

## **CHAPTER 4 - MINIMUM DESIGN & CONSTRUCTION STANDARDS**

### **4.1 GENERAL**

#### **4.1.1 BASIS**

The standards set forth in this Chapter are intended to provide a basis for design and construction. Applicable Federal, State and County laws and regulations should be considered concurrently with this text.

The requirements of this Chapter shall be applicable in all cases where the facilities being constructed or to be constructed will be owned and/or operated and maintained by the Department. All applicable utility facilities shall be transferred to Palm Beach County via a bill of sale subject to an unconditional warranty. The warranty shall cover all materials and labor for a minimum of one year starting on the date of the first permanent Service Activation. On phased projects, the warranty period for each phase shall begin on the date of the first permanent service activation for each respective phase. Lift station pumps and corrosion barrier systems are subject to a five-year warranty as described in Section 4.5 of this Chapter.

Any cost associated with the repair, relocation or adjustment of Utility facilities prior to Service Activation and during the warranty period shall be the responsibility of the Developer/Property Owner. The Department may perform the necessary work and bill the Developer/Property Owner "At-Cost." The Developer/Property Owner may perform this work with prior approval and inspection of the Department.

#### **4.1.2 PREPARATION AND APPROVAL OF PROJECT DOCUMENTS**

It shall be the responsibility of the developer's engineer to obtain as-built information and prepare plans in accordance with the minimum standards shown herein. As-Built information obtained from record drawings shall be field verified prior to design and confirmed prior to construction. If required, a fully executed Development Agreement must be on file prior to plan approval. All construction plans shall be approved by the Department. The approval shall be valid for one year. This approval does not relieve the Developer of the responsibility of meeting the Department's minimum design and construction standards shown herein. No changes shall be made on approved plans without specific written Department concurrence. Revisions which directly or indirectly impact utility design (for example: changes in use from retail to restaurant, adding or deleting bays in buildings, site plan changes, etc.) void the plan approval. Revised plans are required for review and approval, subject to new plan review fees. No construction shall start prior to a pre-construction conference to be held at the Department.

### 4.1.3 UTILITY EASEMENT/UTILITY LOCATION GUIDELINES

The location and size of utility easements shall be determined using the following guidelines:

- (a) In new developments, it is the Developer's/property owner's responsibility to coordinate the Wastewater, and Reclaimed Water facilities shall be located a minimum of 10' horizontal from other public utilities or privately owned irrigation mains when installed parallel, unless specifically approved by Department. A minimum of 10' horizontal separation is also required from structures, buildings, walls, fountains, and fences, unless specifically approved by the Department in writing. TV cable, phone lines and irrigation lines shall cross Department's facilities with a minimum of 12" vertical clearance. Gas mains and electric power cables shall cross Department's facilities with a minimum of 18" vertical clearance.
- (b) Utility easements must be a minimum of twenty (20) feet wide in order to insure that neither structures nor trees, shrubs, etc., are placed closer than ten (10) feet to a Department owned and maintained pipe or facility. The Department may consent to the location of trees closer than ten (10) feet to utility facilities if an approved root barrier system is installed a minimum distance of five (5) feet from Utility facilities by the Developer's landscaping contractor. In these cases, the Property Owner may be required to execute an Indemnity Agreement, in the form provided in Chapter 3. This agreement shall be recorded in the Public Records of Palm Beach County. Indemnity agreements may also be required for approved structural encroachments and the use of non-standard surface materials (i.e., pavers, stamped concrete, etc.) in utility easements and private right-of-ways.
- (c) A ten (10) foot wide utility easement is also required parallel and adjacent to all road right-of-way lines and access tracts.
- (d) Utility easements for water and Wastewater service lines shall be a minimum of 10 feet wide and shall extend a minimum of 5 feet beyond the Point of Service.
- (e) Utility easements for fire hydrant lines shall extend a minimum of 5 feet beyond hydrants.
- (f) In addition to the above, private maintenance easements are required for all "zero lot line" subdivisions.
- (g) Wastewater pump station sites, and related access drives, that have not been specifically dedicated through the platting process are required to be dedicated by easement. The size, location, and configuration of the pump station site and exclusive easement shall be approved by the Department.
- (h) Easements will be required for all public water supply well sites as defined in the TAPO District provision of the Palm Beach County Unified Land Development Code, as amended from time to time. The size, location, and configuration of well sites shall be approved by

the Department. At least a 60 x 40 foot easement for well and well head piping is required. Additional access and/or utility easements for well construction, maintenance, and off-site raw water main piping and other auxiliary utilities may be required. The Department reserves the right to control access to all or a portion of the well site through fencing or other applicable means.

- (i) Private roads and access tracts shall require additional grant of easements or utility easement dedication on plats. The easements shall be granted to the County prior to Service Initiation.
- (j) Prior to any Service Initiation, the property owner shall prepare and grant at no cost to County utility easements for proposed and existing facilities using the County's approved forms. For proposed utility facilities to be constructed on "third party" privately owned properties, recorded easements must be in place prior to design approval.
- (k) A minimum 10' x 10' utility easement and applicable access easement shall be granted for Department owned monitoring wells.
- (l) Utility easement sketches shall be prepared in State Plane Coordinate System and shall include PBC Property Control Number(s).
- (m) A minimum 10' wide utility easement shall be granted for Department owned power and communication lines.

#### **4.1.4 PROJECT SUBMITTAL REQUIREMENTS**

The following items must be submitted to the Department prior to project review and approval:

- \_\_\_\_\_ Name of Property Owner
- \_\_\_\_\_ Plan Review Fee (include Franchise Fees, if applicable)
- \_\_\_\_\_ Standard Development Agreement/Proof of Capacity Reservation
- \_\_\_\_\_ Cover Sheet with Location Map
- \_\_\_\_\_ Utility Master Plan
- \_\_\_\_\_ Three (3) sets of Potable Water plans with location map (one set must be stamped with original \_\_\_\_\_ Fire Marshall's approval indicating minimum flow requirements)
- \_\_\_\_\_ Two (2) sets of Wastewater plans with location map
- \_\_\_\_\_ Two (2) sets of Reclaimed Water plans with location map
- \_\_\_\_\_ Wellfield Protection Zones #1 and #2 shown on Potable Water and Wastewater plans
- \_\_\_\_\_ One (1) set of Paving and drainage plans
- \_\_\_\_\_ Two (2) sets of Landscape plans showing Utility lines
- \_\_\_\_\_ Irrigation Plans (Reclaimed water users)
- \_\_\_\_\_ Preliminary plat or plan showing proposed utility easements
- \_\_\_\_\_ Recorded Utility Easements
- \_\_\_\_\_ DEP Potable Water application
- \_\_\_\_\_ DEP Wastewater application
- \_\_\_\_\_ DEP Wastewater Attachment Form (for projects north of Lake Worth Road)

- \_\_\_\_\_ DEP Reclaimed Water application
- \_\_\_\_\_ PBC owner of right-of-way Utility Permit
- \_\_\_\_\_ FDOT Utility Permit/with Indemnity Agreement
- \_\_\_\_\_ LWDD/SFWMD/NPBID/Indian Trails /Loxahatchee Groves Improvement District Utility Permit
- \_\_\_\_\_ Lift station engineering calculations (including 100 year storm data)
- \_\_\_\_\_ Wastewater Pretreatment Survey questionnaire (non-residential only)
- \_\_\_\_\_ CADD file of approved Utility design drawings

#### **4.1.5 PRE-CONSTRUCTION MEETING REQUIREMENTS**

In order for a pre-construction meeting to be scheduled, the following items must be submitted and accepted:

- (a) Verification of licensure as an Underground Utilities Contractor, Plumbing Contractor or General Contractor, as required by law. A General Contractor may have to provide references for previously constructed public utility improvements. Any Subcontractor shall be properly licensed. A Horizontal Drill Contractor must provide references certifying minimum five (5) years experience in pipe drilling.
- (b) One (1) copy of the Engineer's or Contractor's cost estimate (labor, equipment, and materials) for Potable Water/Reclaimed Water/Wastewater facilities to be inspected by PBCWUD (engineer's seal not required). If the construction includes the installation of Department required oversized facilities, the cost estimate shall be based on the lesser size required by the Development and shall be subject to the review and approval of the Department.
- (c) Inspection Fee based on the total construction cost estimate for Potable Water/Reclaimed Water/Wastewater facilities to be inspected by PBCWUD based on Engineer's or Contractor's estimate. If the actual construction cost values stated on the "Attachment to the Bill of Sale" exceed the Engineer's/Contractor's cost estimate for corresponding improvements by \$25,000 or more, then additional Construction Inspection Fees must be paid to the Department prior to Service Activation. No refunds shall be given for overestimated inspection fees, unless the estimate was due to over sizing facilities.
- (d) Five (5) copies of all shop drawings and specifications for wet wells, manholes, oil/grease interceptors, sand/oil interceptors, control panels, pumps, valve vaults, conflict structures, etc., with approval stamp and signature of Engineer and Contractor.
- (e) One (1) copy of all utility & land development permits for road and canal rights-of way (LWDD, Improvement Districts, DOT, PBC Engineering Department and/or city, if applicable).
- (f) One (1) copy of the Florida Power & Light Transformer Layout - if applicable (preliminary approval by FP&L acceptable).

- (g) Manufacturer approved corrosion barrier system applicator's license.
- (h) Three sets of street lighting plans or utility plans showing locations of proposed streetlights.
- (i) Three (3) copies of "Approved Material List" signed by Contractor and Engineer, with highlighted materials.
- (j) Three (3) copies of the Maintenance of Traffic (MOT) plans for affected public roads as approved by County Engineering and the road owner (i.e., City, FDOT). The MOT plans may not be utilized until reviewed and approved by the Department. Department approval does not constitute a time-specific construction permit, and the Department may revoke its approval of the MOT Plan and require re-scheduling of any construction activity within a road right-of-way at any time. MOT Plan is also required for construction in private right-of-ways (must be coordinated with Owner).
- (k) Signed and sealed pilot bore plan is required for each proposed horizontal directional drill.
- (l) CAD/PDF Utility Plan Design File.

## 4.2 DESIGN GUIDELINES

All utility plans shall be prepared on 24"x36" sheets utilizing the following minimum scales:

- 1" = 50' horizontal, 5' vertical for gravity Wastewater profile sheets
- 1" = 40' horizontal, 4' vertical for plans with up to two piping systems
- 1" = 30' horizontal, 3' vertical for plans with up to three piping systems
- 1" = 10' for lift station site plans

Drawings submitted on other size sheets or at other scales will be returned without review.

In addition, the following items must be addressed:

- Cover Sheet with Location Map.
- The Department's standard detail sheets shall be utilized.
- Phase lines and match lines must be clearly delineated.
- Detailed storm piping system shall be shown on utility plans, including yard drains, roof drains and exfiltration trenches.
- Utility plans to show any covered parking, walkways and building overhangs.
- A Key map shall be shown on all plan sheets.
- Large scale detailed drawings shall be provided for areas with poor legibility.
- Field verified data for existing facilities (sizes, materials, elevations and locations) shall be shown.
- Elevations of conflicting pipes shall be shown to indicate top and bottom pipe elevations. Pipes shall cross in perpendicular way where ever possible.

- Manhole invert and rim elevations shall be shown.
- At a minimum, to scale plan and profiles shall be provided for all gravity wastewater collection mains, mains in major thoroughfares, road and canal crossings, crossings under berms and walls.
- Piping shall be placed in road rights-of-way unless unavoidable.
- The number of building stories shall be stated.
- Residential units with less than 1500 square feet of living space shall be flagged.
- The number of dwelling units shall be identified.
- Driveway locations for all zero lot line developments shall be shown.
- Each lot, bay, and building shall be identified.
- A WUD project number and a legible project location map shall be provided on all plan sheets, which shall include the Section, Township and Range.
- If pretreatment sampling is required, the location of the sample points is to be shown on plan sheets.
- Data shall not be displayed in tabular form.
- All manholes, fire hydrants and valves shall be numerically identified.
- The type, capacity, and location of oil/grease interceptors (OGI's) or sand/oil interceptors (SOI's) shall be identified.
- After the Department's plan approval, all revisions shall be noted in revision block.
- All paved non-asphalt surfaces (pavers, stamped concrete, etc.) proposed over Department owned facilities shall be identified on plans.
- All meters, DCDA and RPDA sizes must be identified.
- Landscaping plans shall indicate the location of perimeter walls, fences, gates, landscape areas, signs, proposed/existing Utility facilities and approved root barriers (if applicable). A plan view and profile of root barrier installation detail must be included in landscaping plans. The root barrier shall be located a minimum of five (5) feet from a utility facility and must be a minimum of 36" deep and a minimum of 15' long centered on a tree.
- Any utility changes related to type of uses (For Example: Retail to Restaurant) or building layout (For Example: Adding or combining Bays) void the plan approval and must be brought to the attention of the Department. Revised plans may be required.
- Grease Traps, Oil/Grease Interceptors and Sand/Oil Interceptors shall serve one facility only.
- Facilities with Grease Traps, Oil/Grease Interceptors and Sand/Oil Interceptors shall be individually metered.
- Design plans shall refer to relevant WUD record drawing files, if available.
- Utility Easement information (easement location and recording data) must be shown for existing utilities within the scope of the project.
- Proposed utility easements for new and existing facilities (if applicable) shall be identified on utility plans or a separate easement plan.
- Utility plans shall be prepared in State Plane Coordinate System.
- CAD/PDF utility plan design file is required with final plan submittal.

## 4.3 APPROVED MATERIALS & EQUIPMENT LIST

### 4.3.1 APPLICABILITY

The materials and equipment set forth in the Approved Material and Equipment List (hereafter, the “List”) are approved for use within the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems. Any party constructing improvements to the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems, or which will become part of the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems following construction, shall utilize materials and equipment set forth in the List. For County-initiated projects, the specifications of the project shall control the use of materials and equipment. The List shall be set forth in the PBCWUD Policies and Procedures Manual and shall be amended as set forth below and in accordance with the PBCWUD Policies and Procedures Manual.

### 4.3.2 PRODUCT APPROVAL PROCESS

(a) Product Evaluation Committee

A Product Evaluation Committee (PEC) shall be formed to provide technical information to the Department Director regarding the inclusion or exclusion of products on the Approved Materials and Equipment List.

The goals of the PEC are to:

- Review and evaluate new and existing technologies and products for potential application in the rehabilitation and expansion of the PBCWUD utility system.
- Encourage standardization and interchangeability of parts/products.
- Provide the Department Director with technically sound information regarding new and existing products.

The PEC shall consist of five (5) PBCWUD staff members. Four **members** shall be appointed by the Department Director and the last member shall be the Technical Services Manager from the Engineering Division, who shall act as the chairperson. The PEC shall elect a vice-chairperson. A meeting quorum shall consist of the attendance of at least three (3) members.

(b) Procedures

Upon request, the product representative will be sent a New Product Review Application Package. This package will contain instructions on how to complete the application form and list the necessary documentation required to support the application. A total of five (5) copies of the completed application form, together with all the supporting documentation, shall be submitted to the PEC Chairman.

The product representative will be notified, in writing, that the New Product Review Application has been received and whether it is administratively complete. If items are found to be incomplete, the application will not be forwarded to the PEC until all sections of the application are complete. Applications that are not properly completed and are not returned to the PEC

within 60 days of the notice of an incomplete application shall be considered void, and the process must be started over.

An administratively complete application will be forwarded to the PEC for review at their next scheduled meeting. The PEC shall determine which staff members will be assigned to review that product.

The PEC may authorize the on-line testing of a product in the PBCWUD Water, Wastewater, or Reclaimed Water System prior to inclusion of a product on the List. Products acquired for such on-line testing may be provided free of charge by the vendor or may be purchased in accordance with the Palm Beach County Purchasing Code. The PEC may require that in order for a product to be used on a trial basis, a performance bond be posted in the amount equal to all inclusive cost associated with the product's removal and replacement.

The PEC shall present to the Department Director all pertinent information related to the product including performance, costs for labor and materials, comparison with currently approved products, references from other users, spare parts availability, standardization, financial stability of the manufacturer, etc.

The PEC may also review a previously approved product that is on the List for possible removal from the List and provide the Department Director with technically sound information for decision making purposes. Prior to the PEC meeting, the product representative will be notified of the Department's possible concern with the product and will be offered an opportunity to meet with the PEC.

The Department Director may then approve or disapprove of the inclusion/exclusion of a product on the List. The Department Director may also request more information from the PEC before approving or disapproving of the inclusion/exclusion of a product. The date of inclusion/exclusion shall be the date of Department Director approval. Materials and equipment in categories not identified in the List shall be as specified by the Department. The Department may present any changes to the List to design and construction industry groups for review and comment.

Notwithstanding the PEC product approval procedures, the Department Director may (a) unilaterally remove a product from the List if, in the opinion of the Department Director, the continued use of the product may threaten the health, safety, or welfare of the public or creates an undue financial and/or maintenance burden on the Department; and (b) unilaterally add a product to the List, if, in the opinion of the Department Director, inclusion of the product or service on the List is necessary to avoid a threat to the health, safety, or welfare of the public or is necessary to avoid an undue financial or maintenance burden on the Department.

**PALM BEACH COUNTY WATER UTILITIES DEPARTMENT**

**NEW PRODUCT REVIEW APPLICATION FORM**

Application Number\_\_\_\_\_

Date Received\_\_\_\_\_

Submittal Complete\_\_\_\_\_

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(Do not write above this line, for PBCWUD use only)

**Instructions:**

All information requested below must be submitted in its entirety. Please provide the required information in loose-leaf binders and label each section with the item number conforming to the list below. No application will be reviewed by the Product Evaluation Committee until the submittal is complete. Failure to provide full disclosure will be grounds for product disapproval.

Five (5) copies of the application and all supporting data shall be sent to the Palm Beach County Water Utilities Department, P.O. Box 16097, West Palm Beach, FL 33416, Attn: PEC Committee Chairman.

1. General Information

Product Name: \_\_\_\_\_

Product Type: \_\_\_\_\_

Product Use/Application:\_\_\_\_\_

Manufacturer's Name:\_\_\_\_\_

Individual Contact(s):\_\_\_\_\_

Mailing Address:\_\_\_\_\_

City, State, Zip Code:\_\_\_\_\_

Telephone:\_\_\_\_\_ Fax Number\_\_\_\_\_

Representative's Company Name: \_\_\_\_\_

Individual Contact(s):\_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax Number:\_\_\_\_\_

2. Provide the following data on a minimum of five (5) completed installations of your

- product: installation date, quantity, cost, location, client/contact person along with respective telephone number. The Department will contact these references concerning product performance.
3. Describe materials and processes used in the manufacture and installation of your product.
  4. Are there any special conditions required for proper performance of the product?
  5. Are current PBCWUD technical specifications adequate for inclusion of the product and are exceptions to the Department's specifications being requested?
  6. Provide evidence of compliance with applicable industry standards/codes (UL, FM, NSF, AWWA, ASTM, FDOT...).
  7. Provide a copy of the standard product installation guide, which outlines special equipment, training, and inspection requirements.
  8. Provide information related to patents, licenses and/or franchises related to the product.
  9. Provide information related to replacement parts costs and availability.
  10. Provide location of nearest maintenance facility and spare parts warehouse.
  11. Provide information on costs for installation and maintenance.
  12. Provide related information. Although not required, your application submittal may include other data to assist the Committee in evaluating the product for use by PBCWUD. This information may include brochures, videotapes, product samples, photographs etc. (One copy of videotapes and product samples is sufficient for Committee review).
  13. Indicate whether you wish to appear before the PEC to present your product (non-mandatory).

#### **4.4 POTABLE WATER, WASTEWATER, AND RECLAIMED WATER SYSTEM DESIGN AND CONSTRUCTION STANDARDS**

The Department Director is hereby authorized to approve the Potable Water, Wastewater, and Reclaimed Water System Design and Construction Standards (hereafter, the “Standards”), and PBCWUD shall compile the Standards in the PBCWUD Policies and Procedures Manual. The Standards are approved for use within the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems. Any party constructing improvements to the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems or which will become part of the PBCWUD Potable Water, Wastewater, and Reclaimed Water systems following construction, shall comply with the Standards. For County-initiated projects, the specifications of the project shall control the design and construction of the project.

Notwithstanding anything to the contrary herein, the Department Director may authorize deviations from the Standards if, in the opinion of the Department Director, said deviations are necessary to protect the health, safety, or welfare of the public or to avoid an undue financial and/or maintenance burden on the Department.

#### **4.5 INSPECTIONS AND AUTHORITY OF INSPECTORS**

The Department Inspectors may inspect all construction and materials and may also inspect preparation, fabrication or manufacture of components, materials and supplies. The Inspector is not authorized to revoke, alter or waive any requirements of the approved plans or these specifications unless approved by the Department’s Director. The Inspector is authorized and expected to call to the attention of the Developer's Engineer or Contractor any failure of work or materials to conform to the plans or specifications. The Inspector shall have the authority to reject materials or suspend the work until questions of issue can be referred to and decided upon by the Department Director or his designated representative. The Inspector shall in no case act as foreman or perform other duties for the Project Engineer and/or Contractor nor interfere with the management of the work. The advice which the Inspector may give shall in no way be construed as binding to the Department or releasing the Developer, his Engineer or Contractor from performing according to the intent of the plans, specifications and the Department's Minimum Design and Construction Standards.

Inspections will be scheduled for regular working hours only, except for nights when service interruptions are involved. Work will not be scheduled for weekends or holidays unless approved in advance by the Department. Overtime pay will apply for each inspection outside of regular working hours (minimum \$300 for up to 3 hours and \$100 per estimated hour for longer inspection, paid in advance). The Department should be provided with at least two (2) full working days notice for scheduled inspections, and a minimum seven (7) days notice is required for construction with service interruptions. Inspectors will make routine passes on call to inspect such items as thrust blocks, material on site and clearances between conflicting lines. Scheduled inspections are required for jack and bores and pipe slippage through same, filling and flushing of potable water mains, pressure testing (private and utility owned mains), flow testing of hydrants if performed by contractor, application of coatings to manholes and wet wells, setting of wet wells, installation of lift station grounding rods, installation of base elbow anchors, prior to pouring any

concrete, field welding/fusion of HDPE pipe and fittings, gravity sewer main lamping (private and utility owned), lift station start-ups (private and utility owned), and tie-ins to Department facilities. Density test results shall be submitted to the Construction Coordinator prior to pressure testing or lamping. The contractor shall keep a copy of the current approved plans on the project site at all times. Approved work schedules are required prior to the beginning of construction for main shutdowns or for modifications to operating pipe systems.

It shall be the Developer's Engineer's responsibility to schedule inspections and their qualified representative shall be present when required by the Department. A scheduled inspection will be canceled if said representative is not present. The Engineer's representative shall be present during the entire length of the inspection. The Developer's Engineer shall pre-test pressure tests and lampings to minimize inspection failures. The Developer's Engineer shall prepare accurate record drawings and same shall be submitted to the Department for review and approval before a lamping or pressure test is scheduled. In any case, approved record drawings must be submitted prior to request of a conditional final/final inspection or service being provided to any phase of a project.

#### **4.6 AUTHORITY OF NON –RESIDENT PBCWUD INSPECTOR**

The Department Director and/or authorized representative shall be permitted to enter upon any property without prior notification for the purposes of inspection, observation, measurement, sampling, testing, review and/or photocopying of records, or investigation as maybe necessary for enforcement of the permit or ordinance. Entry shall be made during daylight or operating hours unless abnormal or emergency circumstances require otherwise.