Standard Water System Specifications

1. **GENERAL**
   a. This specification covers new water main installations.
   b. All labor, material, equipment, and testing required for a complete and functional system shall be furnished by the developer.
2. **MATERIALS**
   a. PIPE
      i. PVC Pipe shall meet the requirements of ASTM D2241, Pressure Class 200 minimum. The use of AWWA C909 molecularly oriented PVCO pipe or AWWA C900 PVC pipe is prohibited.
      ii. PE Pipe shall meet the requirements of AWWA C906. Pressure class will be reviewed and approved on a project by project basis.
      iii. Ductile Iron Pipe shall meet the requirements of AWWA C151, pressure class 250 minimum, and be cement lined in accordance with AWWA C104. D.I. Pipe shall be manufactured by U.S. Pipe and Foundry or American Cast Iron Pipe Company only.
      iv. Gaskets for PVC and ductile iron pipe shall meet the requirements of AWWA C111 for rubber gaskets.
      v. Copper tubing not allowed. All service line material shall be PE 4710 Resin SDR 9 -250 PSI
      vi. Casing pipe shall be ASTM A252, Grade 2, with casing spacers and end seals.
   b. FITTINGS
      i. Fittings on PVC or Ductile Iron Pipe shall be restrained joints as follows:
         1. Compact Ductile Iron in accordance with ANSI/AWWA C153/A21.53 with Mega-Lug type retainer glands with twist-off nuts.
         2. Joint restraint may be provided using Lok-Ring or equivalent pipe joints.
         3. Transition gaskets shall be used with pressure class PVC pipe.
      ii. Fittings on copper tube shall meet ASME B16.18 cast-copper-alloy or ASME B16.22 wrought copper, solder-joint pressure type. The use of compression couplings is not allowed.
   c. POLYETHYLENE ENCASEMENT
      i. Polyethylene encasement for ductile iron pipe shall meet the requirements of ANSI/AWWA C105/A21.5.
      ii. Steel casing shall meet or exceed ALDOT standard casing specifications.
   d. VALVES
      i. All valves installed in water mains shall be AWWA C515 resilient-seated gate valves with ductile iron body and bonnet, bronze or 304SS stems, non-rising stems, and 2” square operating nut. Valves shall be manufactured by Mueller or pre-approved equivalent.
      ii. Valve boxes shall comply with AWWA M44 for cast-iron valve boxes with adjustable extension and 5” diameter barrel. The use of PVC valve boxes and/or extensions is prohibited.
   e. FIRE HYDRANTS
      i. All fire hydrants shall be Mueller Centurion unless otherwise directed by the Board.
   f. MISCELLANEOUS ACCESSORIES
      i. Tapping Sleeves – Cast iron, ductile iron, or fabricated stainless steel, two-piece bolted sleeve with flanged outlet for tapping valve connection.
      ii. Tapping Valves – AWWA C515 valve with one raised face flange mating to the tapping sleeve flange.
      iii. Service Saddles – Copper alloy with seal and AWWA C800 threaded outlet for corporation valve. Service saddles are required on all PVC pipe. Ductile iron pipe shall be direct-tapped without the use of a saddle.
      iv. Corporation Valves – Mueller H15008
      v. Curb Valves – Mueller H14350
      vi. Water Meters and Boxes – Will be furnished and installed by Oneonta Utilities.

3. **INSTALLATION**
   a. PIPE
      i. Ductile iron pipe shall be installed in accordance with AWWA C600.
      ii. PVC pipe shall be installed in accordance with AWWA M23.
      iii. PE pipe shall be installed in accordance with ASTM D2774 and ASTM F645.
      iv. Pipe shall be installed with a minimum of 36” of cover and a maximum of 60” of cover from final grade.
      v. Restrained joint fittings shall be installed at all changes in direction.
      vi. All PVC water mains shall be bedded in a minimum of 6” of ALDOT #57 stone.
      vii. PVC water mains and all other water mains in rock trenches shall be backfilled to 12” minimum above the pipe with ALDOT #8910 stone.
      viii. Ductile iron water mains shall be backfilled to 12”minimum above the pipe with material free of particles larger than 1”.
      ix. All trenches under paving shall be backfilled completely with ALDOT #8910 stone.
      x. Water mains shall not be installed longitudinally under paving.
      xi. All water main shall be installed with 12 gauge blue solid copper locator wire 12” above the main.
   b. FITTINGS
      i. Ductile iron fittings shall be installed in accordance with AWWA C600.
      ii. Copper fittings shall be soldered joints in accordance with ASTM B828 using flushable flux and lead-free solder.
   c. POLYETHYLENE ENCASEMENT
      i. Install polyethylene encasement in accordance with ASTM A674 or AWWA C105.
   d. VALVES
      i. Install resilient seat gate valves with stem pointing up in accordance with AWWA C600.
      ii. Valve boxes are required at all valves and shall be installed true and plumb, with top of box flush with grade.
   e. FIRE HYDRANTS
      i. Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
      ii. Use Grade-Lok fittings as required to adjust hydrants to final grade.
   f. MISCELLANEOUS ACCESSORIES
      i. Tapping Sleeves – Install tapping sleeve on pipe to be tapped. Position flanged outlet so that gate valve will be plumb and level.
      ii. Tapping Valve – Install tapping gate valve onto tapping sleeve with stem pointing up. ALL TAPS ON MAINS WILL BE MADE BY ONEONTA UTILITIES.
      iii. Valve boxes are required on all valves.
      iv. Service Saddles – Install service saddles on pipe to be tapped. Use a drilling machine compatible with service-saddle assemblies and corporation valves.
      v. Corporation Valves – Install corporation valves into all service saddles prior to tapping.
      vi. Curb Valves – Install curb valves in water service piping with head pointing up.
      vii. Water Meters and Boxes – Will be installed by Oneonta Utilities.

4. **TESTING**
   a. All new mains shall be flushed at a minimum velocity of 2.5 feet per second.
   b. All new mains shall be pressure tested at a minimum of 1.5 times the anticipated working pressure or 150 psi, whichever is greater, for a minimum duration of 6 hours. Pressure charts shall be provided to Oneonta Utilities.
   c. All new mains shall be leak tested in accordance with AWWA C600 for ductile iron or AWWA C605 for PVC.
   d. All new mains must be disinfected and bacteriologically tested in accordance with AWWA C651 prior to connection to the distribution system.

5. **SURVEYS AND AS-BUILT DRAWINGS**
   a. All surveys must be tied to Alabama State Plane Coordinates.
   b. As-Built Drawings must be furnished by the developer prior to acceptance by the Board.