



## **ORDINANCE 2007-05**

**AN ORDINANCE TO ESTABLISH THE MINIMUM REQUIREMENTS FOR THE INSTALLATION OF WATER AND WASTEWATER LINES IN THE CITY LIMITS OF TOM BEAN, TEXAS; ESTABLISH PAYMENT OF PERFORMANCE BONDS; ESTABLISH PROCEDURES FOR WATER MAIN DESIGN; AND PROPER PROCEDURES FOR THE INSTALLATION OF WATER AND WASTEWATER LINES.**

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF TOM BEAN, TEXAS AS FOLLOWS:**

**Section 1.** The short title of this Ordinance shall be called **Comprehensive Water and Wastewater Plans.**

**Section 2: REQUIREMENTS:**

### **Comprehensive Plan and Standard Specifications (WATER AND WASTEWATER)**

EFFECTIVE DATE: April 21, 2007

**Definitions of acronyms used in this document:**

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
TCOG	Texas Council of Governments
TCEQ	Texas Commission on Environmental Quality
PSI	Pounds per Square Inch
TX-DOT	Texas Department of Transportation
ROW	Right of Way

## Introduction

The following requirements are hereby established as the standard for the City of Tom Bean and are to be used in conjunction with the Standard Specifications for Public Works Construction as released by TCOG, AWWA specifications, and requirements of the TCEQ as applicable.

## General Requirements

- Performance, Maintenance and Payment bonds must be on file with the City office prior to the start of any construction.
  1. The Performance and Maintenance Bonds shall be for the entire cost of the utility construction.
  2. The Performance Bond shall be in effect until project completion. The Maintenance Bond shall be effective for a 12 month period following project completion and acceptance by the City of Tom Bean and shall cover 100% of the cost of the public improvement portion of the project.
- No utility construction shall begin until a set of engineered drawings of the proposed construction, stamped by a Texas licensed engineer, is received by the City of Tom Bean and approved by signature of the Director of Public Works or his designee. A notice of at least 48 hours must be provided to the City prior to beginning any construction,
- Any utility construction located in a State of Texas right-of-way must be permitted. The engineer shall furnish to the City the required TX-DOT Forms properly completed along with the required back up documentation and drawings of the project. The City will complete and submit the proper TX-DOT forms and will bill the engineer or developer for this service on an hourly basis with a 2 hour minimum. Only the City has the ability to secure TX-DOT permits and any questions regarding these permits shall be addressed to the City. These permits generally require a minimum of 3 weeks to process. At least a 72 hour notice is required to the City prior to any construction beginning, and after the permit is issued, in the TX-DOT right of way.
- If the utility construction is to be located in easements on private property, the Inspection Services Department of the City of Tom Bean shall verify the easement by plat. All plats shall be provided to the City by the developer or contractor when the plans are submitted.
- All utility construction shall be performed in accordance with specifications listed herein and shall be inspected and documented by the City of Tom Bean Public Works Department. Inspections will require any water installation to meet the highest standard applicable to preserve the integrity of Tom Bean's water supply.
- The contractor or owner will be responsible for replacement of any City of Tom Bean property damaged during construction, including, but not limited to, facilities, appurtenances, lines, valves, fire hydrants, manholes, lift stations, etc.
- An emergency contact with telephone number must be on file prior to beginning construction.

## General Construction Requirements

- All main utility lines must have a minimum cover of 24 inches.
- All utility lines and appurtenances must be inspected and approved by the City Public Works Department prior to back filling or covering.
- City streets and/or curbs shall not be cut without the express written approval of the City of Tom Bean Director of Public Works.
- All utility cuts shall be compacted per City of Tom Bean Specs
- Boring requirements are as follows:
  - ✓ Smooth-wall casing pipe shall be of welded steel construction, shall be of new material with a minimum wall thickness of ¼" and shall meet any additional requirements of the railroad or highway authority that may have jurisdiction. Dry bores are always required by the Texas Department of Transportation.

- ✓ Pipe within the casing shall be an unbroken run, and this shall be accomplished by using an approved fusible pipe, a pipe with interlocking joints, or joint restraints.
- ✓ Casing spacers shall be used to install carrier pipe inside the encasement pipe. The spacers shall be of a projection type that has a minimum number of projections around the circumference totaling the number of diameter inches. For example, 8" pipe shall have a minimum of 8 projections and 18" pipe shall have a minimum of 18 projections.
- ✓ Casing spacers shall fasten tightly onto the carrier pipe so that the spacers do not move during installation. Casing spacers shall have a span of 10 feet to 6-1/2 feet dependent on the total load anticipated with the pipe full of liquid. On sewer pipe, the maximum span should be 7 feet to prevent sagging of the carrier pipe. The maximum load shall not exceed the load limits per spacer per the manufacturer's recommendation.
- ✓ Casing spacers shall be totally non-metallic and constructed of preformed sections of high density polyethylene. Spacers shall be certified for strength and quality. Raci type spacers or an approved equivalent shall be used.
- ✓ The ends of the casing shall be sealed using CCI Model ESC Pull on end seals or approved equal. End seals shall be installed as recommended by the manufacturer. In all cases bands and clamps shall be stainless steel and the seals shall be of the highest quality and meet or exceed industry standards.

### **Water Main Design**

- Water main construction must in all ways meet AWWA minimum design standards.
- The developer shall submit a letter certifying and sealed by a Professional Engineer licensed by the State of Texas that the system has been designed in accordance with the requirements of this section and conform with the rules, regulations, and requirements established by the TCEQ Design Criteria in the Texas Administrative Code, as amended.
- All water meter boxes/vaults and valve boxes must be at finished grade, including sod, and visible at the time the job is completed and until the 12 month final inspection is completed. The Maintenance Bond shall not be released if all boxes/vaults are not visible.

### **Minimum Size & Material**

- The minimum acceptable water pipe size for public utilities shall be six (6) inches; larger sizes may be required by the Director of Public Works as a result of the plan review process. All potable water lines laid in the City must be blue in color.
- The minimum acceptable water pipe material for service lines 2" or larger shall be C900, Class 200.
- The minimum acceptable water pipe material for any service line one (1) inches or smaller shall be polyethylene or Type K or L copper.

### **Main Line Location**

All main water lines shall be located on one of the two easements between the back of curb and the leading edge of the sidewalk. The leading edge of the pipe shall always be set two feet behind the back of curb.

- At no time is a water line to be placed closer than nine (9) feet to a wastewater line. Where the nine foot separation distance cannot be achieved, refer to the guidelines from TAC 30 Chapter 317 Appendix E as they will apply.

### **Joints**

- All water main fittings must be ductile iron.
- All joints shall be flange or mechanical.
- All mechanical joints must use Mega Lugs or threaded rod and nut assemblies.
- No slip joints will be allowed on three (3) inch or larger lines.
- No glue type joints are allowed on any line.
- All fittings subject to surge or pressure must be blocked with  $\frac{1}{3}$  yard, or more, of 5 sack concrete. When using concrete for restraint, all nut and bolt assemblies shall be protected with a high density plastic (visqueen) wrap.

### Bedding

- All water lines must be bedded with sand at depths of six (6) inches below the pipe and six (6) inches above the pipe.
- Service lines shall be bedded with sand at depths of six (6) inches below the pipe and six (6) inches above the pipe.

### Valves

- All valves shall be installed so that the valve box lid and pad will be at finished grade, including sod.
- Valves nuts shall be located in the center of the box
- All valve boxes shall have a 18" x 18" concrete pad around the lid at finished grade The valve lid and pad shall be at the same elevation
- In line valves must be located so that no more than 500 feet of line will be out of service in the event of a main failure.
- Valves shall be located at the intersection of two or more main lines.

### Pressure Testing

- All water lines shall pass the appropriate pressure test of 150 PSI for 4 hours.  
**NOTE:** Does not include underground fire sprinkler system lines and/or private fire protection lines which shall be tested at 200 PSI for 2 hours.

### Fire Hydrants

- All fire hydrants that are installed as public utilities or private owned shall be:
  - ✓ improved style of Mueller (Super Centurion Model A423) hydrants with 5 ½ inch barrels
  - ✓ 3 way hydrants with one 4.5 " steamer and two 2.5" outlets; outlets shall have national standard thread
  - ✓ installed so that the center nut of the steamer cap is located at 18" above the final grade
  - ✓ installed so that the breakaway flange is located at final grade
  - ✓ installed with a valve restrained between the hydrant and the main line
  - ✓ anchored using Grade Lok or other approved swivel type anchor
  - ✓ set with the steamer of the hydrant facing the street or fire lane
  - ✓ set at 500 foot intervals in residential areas and 300 foot intervals in commercial/industrial areas
  - ✓ installed in easement and are not to encroach upon sidewalks or curbs in any fashion
  - ✓ Rounded rock 1" to 2" in size must be used as backfill up to 12" above the foot of the hydrant.
  - ✓ All hydrants shall be painted with two coats of Rustoleum Industrial red paint.
  - ✓ Fire Hydrants will be used at the end of dead end mains and cul-de-sacs

## **Bacteriological Sampling**

- Bacteriological sampling in accordance with the Rules and Regulations of TCEQ must be completed prior to a line being placed into service
- All sampling shall be at the expense of the contractor who will be billed prior to sampling
- Accessible sampling points shall be prepared by the contractor at points designated by the City
- All sampling shall be conducted by the City of Tom Bean however the contractor should have staff on site for the opening and closing of line valves and other duties as required
- Water lines that pass all tests shall be put into service at that time
- After the acceptance of the main utility lines and public fire hydrants, the Fire Department will flow test and color code the hydrants based on flow characteristics.

## **Water Meters**

- All water meters installed shall be Sensus. These meters shall be purchased through the City of Tom Bean.

## **Method of Meter and Meter Box Installation**

- All water meters must be installed in public right-of-ways.
- All water meters 1" or smaller shall be installed in 18" x 14" plastic meter boxes with lids that state "WATER".
- All water meters larger than 1" and smaller than 2" shall be installed in 24" x 18" metal meter boxes with lids.
- All meter boxes shall be installed so that the top of the box will be at final grade including sod and with a minimum of 2" of pea gravel covering the entire bottom of the box
- Curb stops shall be set six (6) inches below finished grade.
- A meter spud shall be used on all 3/4" and 1" meter installations.
- Meters and/or meter boxes are not to be re-located without permission from the Department of Public Works.

## **Vault Installation**

- All vaults must be pre-cast concrete with a lid large enough for easy ingress, egress and ventilation of the space
- Vault lids must be large enough to allow for removal and reinstallation of all components contained in the vault
- All vaults are required to be large enough for a repairman to enter for meter repair and/or replacement and shall have a sump hole at least 1 foot square by 1 foot deep installed.
- The meter box/vault shall be large enough to accommodate backflow protection, meter, meter bypass assembly and valves.

## **Tapping Requirements**

- Tapping saddles must be used for all taps. All taps must use a tapping saddle with wide stainless steel straps and nylon coated bodies such as Ford S70-603, Smith Blair 315, or approved equal. .
- Corporations must be brass and the style shall be CC by compression.
- Taps shall be separated by at least 18" and be placed no closer than 24" to the end of a pipe section.
- 3/4" or larger poly tubing must be used between the corporation and the curb stop.
- Service lines under pavement shall be placed in encasement pipe.

- Tapping sleeves for taps larger than 2" shall be all stainless
- No size on size taps are allowed without the written consent of the Director of Public Works
- The Director of Public Works shall determine how any and all connections to existing water lines are to be accomplished.
- All taps and connections must be inspected by City of Tom Bean personnel.

#### **Disinfection.**

- Tabular calcium hypochlorite is the required method of disinfection for new water mains.

#### **Wastewater Design**

- Wastewater plans and specifications must be prepared by a Professional Engineer registered in Texas and must be strictly adhered to during construction. Appropriate ASTM, ANSI, ASME, or AWWA standards shall be cited and used where appropriate. All standards must be the latest revision.
- Plans and specifications must be reviewed and approved by the City of Tom Bean prior to any work beginning.
- All service line cleanouts and main line manholes must be at grade and visible at the time of job completion and at the end of the year final inspection. The 12 month Maintenance Bond shall not be released if these are not visible.
- The City of Tom Bean will not be responsible for any malfunction or failure of any line, connection, assembly or system that results in wastewater back ups onto or into the property of a customer.

#### **Minimum Size & Material**

- No sewer other than service laterals and force mains shall be less than six inches in diameter. Larger sizes may be required by the Director of Public Works as a result of the plan review process.
- The minimum acceptable material shall be ASTM D3034, SDR 35. All gravity wastewater mains shall be green in color and all force mains shall be white.

#### **Main Line Location**

- All main wastewater lines shall be located in one of the two easements (between the back of the curb and the leading edge of the sidewalk). The back of curb edge of the pipe shall always be set two feet behind the back of curb.
- When new sanitary sewers are installed, they shall be installed no closer to waterlines than nine feet in all directions. Sewers that parallel waterlines must be installed in separate trenches. Where the nine foot separation distance cannot be achieved, the guidelines from TAC 30 Chapter 317 Appendix E will apply.  
All force mains shall have a 12 gauge copper wire laid with the pipe to assist in locating the line once it is covered. Said copper wire shall be attached to the top center of the pipe at a minimum of 15 feet intervals. Test points for connection to the locator wire must be provided at finished grade and in 500' intervals in a cleanout type 18" x 14" sewer box.
- Sewers shall be laid in straight alignment with uniform grade between manholes unless slight deviations are justified to the satisfaction of the Director of Public Works.
- Pipe shall be laid to the lines and the grades indicated on the approved drawings.

#### **Minimum Acceptable Wastewater Grades**

#### **Line Size Minimum Grade**

6" .60  
8" .40  
10" .29  
12" .22.  
15" .16.  
18" .12.  
21" .10.  
24" .08

### **Joints**

- All joints shall be rubber gasketed and jointing procedures shall comply with the instructions and recommendations of the manufacturer.

### **Bedding**

- Wastewater lines must be bedded with six (6) inches of pea gravel, below the pipe and six (6) inches above the pipe. Pea gravel must be rounded and no pea gravel with sharp corners will be allowed.

### **Manholes**

- Manholes shall be placed at all points of change in alignment, grade, or size of sewer, at the intersection of all sewers and the end of all sewer lines. Stub outs at the flow line from the end manhole may be required to facilitate future expansion. Manholes shall be set at a minimum of 500' intervals on 6" to 15" lines. Any proposal which deviates from this requirement shall be justified to the satisfaction of the Public Works Director.
- Manholes shall be of sufficient inside diameters to allow personnel to work within them and to allow proper joining of the sewer pipes in the manhole wall. The inside diameter of manholes shall not be less than 48 inches.
- Manholes shall be cast-in-place using 3000 PSI 5 sack concrete, or, precast concrete meeting ASTM C478.
- Manhole rings and lids must be Bass and Hayes Model # 300-24 and rings must be grouted to the manhole. In some low lying areas or areas where odors may be a concern Pam Rex Model 0400 EN 124 will be required.
- Manhole inverts. The bottom of the manhole shall be provided with a "U" shaped channel that is as much as possible a smooth continuation of the inlet and outlet pipes. For manholes connected to pipes less than 15 inches in diameter the channel depth shall be at least half the largest pipe diameter. For manholes connected to pipes greater than 15 inches in diameter the channel depth shall be at least three-fourths the largest pipe diameter. The bench provided above the channel shall be sloped at a minimum of 0.8 inch per foot. In manholes with pipes of different sizes, the tops of the pipes shall be placed at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. A drop pipe should be provided for a sewer entering a manhole more than 12" above the invert.

### **Testing**

- After backfilling is completed, and before acceptance of the work, wastewater mains must pass both a deflection and pressure test.
- Television inspection tests shall be required on any gravity sewer main and will be at the Contractor's expense.
- Any lines found to be defective will be corrected at the Contractor's expense. All defects will be repaired to the satisfaction of the City of Tom Bean.

### **Wastewater Service Lines**

- All wastewater service lines must be extended to the property line and installed with a cleanout in the City easement.
- All cleanouts located in the easements shall be enclosed in plastic meter boxes that are 18" x 14" in diameter and have lids that are clearly labeled sewer or wastewater. Any proposal which deviates from this requirement shall be justified to the satisfaction of the Public Works Director.
- All cleanout boxes shall be installed so that the lid will be at final grade.

### **Private Lift Stations**

- The installation of any private lift station must be approved in writing by the Director of Public Works or his designee.
- On lots where wastewater will not gravity flow to the City's wastewater mains and it becomes necessary to install a small lift station and force main, the force main must empty into a manhole.
- If no manhole is located in the vicinity, then a manhole must be installed.
- All individual lift stations of this type will be installed on private property and will be maintained by the property owner.
- All wastewater force mains will be constructed of C900, Class 150 water pipe or its equivalent. All wastewater force mains shall use white pipe.

### **Public Lift Stations**

- The City of Tom Bean must approve the location of any lift station that will be conveyed to the city for operation and maintenance.
- All lift stations that are to be conveyed to the City of Tom Bean shall be designed and stamped by a Texas registered professional engineer.
- All public lift stations shall submit pump specifications to the City for prior approval. The data and specifications for each unit shall include, but shall not be limited to, the following:
  - Pumps: We prefer ABS pumps and in most cases will require that they be used for all public stations. Exceptions will be reviewed on a case by case basis however all submittals must include: Name of manufacturer, type and model, rotative speed, size of suction elbow inlet, size of discharge elbow outlet or nozzle, complete performance curves showing capacity versus head, BHP [brake kW], Net Positive Suction Head (NPSH) required, and efficiency, and data on shop painting. All pumps shall have at a minimum a 2 (two) year warranty.
  - Motors: All motors must be 3 phase and submittals shall include the name of manufacturer, type and model, type of bearings and method of lubrication, rated size of motor, HP [kW], and service factor, insulation class and temperature rise, full load rotative speed, net weight, efficiency at full load and rated pump condition, full load current, locked rotor current All motors shall have at a minimum a 2 (two) year warranty.
  - Panels: All work and materials shall comply with the required codes and applicable City of Tom Bean regulations, ordinances and specifications. All material and panel assembly components shall be either UL Approved or Listed. All panel assemblies shall be assembled in accordance with applicable NEC, ANSI, IEEE, UL, IEC, ISA, OSHA, and local codes and standards.
  - The Contractor shall, at his own expense, arrange for and obtain all necessary permits, inspections, and other approvals required by the City. This shall include third party inspections and testing of panels, equipment, and installations as may be required. Instrument and control systems shall be designed and coordinated for proper operation with related equipment and materials furnished by others, and with related existing equipment. All instruments and control devices shall be



applied in full conformity with applicable drawings, specifications, engineering data, instructions, and recommendations of the instrument or device manufacturer and the related equipment manufacturer and must be acceptable to the City. Review of drawings submitted prior to the final determination of related equipment shall not relieve the supplier from supplying systems in full compliance with the specific requirements of the related equipment. Related equipment and materials may include, but will not be limited to, primary flow measuring devices, valve actuators, chemical feeders, analytical measuring devices, supervisory control equipment, telemetry, conduit, cable, piping, and other equipment associated with specific projects. Installation drawings shall be prepared for interconnecting wiring and piping between the related equipment and the equipment furnished. All interconnecting wiring shall be appropriate for the service and shall result in a properly functioning system. The system supplier shall provide coordination with other contractors and supervision of installations as required during construction. Complete fabrication, assembly, and installation drawings; wiring and schematic diagrams; and details, specifications, and data covering the materials used and the parts, devices, and accessories forming a part of the equipment furnished shall be submitted. A narrative of the proposed work and function of the system and related appurtenances shall be required.

- Submittals shall include the following items:
  - ✓ A detailed list of any exceptions, functional differences, or discrepancies between the suppliers' proposed system and the contract requirements.
  - ✓ System wiring and installation drawings for all interconnecting wiring between components of the systems furnished and for all interconnecting wiring between the related equipment and the equipment furnished under this section.
  - ✓ Complete system documentation, in the form of operation and maintenance manuals, shall be provided. Manuals shall include complete product instruction books for each item of equipment furnished. Where instruction booklets cover more than one specific model or range of instrument, product data sheets shall be included which indicate the instrument model number, calibrated range, and all other special features. A complete set of "as-built" schematics, fabrication, and interconnection drawings shall be included with the manuals. All equipment furnished to the City shall be selected by the supplier for its superior quality and intended performance. Equipment and materials used shall be subject to review and shall comply with the following requirements. Unless specified otherwise, electrical power supply to all equipment will be unregulated 120 volts ac at the appropriate locations. All transmitted electronic analog instrument signals shall be 4-20 MA dc, unless noted otherwise, and shall be linear with the measured variable. In addition to other environmental protection specified for individual projects, the entire system shall be provided with lightning protection. Lightning protection measures shall include the following. All major components of the system shall have a low resistance ground connection. Grounding system provisions shall be installed and modified by the supplier to provide appropriate protection as recommended by equipment manufacturers.
  - ✓ Surge and lightning suppressors shall be non-faulting, non-interrupting, and shall protect against line-to-line and line-to-ground surges.

**Section 3:** All Ordinances/policies or parts thereof which are in conflict in whole or

in part with any of the provisions of this ordinance as to the effective date of this Ordinance, are hereby repealed.

**Section 4:** PENALTIES: any person violating any provision of this ordinance shall be fined a minimum of two hundred dollars (\$200.00) per each violation.

**Section 5:** SEVERABILITY: This Ordinance and the various parts, sections, subsections, sentences, phrases and clauses thereof are hereby declared to be severable. If any part, sentence, paragraph, section, subsection, phrase, or clause is adjudged unconstitutional or invalid, it is hereby declared that the remainder of this Ordinance shall not be affected thereby.

**THIS ORDINANCE SHALL BE IN EFFECT UPON IT'S READING AND PASSAGE BY THE CITY COUNCIL OF TOM BEAN, TEXAS.**

**DULY PASSED AND APPROVED BY THE CITY COUNCIL OF TOM BEAN, TEXAS THIS 21st DAY OF APRIL, 2007.**

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**Mayor**

**Attest:**

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**City Secretary**