

American Water Works Association

ANSI/AWWA C560-00

(Revision of ANSI/AWWA C501-92)



AWWA STANDARD
FOR
CAST-IRON SLIDE GATES



Effective date: Oct. 1, 2001.

First edition approved by AWWA Board of Directors June 26, 1941.

This edition approved June 11, 2000.

Approved by American National Standard Institute, July 25, 2001.

AMERICAN WATER WORKS ASSOCIATION

6666 West Quincy Avenue, Denver, Colorado 80235

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.

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether that person has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review, and users are cautioned to obtain the latest editions. Producers of goods made in conformity with an American National Standard are encouraged to state on their own responsibility in advertising and promotional materials or on tags or labels that the goods are produced in conformity with particular American National Standards.

CAUTION NOTICE: The American National Standards Institute (ANSI) approval date on the front cover of this standard indicates completion of the ANSI approval process. This American National Standard may be revised or withdrawn at any time. ANSI procedures require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, 11 W. 42nd St., New York, NY 10036; (212) 642-4900.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information or retrieval system, except in the form of brief excerpts or quotations for review purposes, without the written permission of the publisher.

Copyright © 2001 by American Water Works Association
Printed in USA

Committee Personnel

The AWWA Standards Committee on Slide Gates, which reviewed and approved this standard, had the following personnel at the time of approval:

Henry H. Benjes Jr., *Chair*

Consumer Members

R.J. Alberts, City of Pasco, Pasco, Wash.	(AWWA)
Ronald Arrington, US Bureau of Reclamation, Denver, Colo.	(BUREC)
K.D. Jones, City of Midland, Midland, Texas	(AWWA)
H.C. Suan, Edmonton Public Works, Edmonton, Ont.	(AWWA)

General Interest Members

C.S. Barger, Bloomington, Minn.	(AWWA)
H.H. Benjes Jr., HDR Inc., Austin, Texas	(AWWA)
Aivars Bergs, R.V. Anderson Associates Ltd., Willowdale, Ont.	(AWWA)
J.H. Cook, Carter & Burgess Inc., Fort Worth, Texas	(AWWA)
C.R. Dugan, Council Liaison, Board of Water and Light, Lansing, Mich.	(AWWA)
P.J. Olson, * Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)

Producer Members

P.E. Brunelle, Rodney Hunt Company, Orange, Mass.	(AWWA)
Carl Ingimundson, Armtec Water Control Products, Guelph, Ont.	(AWWA)
M.J. McCaig, Misco Rocky Mountain, Denver, Colo.	(AWWA)
G.M. Tuttle, Waterman Industries Inc., Exeter, Calif.	(AWWA)

*Liaison, nonvoting

This page intentionally blank.

Contents

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

SEC.	PAGE	SEC.	PAGE
Foreword		4	Requirements
I	Introduction..... vii	4.1	Data to Be Provided by the Supplier.. 4
I.A	Background..... vii	4.2	Data to Be Provided by the Manufacturer 4
I.B	History vii	4.3	Materials 4
I.C	Acceptance vii	4.4	General Design 6
II	Special Issues ix	4.5	Manufacture..... 13
III	Use of This Standard..... ix	4.6	Installation and Field Testing..... 14
III.A	Purchaser Options and Alternatives. ix	5	Verification
III.B	Modification to Standard..... x	5.1	Inspection 15
IV	Major Revisions..... x	5.2	Test Procedures 16
V	Comments x	6	Delivery
Standard		6.1	Marking..... 16
1	General	6.2	Shipment 16
1.1	Scope 1	6.3	Affidavit of Compliance..... 16
1.2	Purpose 1	Appendix	
1.3	Application..... 1	A	Force Required to Actuate Cast-Iron Slide Gate 17
2	References 2		
3	Definitions 3		

This page intentionally blank.

Foreword

This foreword is for information only and is not a part of AWWA C560.

I. Introduction.

I.A. *Background.* A cast-iron slide gate is a cast-iron, vertically sliding valve with metal (usually bronze or stainless steel) seating surfaces and adjustable metal (usually bronze or stainless steel) wedges. A slide gate is used at the end of a pipeline or to cover an opening in a wall. It is not an in-line valve. Slide gates are raised and lowered by means of a stem or rod using a manually operated screw stem hoist, an electrically driven screw stem hoist, or a hydraulic cylinder. Slide gates are mounted to a pipe flange, to a wall casting or thimble embedded in the concrete, or directly to the concrete wall with anchor bolts.

I.B. *History.* The original AWWA standard for slide gates was approved as tentative in June 1941 and was referred to as sluice gates. The tentative standard was revised and approved in 1967 as AWWA Standard C501.

Revisions to AWWA C501 include the following:

<u>Designation</u>	<u>Date of Approval</u>
AWWA C501-41T	June 26, 1941
AWWA C501-67	June 4, 1967
AWWA C501-80	Jan. 28, 1980
AWWA C501-87	June 14, 1987
AWWA C501-92	June 18, 1992

This edition of C560-00 was approved on June 11, 2000.

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, ANSI[†]/NSF[‡] 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 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 ANSI/NSF 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.

Annex A, “Toxicology Review and Evaluation Procedures,” to ANSI/NSF 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 C560 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.

*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

†American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

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

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

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 covered in the purchaser's specifications:

1. Standard used—that is, AWWA C560, Standard for Cast-Iron Slide Gates of latest revision.

2. Number of units required.

3. Size and type of closure—conventional or flush-bottom.

4. Any drawings and material specifications required of the supplier or of the manufacturer (Sec. 4.1 and 4.2).

5. If test records must be viewed (Sec. 4.3.2).

6. Acceptable materials (Sec. 4.3.3).

7. Design head measured from surface of water to centerline of gate, in feet (metres), for the following:

a. Seating head.

b. Unseating head.

8. Operating head measured from surface of water to centerline of gate, in feet (metres).

9. Length and shape of wall thimble or connecting device (Sec. 4.4.10).

10. Rising stem or nonrising stem (Sec. 4.4.7 and 4.4.11).

11. Type of lift mechanism—manual, electric-motor-driven, or hydraulic-cylinder. If electric-motor-driven or hydraulic-cylinder, the purchaser should refer to ANSI/AWWA C540.

12. If an actuator stand is needed (Sec. 4.4.14).

13. If hydraulic or pneumatic actuators are specified, provide cylinder operating media and pressure (refer to ANSI/AWWA C540, Standard for Power-Actuating Devices for Valves and Slide Gates).

14. Omission of stem covers (Sec. 4.4.14.6), if not required.
15. Leakage tests in the shop (Sec. 4.5.2.2) and in the field (Sec. 4.6.8), if required.
16. Inspection by purchaser, if required (Sec. 5.1).
17. Separate shipment of embedded items (Sec. 6.2).
18. Affidavit of compliance (Sec. 6.3), if required.
19. Definition of any special design and construction required for conditions beyond the scope of this standard, such as throttling service or downward acting gates, including intended operation frequency and duration.
20. Frequency of operation and special operating conditions, such as ice formation.
21. An installation-requirement drawing showing clearances, wall and floor thicknesses, details of wall pipe and thimble installation, and location of operator.

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 made to the standard in this revision include the following:

1. Definitions for design and operating heads have been added (Sec. 3).
2. Material requirements for stem couplings and thrust nut and gate-actuator lift nuts have been added (Sec. 4.3.3.6 and 4.3.3.7).
3. Sec. 4.4.11 Stems and Stem Couplings has been revised.
4. Sec. 4.4.14 Manual Lifting Devices has been revised.
5. Sec. 4.4.15 Powered Lifting Devices has been added.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group, (303) 794-7711 ext. 6283, FAX (303) 795-7603, or write to the group at 6666 W. Quincy Ave., Denver, CO 80235.