



**American Water Works
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ANSI/AWWA C600-17
(Revision of ANSI/AWWA C600-10)

AWWA Standard

Installation of Ductile- Iron Mains and Their Appurtenances

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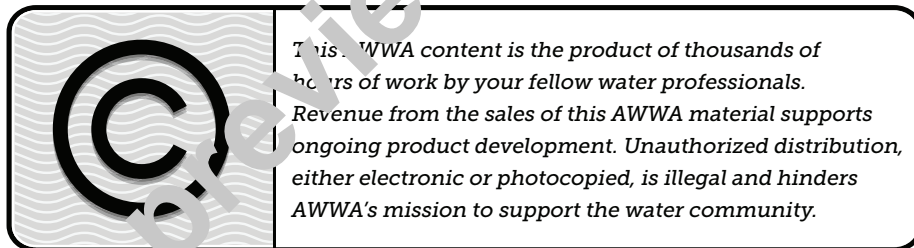
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C600.

I. Introduction.

I.A. *Background.* The provisions of this standard are intended to act as a guide for installing extensions to existing distribution systems and in preparing contract documents for the construction of new systems or extensions. The standard is to be used as a guide for installing bell-and-spigot ductile-iron pipe (that includes push-on joint, mechanical joint, and restrained joint) and does not cover the provision and delivery of material, any other type of pipe, or any other type of joint. The standard includes information to be used as a part of the purchaser's documents.

I.B. *History.* The first edition of this AWWA standard, titled "Standard Specifications for Laying Cast-Iron Pipe" (7D.1-1938), was adopted in April 1938. The standard was published in the February 1938 edition of *Journal AWWA*. The standard was revised in 1949, including a change of title to "Standard Specifications for Installation of Cast-Iron Water Mains" (7D.1-T-1949 and C600-49T). The standard was expanded by adding numerous tables and installation guidelines. The model addendum was also expanded. The revised standard was published in the December 1949 edition of *Journal AWWA*. Section 9b, joining of Mechanical-Joint Pipe, was added in May 1954. Section 9c, Joining of Push-on Joint Pipe, was added in 1964.

In 1975, the AWWA Standards Council formed the present C600 committee to revise ANSI/AWWA C600 to reflect current practices and to add ductile iron as a pipe material. To do this, the committee decided to completely change the character of the standard, removing the model addendum and making the standard consistent with the style of other AWWA standards.

In 1980, an addendum to the standard was approved that revised parts of Sec. 3.4 regarding mechanical-joint assembly.

The revisions made in the 1982 edition included the elimination of references to gray cast-iron pipe as a material for new pipeline installation because it was no longer manufactured for water utility service. Also, metric conversions were included in the 1982 revision; these were direct conversions of customary US inch-pound units, rather than those shown in International Organization for Standardization (ISO) standards.

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY10036.

The revisions made in 1987 included new references, a caveat against prolonged exposure of polyethylene film to sunlight, revised sections on thrust restraint and hydrostatic testing, and a discussion on making service taps on polyethylene-encased iron mains.

Revisions made in the 1993 edition included the addition of 60-in. (1,500 mm) and 64-in. (1,600 mm) pipe, revisions to the hydrant installation section, a new section on subaqueous crossings, and a recommended procedure for tapping through polyethylene encasement.

For the 1999 revision, there were no major changes to the standard. Review responsibility was transferred to the A21 committee, but there were no changes to the title or numeric designation of the standard.

Revisions made in the 2005 edition included restrictions on filling the void between carrier and casing pipe for highway and railroad crossings, the introduction of trenchless applications, and a modification of the hydrostatic testing allowance formula.

Revisions made in the 2010 edition included additional instructions for the selection and installation of polyethylene encasement, including subaqueous installations, and a reference to high-pressure water cleaning in the flushing section.

This edition was approved on Jan. 14, 2017.

I.C. Acceptance. In May 1985, the U.S. Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF*) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.† Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. Specific policies of the state or local agency.

* NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

† Persons outside the United States should contact the appropriate authority having jurisdiction.

2. Two standards developed under the direction of NSF: NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.

3. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,* and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, “Toxicology Review and Evaluation Procedures,” to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of “unregulated contaminants” are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA C600 does not address additives requirements. Users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by all parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Use as Reference.* ANSI/AWWA C600, Installation of Ductile-Iron Mains and Their Appurtenances, can be used as a reference when making extensions to existing distribution or transmission systems or when constructing new distribution or transmission systems using ductile-iron mains with either mechanical or push-on joints. It is not intended for this standard to be used as a purchase document, but it may be used as a reference in purchaser’s documents. It is based on a consensus of the committee on the minimum practice consistent with sound, economical service under normal conditions, and its applicability under any circumstances must be reviewed by a responsible engineer. The standard is not intended to preclude the manufacture, marketing, purchase, or use of any product, process, or procedure.

* Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

II.B. *Chlorine and Chloramine Degradation of Elastomers.* The selection of materials is critical for water service and distribution piping in locations where there is a possibility that elastomers will be in contact with chlorine or chloramines. Documented research has shown that elastomers such as gaskets, seals, valve seats, and encapsulations may be degraded when exposed to chlorine or chloramines. The impact of degradation is a function of the type of elastomeric material, chemical concentration, contact surface area, elastomer cross section, and environmental conditions as well as temperature. Careful selection of and specifications for elastomeric materials and the specifics of their application for each water system component should be considered to provide long-term usefulness and minimum degradation (swelling, loss of elasticity, or softening) of the elastomer specified.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives.* The following items should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C600, Installation of Ductile-Iron Mains and Their Appurtenances, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
3. Details of other federal, state or provincial, and local requirements (Sec. 4.2).

III.B. *Modification to Standard.* Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. Major revisions to this edition of the standard include the following:

1. New Sec. II.B, Chlorine and Chloramine Degradation of Elastomers, was added.
2. Added references to raw water throughout the standard.
3. Provided additional clarification on Pipe Cleanliness section (Sec. 4.3.3.3) for polyethylene pipe.
4. Updated Table 1, Mechanical-Joint Bolt Torque, to include reference through 64-in. (1,600-mm) joint size.
5. Clarified allowable backfill material (Sec. 4.3.5.1.2).
6. Added provisions for air-release and vacuum vents (Sec. 4.3.6.3.2).
7. Added recommendations for tapping (see Sec. 4.8.1) and Table 4, Maximum Recommended Direct Tap Size.

8. Clarified recommendations in Sec. 5.2.1.4, Testing Allowance, and in Sec. 5.2.1.5, Acceptance of Installation.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email at standards@awwa.org.

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AWWA Standard

Installation of Ductile-Iron Mains and Their Appurtenances

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes installation procedures for ductile-iron mains and their appurtenances for potable water, wastewater, reclaimed water, and raw water.

1.1.1 *Conditions not discussed.* Installations that require special attention, techniques, and materials are not discussed. Each of these installations requires special considerations based on many influencing factors that cannot be discussed adequately in a single standard. These installations may require design by a competent engineer and consultation with representatives of the material manufacturing industry. Some of these special installations include the following:

1. Piping through rigid walls.
2. Piping on supports aboveground or belowground.
3. Piping requiring insulation.
4. Treatment plant or pump-station piping.
5. Flanged-joint piping.
6. Ball and socket piping.
7. Grooved and shouldered piping.
8. Restrained joint piping.
9. Industrial piping.