

The Utilities Board City of Muscle Shoals

Materials and Installation Requirements for Potable Water Lines and Appurtenances and for Sanitary Sewer Lines and Appurtenances

1. **PURPOSE OF THESE SPECIFICATIONS:** The Utilities Board City of Muscle Shoals, Alabama, in many instances allows individual developers (hereinafter referred to as “Contractor”) and other similar interests to install potable water and sanitary sewer collection and pumping facilities as a portion of the overall development requirements. All contractors must be currently licensed in the category “Municipal, Utility, and Work Incidental thereto.” After such installations, should all components associated with the installations be those approved by the Board, and should proper workmanship be pursued when constructing such facilities, it is the normal policy of the Board to assume ownership of the potable water and sanitary sewer collection and pumping facilities improvements when such improvements are located within the defined service area of the Board. These specifications are intended to serve as general guidelines regarding the installation of such facilities, and may be amended by the Board as required to facilitate the integrity of installation, or the well being of the health and welfare of the general public.
2. **PLANS OF PROPOSED FACILITIES:** All potable water lines and sanitary sewer collection lines and pumping stations shall be properly depicted and presented to the Board as scaled drawings, prepared by the developers certified engineer. Potable water line improvements shall be prepared at a scale of 1”=100’ (or 1”=200’ or other designated scale as may be required by the Board), and appurtenances and services that are proposed shall be clearly indicated. Sanitary sewer collection line improvements shall be prepared at a scale of 1”=50’ for the “plan” portion of the drawings, and a scale of 1”=50’ horizontal and 1”=5’ vertical for the “profile” portion of the drawings. All sanitary sewer collection line improvements drawings shall clearly indicate manhole placements (spacing of no greater than 400 linear feet unless approved otherwise), inlet and outlet invert elevations, top of manhole elevations, line sizes, line slopes in percent, and carrying capacities (gallons per minute) of lines between manhole segments. All existing utilities (water, sewer, gas, power, telephone, cable, etc.) shall be clearly and legibly shown on all drawings, and the elevations of existing utilities shall be shown on all drawings, and the elevations of existing utilities shall be shown where proposed water or sanitary sewer lines are proposed to cross existing utilities. All elevations utilized shall be based on “mean sea level” elevations, and permanent bench marks shall be located and noted on the drawings for sanitary sewer lines such that the spacing between bench marks is not greater than 1,000 linear feet. All drawings shall be prepared by an agency approved by the Board, and all drawings shall clearly indicate the “north” direction. Prior to installation there will be a preconstruction meeting with developer/contractor and the Utilities Board representative.
3. **RECORD DRAWINGS:** Upon completion of construction of all work, as a condition prior to acceptance by the Board, the Contractor shall provide the Board with two (2) complete sets of drawings that depict “record” data, reflecting all components as constructed. Data shall show exact locations of all lines and appurtenances, and all service lines shall be clearly marked, complete with reference dimensions such that the services can be easily located in

the future.

4. **EASEMENTS AND PROPERTY REQUIREMENTS:** All easements and property requirements necessary for the proper installation and maintenance of potable water lines and sanitary sewer collection and pumping facilities shall be provided by the Contractor to the Board at no cost to the Board. Easements shall be dedicated to the Board as perpetual “utility easements”, and all properties conveyed to the Board for pumping station sites, etc., shall be fee simple. All easements and properties intended for use shall be adequately described (complete with drawings as may be required) by a professional land surveyor duly registered to perform such work in the state of Alabama, with adequate property ties so as to clearly define the location of the easements and properties. The Board will determine the proper width of all easements required, based on depths of cut during construction, with consideration being also given to widths needed for proper access and maintenance during the ensuing years following completion of construction. The Board reserves the right to require the Contractor to provide additional easement widths in the form of “construction easements”, in addition to the perpetual easements, as may be required to facilitate construction.
5. **WARRANTY PERIOD:** The Contractor shall be responsible for all operation and maintenance requirements associated with water lines and appurtenances, sewer collection lines and force mains and appurtenances, and sanitary sewer pumping stations and appurtenances for a period of one year following completion of construction, and subsequent acceptance by the Board. Warranty provided shall include all equipment, materials and labor at no cost to the Board, shall include restoration of surface areas due to erosion, including roadway surface (paving) repairs, and shall include “settling” of ditch lines due to inadequate compaction during construction. Upon completion of construction and acceptance by the Board the Contractor shall be provided a written “acceptance” by the Board. The one-year warranty period shall commence on the date of the written acceptance by the Board, or one year following the placement of the newly constructed facilities into service, whichever is the last to occur.
6. **SAFETY:** The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work continuously, 24 hours per day. Under the terms and conditions of these specifications, neither the Board, nor the Board’s representatives, shall act as safety engineer or safety supervisor, since such responsibility remains solely with Contractor.
7. **GENERAL REQUIREMENTS:** All piping materials and accessories included in the work shall meet all applicable requirements of these Specifications. All materials and accessories shall be properly stored and shall be free of all dirt, debris and extraneous materials when installed. After careful inspection by the Board all defective piping materials and accessories shall be removed from the site of the work prior to installation. The Board shall be notified of any and all defective items discovered by the Contractor.

All piping materials and related accessories and components shall be provided and installed by the Contractor. Items provided and installed shall include pipe, services, valves, fittings, couplings, valve boxes, indicators, gaskets, bolts, nuts, supports, hangers, clamps, blocks, brackets, guides, bracing, piers, anchors, valve operators, extensions, stands, manholes

and all other components necessary to place the entire installation in first class operating condition. All proper equipment and components necessary for suitable installation shall be provided by the Contractor. Any contractor who installs water or sewer mains must be licensed in the category "Municipal, Utility and Work Incidental thereto".

Ends of piping runs at the end of each workday shall be properly bulkheaded, blocked or plugged in an effort to keep the interior clean and free from all foreign matter. All foreign matter allowed to enter any portion of the piping shall be immediately removed from the piping.

8. WATER FACILITIES REQUIREMENTS

- 8.1. WATER SUPPLY LINES: Water supply lines shall be PVC Class 200 (AWWA approved), or Ductile Iron, Class 50 equivalent of new rating classifications, Tyton joint or mechanical joint as required by the Board, cement lined and coated. PVC pipe with a higher class rating may be required in some instances. All PVC piping installation shall include a "continuous" run of tracer wire, solid copper, tin-coated, not less than #12 gauge. The physical placement of the tracer wire in the construction trench shall be as directed by the Board. All supply lines shall meet AWWA standards.
- 8.2. SUPPLY LINE VALVES: Valves for 2" diameter supply lines shall be Clow or Equivalent, full port, resilient seat, short body gate valve. Valves for supply lines larger than 2" diameter shall be Mueller, M & H, Stockham or American brand, of construction and end connections as designated by the Board. The Board shall also determine if the valves are to be gate type or butterfly. All valves shall meet AWWA standards.
- 8.3. SUPPLY LINE FITTINGS: Fittings shall be fitted with mechanical joint end connections, and shall be ductile iron, compact, or cast iron. Fittings shall be cement lined and coated, and shall meet AWWA standards. Proper concrete bracing and blocking shall be provided for fittings that provide for a change in direction, all as required by the Board.
- 8.4. FIRE HYDRANTS: Fire hydrants shall be Mueller (5.25") main valve opening, with two hose nozzles and one pumper nozzle, dry top design. All hydrants shall "open left". All hydrant laterals shall be 6" diameter, and shall be fitted with an isolation valve. Proper blocking and bracing shall be utilized to provide a rigid installation, free of potential movement. Location and spacing of hydrant assemblies shall be in accordance with the requirements of the Muscle Shoals Utilities Board and Muscle Shoals Fire Marshall. All Fire hydrants will be installed to Final grade elevation.
- 8.5. WATER SERVICE LINES: Piping for water service lines shall be ¾" or 1" diameter Type K soft copper. Service line runs shall be free of joints between the pint of connection with supply main and the meter location. Corporations shall be ¾" or 1" Mueller brand, #H-15008. Service saddles for PVC supply mains shall be ¾" or 1" Dresser brand, Style 94, or shall be 2" I.P.T. Ford brand, double strap. Curb stops shall be ¾" or 1" Mueller brand, #B-24350-R Ball Stop.

- 8.6. EXCAVATION, TRENCHING AND BACKFILLING: All excavation trenching and backfilling shall be performed in accordance with the requirements of the Board, and in accordance with the requirements of the city of Muscle Shoals where applicable. All water supply lines shall be installed in accordance with the manufacturer of the piping utilized, and care shall be used in backfilling such that adequate compaction is achieved to prevent long-term settlement. Some PVC piping installations may require the use of special bedding and backfill material (other than native materials) to prevent damage to the piping materials. All water lines will have a minimum of 3 ft. of cover prior to testing.
- 8.7. TESTING: All line installations shall be properly tested upon completion of installation, after being properly flushed (the Board shall direct all flushing activities in an effort to prevent “muddy” water throughout the water distribution system). Test pressure shall be at a psi at least 75% of pipe rating, and the test pressure shall be monitored over a period of 6 continuous hours. After testing is completed, and if a pressure drop is indicated through out the test section, the line shall be filled to the initial test pressure with a known volume of water. The Board will make the determination if the line section tested is acceptable, or if additional work is required by the Contractor. All valves and fire hydrants will be installed at a finished grade elevation.
- 8.8. DISINFECTION: All water main installations shall be properly disinfected with 65% HTH as directed by the Board, and when installed. After proper flushing samples shall be delivered to a certified laboratory and tested for bacteria in accordance with the requirements of the Alabama Department of Environmental Management.

9. SANITARY SEWER LINES AND APPURTENANCES REQUIREMENTS

The following specifications are an amendment to the existing Subdivision Regulations Article VI Required Improvements 1.6 Sanitary Sewers Amended-Construction Specifications and will be enforced in conjunction with the above listed specifications.

- 9.1. SANITARY SEWER LINES: Gravity sanitary sewer lines shall be ductile iron, slip joint, Class 50 equivalent of new rating classifications, or PVC, gasketed joint, in accordance with the depth and terrain associated with line locations. Where PVC pipe is utilized, and the overall depth is 6'-0" or less and the pipe size is 6" diameter or greater, the pipe classification shall be S.D.R. 35. Where PVC pipe is utilized, and the overall depth is greater than 6'-0" and the pipe is 6" diameter or greater, the pipe classification shall be S.D.R. 26. Sanitary sewer force mains shall be ductile iron, Class 50 equivalent of new rating classifications, Tyton joint or mechanical joint as required by the Board, cement lined, and/or Protecto 401 lining or equivalent as required by the Board and coated. All lines will have a minimum of 3 ft. of cover prior to testing.
- 9.2. LATERALS AND FITTINGS: Sanitary sewer service laterals will be 4" diameter and shall be PVC Schedule 40. The Board will make the determination as to whether the joints of service lateral piping are gasketed or glued, and cleanouts shall be properly located in accordance with the requirements of the City of Muscle Shoals. Tee-wye-plug adapters used to connect service laterals to collection lines shall be PVC S.D.R. 35 or 26, spigot X Schedule 40 bell, solvent weld. Taps made to connect service laterals

to existing vitrified clay collection lines shall include the use of a sewer saddle with stainless steel strap or clamp to snugly fit the collection line. Inlet provided for service lateral shall be 4" diameter suitable for Schedule 40 PVC. Inlet must be created with a holesaw type device and will not be hammered out. The coupon to be provided to the Board upon request. Laterals will be marked with a metal post so a metal detector can be used to locate.

9.3. **BEDDING MATERIAL:** Bedding material utilized for sanitary sewer main and lateral installations shall be ADOT #78 Stone or #57 Washed Stone.

9.4. **MANHOLE FRAMES AND COVERS:** Manhole frames and covers shall be installed in a rigid manner, and shall be completely sealed with cementitious grout, inside and outside. All manhole frames and covers shall be installed with an approved surface water infiltration preventor. All manholes must be at final grade elevation prior to approval.

9.5. **MANHOLES:** Manholes shall be constructed of pre-cast concrete. Minimum diameter shall be 4'-0", and manhole assembly shall include base riser, intermediate riser(s) and cone section as required to provide a finished top of manhole elevation suitable for the respective location. All manholes shall receive a concrete grout "invert" finished smoothly so as to provide proper flow characteristics. Integrally-cast flexible rubber boot with stainless steel ring, or other suitable means of adequately connecting the sewer collection line to the manhole assembly, shall be provided as may be required by the Board. Rainguard inflow protectors will be installed in areas subject to storm water infiltration.

9.6. **TESTING:** All sanitary sewer lines and appurtenances shall be air tested in accordance with the requirements of the Board. All sanitary sewer lines shall be tested for deflection by a mandrel pull. All sanitary sewer lines and manholes shall be videoed showing locations of all stubs, with footage of stubs depicted from manholes. All manholes shall be vacuum tested according to the Boards. specifications

9.7. **PUMPING STATIONS:** All pumping stations, as may be required by the Board, shall be properly designed in accordance with the requirements of the Board, and shall be properly sized to accommodate all existing flows and future flows as dictated by the area or areas served. Contractor/developer will install connections for portable pump as specified by the Board.

10. **ADDITIONAL REQUIREMENTS:** The Board reserves the right to amend the requirements noted herein from time to time as may be deemed appropriate by the Board.

- All water and sewer lines will be at a minimum of three feet deep below final developed grade.
- All water and sewer main extensions will be extended to the property owner/ developer farthest property line