AWWA C206-03
(Revision of ANSI/AWWA C206-97)

American Water Works Association

The Authoritative Resource on Safe Water℠

AWWA Standard

Field Welding of Steel Water Pipe

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AWWA Standard

This document is an American Water Works Association (AWWA) standard. It is not a specification. AWWA standards describe minimum requirements and do not contain all of the engineering and administrative information normally contained in specifications. The AWWA standards usually contain options that must be evaluated by the user of the standard. Until each optional feature is specified by the user, the product or service is not fully defined. AWWA publication of a standard does not constitute endorsement of any product or product type, nor does AWWA test, certify, or approve any product. The use of AWWA standards is entirely voluntary. AWWA standards are intended to represent a consensus of the water supply industry that the product described will provide satisfactory service. When AWWA revises or withdraws this standard, an official notice of action will be placed on the first page of the classified advertising section of *Journal AWWA*. The action becomes effective on the first day of the month following the month of *Journal AWWA* publication of the official notice.

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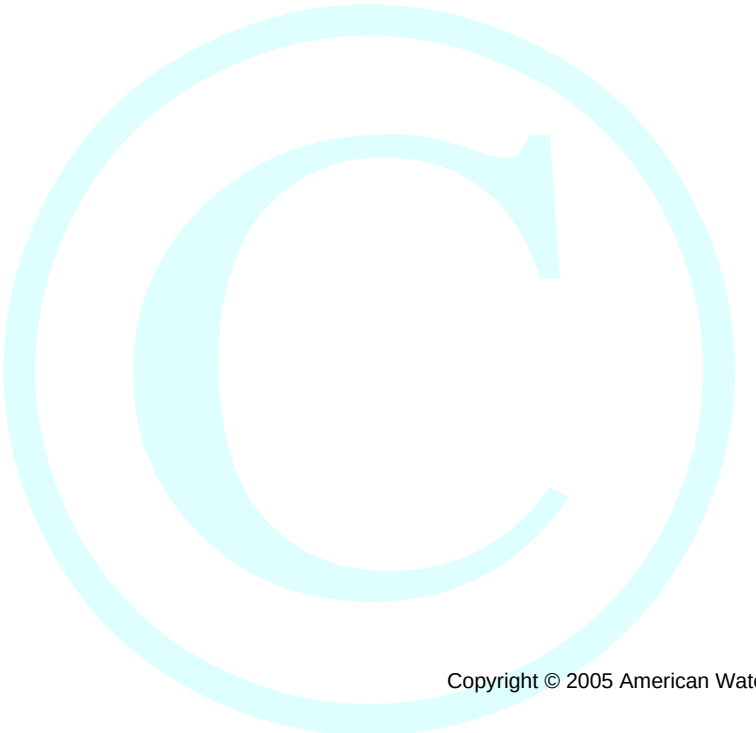

Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

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Foreword

This foreword is for information only and is not a part of AWWA C206.

I. Introduction.

I.A. *Background.* The provisions of this standard describe the requirements for welding steel water pipe joints in water transmission and distribution lines. The purchaser for each project is responsible for determining if any unusual circumstances related to the project require additional provisions that are not included in the standard.

The design of field-welded joints is not discussed in this standard. Useful information on this subject may be found in *Steel Water Pipe—A Guide for Design and Installation,*[*] and in *Useful Information on the Design of Plate Structures.*[†]

After the welded field joint has been completed, if the pipe has been coated or lined, the joint shall be coated and lined with a coating system compatible with that on the body of the pipe, in accordance with the requirements for field repairs stated in the appropriate AWWA coating or lining standard.

For lap-welded pipe with an inside diameter exceeding 27 in. (675 mm) and where the purchaser deems single welding to be acceptable, inside welding should be considered.

Pipe should be supplied with lead holes approximately 3 in. (76 mm) in diameter at approximately 500-ft (150-m) centers to allow passage of welding leads. Lead holes in the pipe will permit shorter welding leads, and thus avoid erratic voltage drops caused by excessively long welding leads. The plug plate to repair the hole shall be the same material as the base material of the pipe, and the holes shall be closed by welding.

I.B. *History.* This standard was first approved as tentative by AWWA in January 1946 and by the American Welding Society (AWS) in October 1945. It was advanced to standard status by AWWA in 1950 and by AWS in 1951. The joint AWWA–AWS activity continued through revisions in 1957 (AWWA C206-57, AWS D7.0-57) and 1962 (AWWA C206-62, AWS D7.0-62a). The joint committee

[*] *Steel Water Pipe—A Guide for Design and Installation,* AWWA Manual M11, AWWA, Denver, Colo. (2004).

[†] *Useful Information on the Design of Plate Structures,* Steel Plate Engineering Data, Vol. 2, American Iron and Steel Institute, 1101 17th St. N.W., Ste. 1300, Washington, DC 20036.

was dissolved in 1971, and the standard was assigned to the AWWA Standards Committee on Steel Pipe. Subsequent editions of the standard were published in 1975, 1982, 1988, 1991 and 1997. This edition was approved by the AWWA Board of Directors on Jan. 19, 2003.

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

*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 West 43rd Street, Fourth Floor, New York, NY 10036.

§Both publications available from National Academy of Sciences, 2101 Constitution Ave. N.W., Washington, DC 20418.

accept or accredit certification organizations within their jurisdiction. 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.

AWWA C206-03 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. This standard has no applicable information for this section.

III. Use of This Standard. AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any user. Accordingly, each user of this standard is responsible for determining that the standard's provisions are suitable for and compatible with that user's intended application.

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

1. Standard used—that is, AWWA C206, Standard for Field Welding of Steel Water Pipe, of latest revision.
2. Provisions for alleviation of thermal stresses (Sec. 4.2.6).
3. Type of joint (Sec. 4.3).
4. Lap joint (Sec. 4.3.2).
5. Butt joint (Sec. 4.3.3).
6. Option regarding backing rings (Sec. 4.3.3.1).
7. Seal weld of butt straps to facilitate an air test (Sec. 4.3.4).
8. Notch tough weld criteria, if required, temperature of test, and test values (Sec. 4.6.9).
9. Weld inspection, if required (Sec. 5.1.3).

10. Testing methods, if required (Sec. 5.2).

11. Nondestructive testing of welded joints if substituted for hydrostatic tests (Sec. 5.2.2).

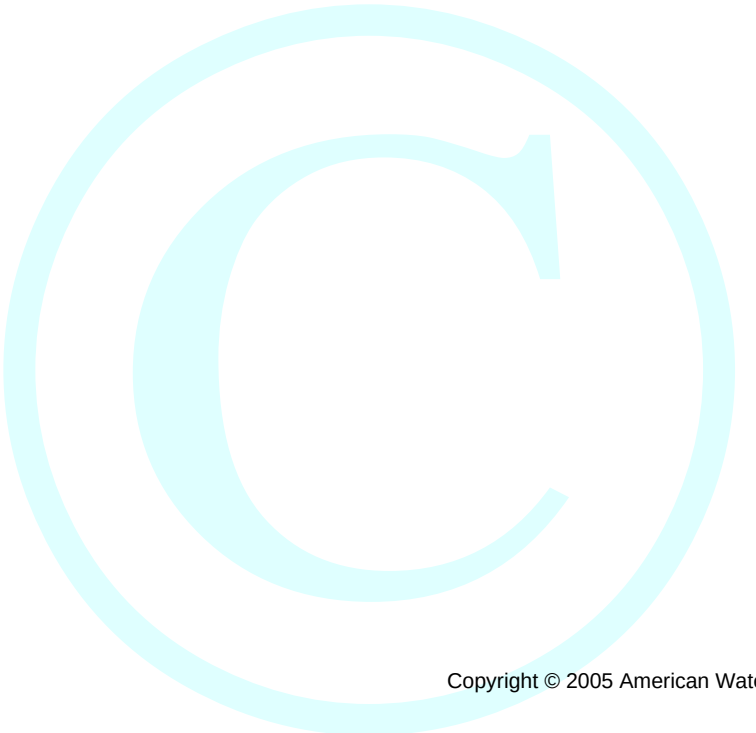
12. Affidavit of compliance (Sec. 6.3).

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

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

1. Reference to ANSI/ASME Sec. V was deleted.
2. Reference to ASTM A283/A283M was deleted.
3. Reference to Steel Plate Engineering Data, Vol. 2, AISC was deleted.
4. Reference to ANSI/ASME Sec. VIII was added.
5. Several definitions in Sec. 3 were revised.
6. Sections 4.2.4, 4.2.6, and 5.2.2.2 were added.
7. Section 4.3.5 was deleted.
8. Reference to ANSI/AWS D1.1, Table 6.1 was added.
9. Testing requirements were changed in Sections 5.2.2.1 and 5.2.2.2.

V. Comments. If you have any comments or questions about this standard, please contact 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 e-mail at standards@awwa.org.



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AWWA C206-03
(Revision of ANSI/AWWA C206-97)

AWWA Standard

Field Welding of Steel Water Pipe

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes manual, semiautomatic, and automatic field welding by the metal arc-welding processes for steel water pipe manufactured in accordance with ANSI/AWWA C200, Standard for Steel Water Pipe—6 In. (150 mm) and Larger. This standard describes field welding of three types of circumferential pipe joints: (1) lap joints; (2) butt joints; and (3) butt-strap joints. Other welding required in field fabrication and installation of specials and appurtenances is also discussed. The design of field-welded joints is not described.

This standard recognizes ANSI/AWS D1.1 as the supporting document that provides more specific information. Welding of gasketed joints may require modification to the parameters of this welding standard.

Sec. 1.2 Purpose

The purpose of this standard is to provide minimum requirements for field welding and inspection of steel water pipe, including requirements and inspection.