METROPOLITAN UTILITIES DISTRICT OF OMAHA
OMAHA, NEBRASKA

SPECIFICATIONS FOR POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS FOR WATER DISTRIBUTION SERVICE

NOTE: This document has undergone a comprehensive formatting update as of 10/9/2025. Please review all sections for changes.

1.0 General

1.1 Purpose and Scope. This specification defines the minimum requirements for the material, procurement, logistics, and assurances of polyvinyl chloride (PVC) pipe and fittings used within the District's municipal water system. Throughout this specification, 'pipe' and 'fittings' shall refer to PVC pipe and fittings, respectively, unless otherwise specified.

1.2 Applicable Codes and Standards. The requirements of all referenced documents shall apply, except where superseded or supplemented herein. In case of conflict, these specifications shall govern. Unless otherwise specified, all external documents referenced shall be their latest edition.

1.3 Definitions.

1.3.1 *Cast Iron Pipe Size (CIPS):* A standardized outside diameter sizing convention based on the outside diameters of cast iron pipe sizes. Acronyms for CIPS include cast iron outside diameter (CIOD), ductile iron pipe size (DIPS), and ductile iron outside diameter (DIOD).

2.0 Materials

2.1 Conformance.

2.1.1 Pipe and fittings shall conform to AWWA C900 *Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In.*

2.1.2 Pipe, fittings, and gaskets shall be NSF/ANSI 61 certified and shall be listed with Underwriters Laboratories, Inc. (UL).

2.2 Properties.

2.2.1 Pipe and fittings shall be manufactured from PVC compound conforming to cell class 12454 as defined in ASTM D1784.

2.2.2 Pipe compounds shall qualify for a minimum hydrostatic design basis (HDB) of 4,000 psi at 73°F in accordance with the requirements in AWWA M23 *PVC Pipe – Design and Installation.*

2.3 Age. Pipe and fittings shall not be manufactured more than two years prior to the date of delivery to the job site or the District’s storage yard.

3.0 Pipe

3.1 Pressure Classes.

3.1.1 Unless otherwise specified, 4” through 16” pipe shall be DR 14 (Pressure Class 305 psi).

3.1.2 Unless otherwise specified, 18" and larger pipe shall be DR 18 (Pressure Class 235 psi).

3.1.3 Unless otherwise specified, pipe and fittings shall be ductile iron pipe size (DIPS).

3.2 Pipe Marking. Pipe marking shall conform to the requirements listed in AWWA C900. This includes, at a minimum, the following information:

(1) Nominal size and outside diameter base (e.g., 12 DIPS)
(2) PVC
(3) Dimension ratio (e.g., DR18)
(4) Pressure class in psi (e.g., PC235)
(5) Hydrostatic integrity test pressure (e.g., T330)
(6) AWWA designation for this standard (e.g., ANSI/AWWA C900)
(7) Manufacturer's name or trademark and production run record or lot code
(8) "UL" and "NSF 61" seal to verify compliance for potable water service
(9) Production date

3.3 Lubricant. The manufacturer shall furnish a sufficient amount of pipe lubricant for the pipe supplied. Lubricant shall be NSF/ANSI 61 certified.

4.0 Joints and Fittings

4.1 Push-On Joints. Push-on style joints shall be spigot and integral wall section bell with an elastomeric gasket. The gasket shall be factory assembled in the bell and secured in place to prevent displacement. The spigot end shall be factory beveled and referenced marked for proper seating depth. Solvent cemented joints are not acceptable.

4.2 Restrained Joints. Restrained style joints shall consist of a PVC coupling, meeting PVC requirements of this specification, with a non-metallic locking spline. The coupling shall incorporate twin elastomeric sealing gaskets. The gaskets shall be factory assembled in the coupling and secured in place to prevent displacement. Restrained joint pipe shall be Westlake Pipe & Fittings Certa-Lok™ C900/RJ™ PVC pipe or approved equal.

5.0 Handling, Shipping, Delivery, and Storage

5.1 Handling.

5.1.1 All piping and related materials shall be handled with care. Pipe shall be handled by use of ropes, wide belt slings, or other suitable tools and equipment that will not damage the material. Handling shall not be conducted with chains or cables.

5.1.2 Pipe and related materials shall not be dropped or rolled as a means of handling.

5.2 Shipping.

5.2.1 Care shall be taken during shipment to prevent cuts, scratches, and other damage.

5.2.2 Blocking and hold-downs shall be used during transportation to prevent shifting and movement. Chains or cables shall not be used for hold-downs.

5.2.3 During transportation, the leading edge of the pipe shall be covered to prevent foreign material (including exhaust, debris, and insects) from entering the pipe.

5.2.4 Smaller diameter pipe shall not be transported (nested) inside larger diameter pipe. Pipe shall be delivered in single layers with each layer being individually banded. Each layer of pipe shall have spacers with a minimum of 4" nominal thickness between them, including a 4" spacer between the bottom pipe layer and the trailer bed. The spacers shall remain with the pipe upon delivery at no additional cost to the District. Unless otherwise specified, additional bracing around a layer of pipe beyond what is described herein, such as on the sides or top, is prohibited.

5.3 Delivery. The District reserves the following rights in the event of the delivery of non-conforming pipe and/or materials. Neither action shall result in charges to the District.

5.3.1 Refusal of Delivery. The District can refuse any and all loads at the time of delivery if they are found to be out of specification.

5.3.2 Rejection after Inspection. The District can reject any and all loads that are out of specification after it has had a reasonable opportunity to inspect them following delivery.

5.4 Storage.

5.4.1 Pipe and fittings shall be stored in a manner as to prevent damage to the pipe and fittings. Pipe and fittings shall not be stored directly on the ground. Instead, pipe and fittings shall be stored on suitable supports (e.g., pallets, timbers, etc.). The storage area shall be a relatively smooth, level surface free of stones, debris or other materials that could damage the pipe or fittings. Smaller diameter pipe shall not be stored (nested) inside larger diameter pipe.

5.4.2 All materials shall be used on a first-in, first-out (FIFO) basis. The oldest inventory in stock shall be used before newer stock to ensure proper stock rotation and prevent material obsolescence.

6.0 Warranties and Guarantees

6.1 Warranty. The manufacturer shall warrant pipe and/or fittings for a minimum period of five (5) years after delivery to the jobsite or the District's storage yard. Within this period, costs accrued by the District for replacement or repair of pipe and/or fittings found to have defects in material and workmanship and/or not complying with AWWA C900, these specifications, and/or the manufacturer's documents shall be the responsibility of the manufacturer.

6.2 Affidavit of Compliance. If requested by the District, the manufacturer shall provide an affidavit with each pipe and/or fitting shipment that all materials comply with the requirements of AWWA C900 and this specification. The affidavit shall include the manufacturer's production code, including the day, month, and year of production, and all testing results required by the applicable AWWA standard.