American Water Works Association

The Authoritative Resource for Safe Drinking Water[SM]

ANSI/AWWA C300-04
(Revision of ANSI/AWWA C300-97)

AWWA Standard

Reinforced Concrete Pressure Pipe, Steel-Cylinder Type

ANSI American National Standards Institute

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C300.

I. Introduction.

I.A. *Background.* Reinforced concrete pressure pipe of the cylinder type, first manufactured in 1919, consists of a welded steel cylinder with a steel joint ring welded at each end; a cage or cages of steel reinforcing bars or wire; an encasing wall of concrete; and a preformed gasket of rubber to provide the joint seal between adjacent pipes. The pipe is manufactured in sizes ranging from 30 in. (760 mm) to more than 144 in. (3,660 mm) in diameter and is generally made in 16-ft through 24-ft (4.8-m through 7.5-m) laying lengths.

Reinforced concrete pressure pipe, steel-cylinder type, is designed for the specific combination of internal pressure and external load required for the project in accordance with the procedures outlined in AWWA Manual M9, *Concrete Pressure Pipe*. This pipe is normally limited in working pressures to a maximum of 260 psi (1,790 kPa).

This type of pipe is used for transmission lines in irrigation, industrial, and domestic water supply systems, as well as for distribution feeder mains and other uses (see Sec. III of the foreword).

I.B. *History.* In April 1943, the AWWA Board of Directors authorized the preparation of "Tentative Emergency Specifications for Concrete Pressure Pipe." These tentative specifications, which described several types of pipe in a single document, served a useful purpose during World War II but are now obsolete and have been withdrawn.

The first standard prepared by AWWA Water Works Practice Committee 8320D—Reinforced Concrete Pipe, which was formed in 1946, described the manufacture of reinforced concrete pressure pipe, steel-cylinder type, not prestressed. The standard is now designated ANSI/AWWA C300.

The first edition of this standard was approved as tentative on Dec. 11, 1947. It was revised and approved as a standard on Jan. 13, 1952. The second edition was approved as tentative on July 19, 1957, and made a standard on Jan. 27, 1964. Subsequent editions of ANSI/AWWA C300 were approved by the AWWA Board of Directors on Jan. 28, 1974, May 16, 1982, July 26, 1989, and Feb. 2, 1997. This edition was approved on June 13, 2004.

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Installation, design, and other data pertaining to this type of pipe are covered by AWWA Manual M9, *Concrete Pressure Pipe*.

I.C. *Acceptance.* In May 1985, the US 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 all direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (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. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. 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.
4. 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 jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

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*Persons outside the US should contact the appropriate authority having jurisdiction.

† NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48105.

‡ American National Standards Institute, 25 W. 43rd St., Fourth Floor, New York, NY 10036.

§ Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

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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 C300 does not address additives requirements. Thus, 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. Other special issues are addressed in AWWA Manual M9, *Concrete Pressure Pipe*.

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.* Whether compliance with NSF/ANSI 61 Drinking Water System Components—Health Effects, is required, in addition to the requirements of the Safe Drinking Water Act. Purchasers are advised that, while this standard presents information on materials and procedures of manufacture of the pipe, it does not contain all of the engineering information needed to prepare a complete specification for a particular pipeline installation. A specific installation may require more restrictive provisions than those in the standards and most certainly will require additional design and installation features.

Reference to AWWA Manual M9, *Concrete Pressure Pipe*, should be considered a supplement to the use of this standard, and information in the manual should not be regarded as superseding any portion of this standard. The purpose of AWWA Manual M9, *Concrete Pressure Pipe*, is to provide information concerning some of the various subjects to be considered in, and the minimum standard of practice for, the design and installation of concrete pressure pipelines.

The following items should be covered in the purchaser's specifications:

1. Standard used—that is, ANSI/AWWA C300, Standard for Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, of latest revision.

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2. Manner of storage and delivery, if required of the manufacturer.

3. Working pressure, surge pressure, field-test pressure, external loading conditions, and method of bedding and backfilling (Sec. 4.2.2).

4. If detailed drawings and schedules are to be submitted for review (Sec. 4.3.1).

5. If the manufacturer is not permitted to supply pipe from inventory (Sec. 4.3.1).

6. If a tabulated layout schedule will be required (Sec. 4.3.2).

7. Type of cement required, if there is a preference (Sec. 4.4.1.1).

8. If the manufacturer is not permitted to use pozzolanic materials as a cement replacement (Sec. 4.4.1.1).

9. If aggregate samples will be required (Sec. 4.4.4).

10. If submission of the type and amount of admixtures will be required (Sec. 4.4.6).

11. If submission of manufacturer's design calculations will be required (Sec. 4.5.2).

12. If elliptical reinforcement is acceptable (Sec. 4.5.2 and AWWA Manual M9, *Concrete Pressure Pipe*).

13. If submission of welding procedure specifications will be required (Sec. 4.6.3).

14. Variance in curing, if permitted (Sec. 4.6.7.1).

15. If details of specials and fittings are to be provided by the manufacturer (Sec. 4.7.1).

16. If the purchaser desires to inspect the material, pipe, and fittings at the manufacturer's plant (Sec. 5.1.1).

17. If any material or manufacturing test reports will be required (Sec. 5.1.2).

18. If steel test specimens will be required (Sec. 5.2.5).

19. If testing of welds in reinforcing bars is required (Sec. 5.2.7).

20. If identification marks referenced to layout drawings and schedules are required (Sec. 6.1).

21. If an affidavit of compliance will be required (Sec. 6.3).

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

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IV. Major Revisions. Major changes made to the standard in this revision include the following:

1. The section on unusable cement materials has been updated to be consistent with other AWWA concrete pressure pipe standards (Sec. 4.4.1.4).

2. The interval between specific gravity measurements on fine and coarse aggregate has been changed from six months to annually (Sec. 4.4.2 and Sec. 4.4.3).

3. The minimum yield strength for the steel used for cylinders and fittings and for joint rings has been changed to 36,000 psi (248 MPa) (Sec. 4.4.7 and 4.4.9.1).

4. The requirements for making concrete test cylinders during fabrication have been modified (Sec. 4.6.6.5).

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group (303) 794-7711, FAX (303) 795-7603, or write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or by e-mail at standards@awwa.org.

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