Acceptance Certificate officially transferring ownership and maintenance responsibilities for the water, sanitary sewer, and reuse infrastructure to TWA.



Questions ● Comments ● Suggestions

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