

DEVELOPER POLICY

4.1 General

- A. This is a developer policy fact sheet and is not intended to provide detailed plans and specifications for all aspects of sanitary sewer construction as required by the Pine Bluff Wastewater Utility (PBWU). Detailed specifications are not included with this document due to their proneness to frequent change. Likewise, this document is dynamic and subject to change as deemed necessary by the PBWU. A more detailed Policy document may be prepared and various Detailed Specifications and Detailed Standard Drawings may be available from the PBWU if needed or desired.
- B. All materials and construction methods shall meet or exceed the Ten State Standards and the minimum requirements of the Arkansas Department of Health. The Ten State Standard is also used as a guideline by the PBWU. As required by state law, all project plans and specifications must be designed, signed, and stamped by a Professional Engineer registered in the State of Arkansas. The PBWU reserves the right to have all materials and construction methods conform to our applicable specifications and standards before the work will be accepted.
- C. This Developer Policy and Details of the PBWU shall become a supplement to the Specifications of any Project designed by any Registered Engineer, Architect or Engineering Firm if said project is to be accepted by the PBWU. The most stringent specifications shall be used.
- D. Certain standard and typical details are included in this document and shall be considered as the minimum acceptable for materials, work, and construction techniques allowed for projects to be accepted by the PBWU. If any project includes work that is not covered by this document, contact PBWU to verify the appropriate specifications, standards, and practices.

4.2 Sewer Improvement Districts

- A. PBWU's current policy on expansion of its wastewater collection relies on those that are not currently served to coordinate and fund any improvements required for them to be served. Historically, expansions have either been funded by developers or potential customers banding together to form sewer improvement districts.
- B. Potential customers who wish to be served are responsible for selecting, coordinating with, and compensating the professionals, including attorneys, engineers, and appraisers, necessary to form their sewer improvements district.
- C. As with any expansion of its system, PBWU will support sewer improvements districts by providing information on existing infrastructure, meeting with the

improvements district and its representatives, and reviewing/approving the planned improvements.

- D. Infrastructure constructed by sewer improvement districts are subject to the same design, sewer service application, plan submission, construction review fee, easement, permit, licensing, inspection, testing, and bonding requirements as new construction. See the other remaining sections of this Developer Policy for Policy for more information.

4.3 Sewer Service Application

- A. Any potential customer seeking service from the PBWU will complete and submit a Sewer Service Application.
- B. The Sewer Service Application is included in this document.

4.4 Submission of Development Design Plans and Specifications

- A. Preliminary approval for any proposed sanitary sewer extension must be granted by the Manager of the PBWU. A vicinity map and site plan shall be sufficient to indicate the Owner/Developer's intentions. Preliminary approval does not constitute automatic final approval of any sewer extension. An Engineering Report is required for any Project, regardless of size. Preliminary information provided by the PBWU is normally limited to aerial maps showing the site location and the nearest available sewer lines, pump stations, and force mains. Elevations of manholes and size of existing pipes are given if known. The Owner/Developer is responsible for providing an Engineers design plan to be reviewed by the PBWU Designated Engineer or Consulting Engineering Firm.
- B. A proposed detailed CONSTRUCTION PLAN AND SPECIFICATIONS shall conform to the PBWU's latest standards. At the discretion of the PBWU, small projects may use the STANDARD DETAILS and SPECIFICATIONS as published by the PBWU. Large projects may require submittal of DETAILED SPECIFICATIONS prepared by the project's Engineer. As required by state law, all construction plans and specifications must be designed, signed, and stamped by a Professional Engineer registered in the State of Arkansas. One complete set of the proposed Construction Plan is sufficient for the preliminary review.
- C. After review by the PBWU, corrections and adjustments to the PLAN and SPECIFICATIONS as detailed and/or directed by the PBWU shall be resubmitted by the Owner/Developer. Final written approval of CONSTRUCTION PLANS and SPECIFICATIONS must be made by the PBWU and the Arkansas Department of Health, Engineering Section, before construction of the project can commence.

- D. A construction review fee of 0.5% of the estimated construction cost will be required for each project whose estimated construction cost exceeds \$50,000. The construction review fee shall not exceed \$1,000.

4.5 Easements and Permits

- A. Before construction can begin, signed RIGHT-OF-WAY EASEMENTS shall be obtained by the Owner/Developer for all portions of the project located on or across private property. A MEMORANDUM OF UNDERSTANDING developed by PBWU may be substituted for a signed EASEMENT.
- B. PERMITS shall be obtained from the applicable department and/or agency for all portions of the project located on or across public property (i.e. streets, highways, parks, utility easements, etc.).
- C. Any work on AHTD right-of-way requires a permit and compliance with the AHTD's Utility Accommodation Policy. The Developer and his contractor will strictly comply with all AHTD requirements. The AHTD's Utility Accommodation Policy does not allow the Developer to directly secure AHTD Utility Permits. Instead, AHTD policy requires that all AHTD Utility Permits for PBWU projects be acquired and bonded by the PBWU. The Developer will be responsible for coordinating with the AHTD, filling out all permit forms for execution, and submission to AHTD by PBWU. The Developer will be financially responsible for all costs associated with the AHTD permit and of any PBWU bonds forfeited due to his or his contractor's failure to comply with the AHTD Utility Accommodation Policy.
- D. EASEMENTS and PERMITS shall be submitted to the PBWU for review and approval prior to start of construction. Pump stations shall be located on property deeded to the City of Pine Bluff.

4.6 Licensing Requirements

- A. Projects valued at less than \$20,000 may be installed by either an Arkansas licensed Master Plumber or an Arkansas licensed General Contractor. Projects valued at \$20,000 or more must be constructed by an Arkansas licensed General Contractor with applicable project bonding and insurance as per State law. Arkansas State Licensing Law for Commercial Contractors Act 150 of 1965 and Act 162 of 1987 (as amended) requires the Installation Contractor to have a Contractors Licenses Classification of Municipal and Utility Construction.
- B. Contractors will be required to comply with all requirements outlined in the Pine Bluff Wastewater Utilities' Contractor Policy.

4.7 Construction Inspection & Testing Requirements

- A. The PBWU's Designated Engineer or PBWU Inspector shall be informed at least 24 hours before any construction is commenced on the project. During construction, no sewer pipe or appurtenances shall be backfilled, encased, or permanently covered until inspected by the PBWU or its contracted representative. The project shall be subject to continuous and/or random inspection by the PBWU or its contracted representative. All materials and/or work found to be in non-conformance with the PLANS AND SPECIFICATIONS shall be rejected. A project containing any uncorrected non-conformance materials and/or work will not be accepted by the PBWU.
- B. A Final Inspection and certain forms of testing on the project will be required, as shown in the DETAILED SPECIFICATIONS and/or the SANITARY SEWER DESIGN GUIDELINES (QUICK FACT SHEET).
- C. After completion of the construction phase, the following items shall be submitted by the Owner/Developer to the PBWU for its review and approval:
 - 1. Testing results.
 - 2. "AS-BUILT" PLANS.
 - 3. CERTIFICATE OF CONFORMANCE.
 - 4. BILL OF SALE.
 - 5. SEWER MAINTENANCE BOND.
 - 6. Any revisions to easements and permits, required for construction.

4.8 Sewer Maintenance Bond Requirements

- A. A SEWER MAINTENANCE BOND is required prior to acceptance on any sewer infrastructure by the PBWU.
- B. The SEWER MAINTENANCE BOND must be submitted on Pine Bluff Wastewater Utilities' standard form.
- C. The surety issuing the SEWER MAINTENANCE BOND must be licensed to practice in the State of Arkansas.

4.9 Sewer Infrastructure Design Requirements

- A. Wastewater Service Connections: Wastewater service connections shall comply with the requirements of Paragraph 3.2 of the Customer Service Policy.
- B. Gravity Collection Mains

1. Sizing: gravity collection mains shall be sized for the anticipated load. The minimum size shall be eight (8) inch, unless six (6) inch is approved by the PBWU in writing.
2. Piping Material: pipe for sewer lines shall be PVC SDR-26/PS115 solid wall gravity sewer pipe. Any main line with less than 36" of cover shall be ductile iron. All ductile iron castings and fittings shall be manufactured by an ISO certified factory. Ductile iron sewer pipe shall be class 50 with cement lining.
3. Bedding
 - a. Bedding Material: bedding shall be Class I crushed stone, granite or hard lime rock, ¾" nominal size. Other sizes and gradations of bedding material may be used only with written approval from the PBWU.
 - b. Bedding for Ductile Iron: ductile iron pipe shall be bedded in a 3" minimum thick bed of crushed stone under pipe.
 - c. Bedding for PVC: PVC pipe shall be bedded per Pine Bluff Wastewater standard details.
 - d. Special Bedding: Any pipe laid in extremely deep cuts or bad subgrade conditions may require special bedding. Coordinate bedding requirements with PBWU Technical Service Division.
4. Installation
 - a. All sewer main lines shall be laser aligned for grade and line using industry standard laying techniques and construction methods acceptable to the PBWU.
 - b. Sewer main lines shall be laid to the minimum standards of 2 feet per second velocity. Unless approved in writing by PBWU, minimum sewer grades will be used in an effort to maintain sewer depth to allow for future upstream development. The following minimum grades are provided for your convenience:

Pipe Diameter	Minimum Grade
6"	0.60%
8"	0.40%
10"	0.28%
12"	0.22%
14"	0.17%
15"	0.15%
18"	0.12%
21"	0.10%
24"	0.08%
27"	0.067%
30"	0.058%
36"	0.046%
42"	0.037%

- c. Manholes as required by this document.
 - d. Pipe bedding as required by this document.
 - e. Pipe trenches located under special and driving surfaces shall be totally backfilled with compacted Bottom Ash Blend (BAB), a 50% mix of Bottom Ash and Fly Ash. BAB is obtainable from a local provider. It should be placed in lifts not exceeding 18" thick. Paved surfaces shall be repaired as per the governing department/agency requirements. Do not place BAB against any metal without properly protecting the metal surface with approved plastic wrapping, paint, or other protectant.
5. Testing
- a. Sewer main lines shall be air tested as per the generally accepted wastewater (Professional) or engineering standards for low air pressure sewer line testing.
 - b. Sewer main lines shall be hydro cleaned and video inspected by camera after completion of work. PBWU will provide TV video of any sewer main line extension performed by a Contractor up to two line segments at no charge. Larger projects will be video inspected at Owner/Developer's expense. A TV log must accompany video showing Project Name, Manhole Numbers, Pipe Size, and Wye Locations/distances. TV video and log shall be recorded in DVD format from downstream to upstream.
 - c. All main lines constructed of flexible pipe material (i.e. PVC) shall be mandrel tested 30 days after backfill (hand pull, 5% maximum defection, using go/no-go mandrel). The mandrel must be stamped with the proper % of deflection for the type of pipe testing being conducted. If using an adjustable mandrel, a sizing ring must be provided for the size used.
 - d. Manholes shall be vacuum tested as per industry standards.
 - e. The PBWU Inspector shall be present for all testing. All test results shall be submitted to the PBWU's Designated Engineer for review and approval.

C. Manholes

- 1. Manholes shall be cast-in-place, per Pine Bluff Wastewater Standard Details, or precast, by Peterson Concrete Tank or equal and meeting Pine Bluff Wastewater Standard Specifications.
- 2. Minimum inside diameter is four (4) feet.
- 3. Maximum spacing between manholes is 400 feet.
- 4. All manholes shall have a preferred fall across the manhole invert of 0.10 feet, 0.05 feet minimum
- 5. All construction joints and pipe penetrations in cast-in-place and precast manholes shall be filled smooth with a non-shrink grout and sand mixture.
- 6. Inverts shall be smooth all around to prevent catching of debris.
- 7. Manhole ring and cover shall be the Arkansas standard 250 pound set, 22" clear opening, 23 1/2" diameter cover with an edge thickness of 1 1/2".

8. Manholes located in flood prone areas shall be elevated above the 100-year flood plain elevation or provided with an approved watertight, bolt-down ring and cover.
9. (Inside/Outside) Drop manholes shall be constructed per the Owners discretion when the invert of any two lines entering and leaving a manhole exceeds two (2) feet in elevation.
10. Before being accepted for service, manholes must pass a vacuum test per industry standards. Manholes failing vacuum testing must either be repaired or replaced and retested.

D. Wastewater Lift Stations

1. Pump stations will not be allowed in any project unless physical limitations preclude the construction of an all-gravity system. A pump station may not be included in a project without the written approval of the PBWU. If a pump station is required and approved, the PBWU will provide or assist with general construction and capacity requirements for the station.
2. Any Pump Station that will be turned over to the PBWU to operate and maintain shall be required to have a PBWU pre-approved monitoring system installed at the Developer's expense.
3. Final design of the pump station must meet with the approval of the PBWU.
4. Pump Stations shall, as a minimum, conform to the requirements of "Ten States Standards", with particular attention to the following:
 - a. A minimum of two submersible, wet well mounted sewage pumps shall be installed in the station, with each pump sized to pump the design capacity of the pumping station.
 - b. Station shall be equipped with an alternator to equalize the wear on the pumps.
 - c. Pumps shall be capable of passing a three (3) inch sphere. Grinder type pumps are not permitted.
 - d. Wetwell level shall be sensed and utilized in starting and stopping pump operations using an electronic level transducer, Consolidated or PBWU approved equal.
 - e. Pump Stations shall be equipped with an emergency pump connection to permit connection of an auxiliary portable pump to the force main.
 - f. When lift station is designed to pump into common force main with one or more other lift stations, provide hydraulic modeling to confirm that performance of all lift stations is not compromised by installation of new pump station. If necessary, Developer will be responsible to modifications to other stations required to maintain their performance.

E. Wastewater Force Mains

1. Sizing: force main shall be designed for a minimum scouring velocity of 2 feet per second.
2. Pipe for force main shall be one of the following, as approved by PBWU:
 - a. Ductile iron pipe with "push-on" joints, AWWA C151/A21.51-02, with cement mortar lining AWWA C104/A21.4-03, minimum pressure class 150 psi.
 - b. PVC Pressure Pipe, ASTM D2241, minimum wall thickness ratio SDR-21.
 - c. PVC Pressure Pipe (DI o.d.) AWWA C900, latest revision, minimum wall thickness DR-18.
3. Force main (except ductile iron pipe) shall have a continuous copper tracer wire installed in the pipe trench. Tracer wire will consist of a 12-gauge insulated copper wire. Tracer wire will be located below the pipe along the edge of the trench to prevent damage to the tracer wire if the pipe is excavated. On new construction, no underground tracer wire splices will be allowed. Instead, splices must be made in valve boxes, air release valve vaults, or tracer wire splice boxes. Tracer wire splice boxes shall consist of a Carsonite LCTSI508 cathodic protection test station and a Carsonite CTP307201 post or approved equal. Repairs to damaged tracer wire shall be made with an electrical/telephone direct bury splice kit, 3M Model DBY-6 or approved equal. Provide a minimum of 10 feet of excess wire at all splice locations.
4. Pipe shall also have Detector Locator Tape (Conductive Tracer) placed flat in the trench with warning message facing up. Detector locator tape shall be located after initial backfill, 12 to 18 inches above the top of the pipe. Detector locator tape shall be Terra Tape "Extra Stretch" or approved equal.
5. Bedding: provide same bedding material as gravity collection mains.
6. Pipe trenches located under special and driving surfaces shall be totally backfilled with compacted Bottom Ash Blend (BAB), a 50% mix of Bottom Ash and Fly Ash. BAB is obtainable from a local provider. It should be placed in lifts not exceeding 18" thick. Paved surfaces shall be repaired as per the governing department/agency requirements. Do not place BAB against any metal without properly protecting the metal surface with approved plastic wrapping, paint, or other protectant.
7. Installation:
 - a. Force main shall be installed to grade with continuous positive and negative slopes between air valves.
 - b. Provide air valves at all high points to ensure proper management of air within the force main.

G. Air Valves