AWS B5.4:2025
An American National Standard

Specification for the Qualification of Welder Test Facilities

American Welding Society®

AWS B5.4:2025
An American National Standard

Approved by the
American National Standards Institute
July 30, 2024

Specification for the Qualification of Welder Test Facilities

2nd Edition

Revises AWS B5.4:2005

Prepared by the
American Welding Society (AWS) Qualification and Certification Committee

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This specification defines the requirements for the qualification of welder test facilities.

American Welding Society®

ISBN Print: 978-1-64322-334-6
ISBN PDF: 978-1-64322-335-3
© 2025 by American Welding Society
All rights reserved
Printed in the United States of America

Photocopy Rights. No portion of this standard may be reproduced, stored in a retrieval system, or transmitted in any form, including mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner.

Authorization to photocopy items for internal, personal, or educational classroom use only or the internal, personal, or educational classroom use only of specific clients is granted by the American Welding Society provided that the appropriate fee is paid to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, tel: (978) 750-8400; Internet: www.copyright.com.

Statement on the Use of American Welding Society Standards

All standards (codes, specifications, recommended practices, methods, classifications, and guides) of the American Welding Society (AWS) are voluntary consensus standards that have been developed in accordance with the rules of the American National Standards Institute (ANSI). When AWS American National Standards are either incorporated in, or made part of, documents that are included in federal or state laws and regulations, or the regulations of other governmental bodies, their provisions carry the full legal authority of the statute. In such cases, any changes in those AWS standards must be approved by the governmental body having statutory jurisdiction before they can become a part of those laws and regulations. In all cases, these standards carry the full legal authority of the contract or other document that invokes the AWS standards. Where this contractual relationship exists, changes in or deviations from requirements of an AWS standard must be by agreement between the contracting parties.

AWS American National Standards are developed through a consensus standards development process that brings together volunteers representing varied viewpoints and interests to achieve consensus. While AWS administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in its standards.

AWS disclaims liability for any injury to persons or to property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this standard. AWS also makes no guarantee or warranty as to the accuracy or completeness of any information published herein.

In issuing and making this standard available, AWS is neither undertaking to render professional or other services for or on behalf of any person or entity, nor is AWS undertaking to perform any duty owed by any person or entity to someone else. Anyone using these documents should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. It is assumed that the use of this standard and its provisions is entrusted to appropriately qualified and competent personnel.

This standard may be revised, corrected through publication of amendments or errata, or supplemented by publication of addenda. Information on the latest editions of AWS standards including amendments, errata, and addenda is posted on the AWS web page (www.aws.org). Users should ensure that they have the latest edition, amendments, errata, and addenda.

Publication of this standard does not authorize infringement of any patent or trade name. Users of this standard accept any and all liabilities for infringement of any patent or trade name items. AWS disclaims liability for the infringement of any patent or product trade name resulting from the use of this standard.

AWS does not monitor, police, or enforce compliance with this standard, nor does it have the power to do so.

Official interpretations of any of the technical requirements of this standard may only be obtained by sending a request, in writing, to the appropriate technical committee. Such requests should be addressed to the American Welding Society, Attention: Director, Certification Department, 8669 NW 36 St, # 130, Miami, FL 33166 (see Annex D). With regard to technical inquiries made concerning AWS standards, oral opinions on AWS standards may be rendered. These opinions are offered solely as a convenience to users of this standard, and they do not constitute professional advice. Such opinions represent only the personal opinions of the particular individuals giving them. These individuals do not speak on behalf of AWS, nor do these oral opinions constitute official or unofficial opinions or interpretations of AWS. In addition, oral opinions are informal and should not be used as a substitute for an official interpretation.

This standard is subject to revision at any time by the AWS Qualification and Certification Committee. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn. Comments (recommendations, additions, or deletions) and any pertinent data that may be of use in improving this standard are requested and should be addressed to AWS Headquarters. Such comments will receive careful consideration by the AWS Qualification and Certification Committee and the author of the comments will be informed of the Committee's response to the comments. Guests are invited to attend all meetings of the Qualification and Certification Committee to express their comments verbally. Procedures for appeal of an adverse decision concerning all such comments are provided in the Rules of Operation of the Qualification and Certification Committee. A copy of these Rules can be obtained from the American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

This page is intentionally blank.

Personnel

Qualification and Certification Committee

R. E. Dines, Chair	*United Technical, Incorporated*
H. B. Craft, Vice Chair	*Consultant*
J. L. Pariseau, 2nd Vice Chair	*National Inspection Academy*
D. Smith, Secretary	*American Welding Society*
E. A. Abbott	*Ironworkers International Union (Retired)*
T. J. Baber	*Santa Clarita Community College District*
S. Barrett	*Haberle Steel, Incorporated/Clover Field Services LLC*
M. C. Cook	*ACME Constructors*
J. S. Corder	*Ironworkers International Union*
I. A. Cross	*Valiant TMS*
F. M. Dragolich	*Consultant*
C. H. Eskridge	*Becht Engineering*
M. T. Harris	*International Training Institute*
G. G. Hlifka	*Consultant*
R. L. Holdren	*ARC Specialties, Incorporated*
J. I. Johnson	*North Dakota State College of Science*
V. Kuruvilla	*Lexicon, Incorporated*
T. E. Logan	*Atema, Incorporated*
M. J. Mauris	*DOT Quality Services*
A. L. Petroski	*Atema, Incorporated*
T. H. Sumerix	*Muskegon Community College*
R. J. Tessier	*Consultant*

AWS Subcommittee on Welding Test Facilities and Welders

M. T. Harris, Chair	*International Training Institute*
E. A. Abbott, Vice Chair	*Ironworkers International Union (Retired)*
B. L. Boddiger, Secretary	*American Welding Society*
M. C. Cook	*ACME Constructors*
R. E. Dines	*United Technical, Incorporated*
J. T. Graham	*Constellation Energy*
R. K. Wiswesser	*Welder Training and Testing Institute, Incorporated*

This page is intentionally blank.

Foreword

This foreword is not part of this standard but is included for informational purposes only.

This specification establishes the requirements for a facility to conduct performance qualification testing of welders. These requirements include personnel, organization, procedures, equipment, capability, and commitment to conducting such testing. This specification also describes the activities and responsibilities of the test facility to achieve this purpose.

NOTE: It is the test facility representative's responsibility to be sure their inspectors meet any state or local requirements for qualifications and reporting organization.

The first edition of this specification replaced in part AWS standard QC4–89, *Standard for the Accreditation of Test Facilities for the AWS Certified Welder Program*. This standard defined the requirements for the qualification of the facility but did not address requirements for the accreditation of the facility.

This is the second edition of this specification. The term "quality" replaced "quality control" throughout the document. Underlined text in the clauses, subclauses, tables, figures, or forms indicates a change from the 2005 edition. A vertical line in the margin of a table or figure also indicates a change from the 2005 edition. The following is a summary of the most significant changes contained in B5.4:2025:

Summary of Changes

Clause	Modification
Clause 1	Editorial changes have been made to the Scope.
Clause 3	The definition of "essential variable" has been updated.
Clause 5	A new subclause 5.3(4) was added to address offsite testing. In 5.6 and 5.6.3, "calibration" was replaced with "verification" and verification parameters were included.

Comments and suggestions for the improvement of this standard are welcomed. They should be sent to the Secretary, AWS Qualification and Certification Committee, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

This page is intentionally blank.

Table of Contents

Page No.

This page is intentionally blank.

Specification for the Qualification of Welder Test Facilities

1. General Requirements

1.1 Scope. This specification defines minimum requirements for welder qualification test facilities to consistently conduct welder qualification testing to meet the requirements of codes and other standards.

This specification may be used by all welder qualification test facilities. Test facilities may be part of an independent laboratory, manufacturing plant, educational institution, or other party. This document becomes mandatory when invoked by a referencing document such as a specification or contract document. This specification does not establish welder certification requirements.

1.2 Units of Measurement. This standard does not require units of measure. Therefore, no equivalents or conversions are contained except when they are cited in examples.

1.3 Safety. Safety and health issues and concerns are beyond the scope of this standard and therefore are not addressed herein.

Safety and health information is available from the following sources:

American Welding Society:

(1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

(2) AWS Safety and Health Fact Sheets

(3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

(1) Safety Data Sheets supplied by materials manufacturers

(2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

1.4 Procedure. This specification establishes procedures that allow welder qualification test facilities to consistently perform welder qualification testing.

1.5 Terminology Guidelines. As used in this specification, the word ***shall*** denotes a mandatory provision; the word ***should*** denotes a non-mandatory provision but is recommended as good practice; and the word ***may*** denotes an optional provision. Additionally, ***welder*** shall be construed to include welder, welding operator, tack welder, brazer, and brazing operator; ***welding*** shall be construed to include both welding and brazing.

2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments or revisions of the publications may not apply since the relevant requirements may have changed.

American Welding Society (AWS) standards:

AWS QC1, *Specification for AWS Certification of Welding Inspectors*

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions*

AWS A5.01M/A5.01 (ISO 14344:2010 MOD), *Welding and Brazing Consumables — Procurement of Filler Metals and Fluxes*

AWS B4.0, *Standard Methods for Mechanical Testing of Welds*

AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*

ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

American Society for Nondestructive Testing (ASNT) standard:

ASNT SNT-TC-1A, *Recommended Practice: Personnel Qualification and Certification in Nondestructive Testing*

3. Terms and Definitions

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions*, provides the basis for terms and definitions used herein. However, the following terms and definitions are included below to accommodate usage specific to this document.

acceptance criteria. Specified limits placed on characteristics of an item, process, or service as defined in codes, other standards, or other contract documents.

accreditation body. Any organization qualified to certify test facilities as acceptable suppliers of services including but not limited to AWS Qualification and Certification Committee.

assessment. A systematic review and verification of a facility and operations in accordance with its Quality Manual.

assessor. A third party who is qualified for the task of performing assessments. (See Annex B). In the case of self-assessing test facilities, the agent designated and trained by the test facility.

AWS. American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

certification. The act of determining, verifying, and attesting in writing to the qualification of personnel in accordance with specified requirements.

Certification Department. The Certification Department of the American Welding Society, Miami, Florida.

essential variable. A welding process parameter deemed critical to creation of a weld meeting quality and mechanical property requirements of the applicable standard.

facility representative. Individual(s) designated by the test facility to make legally binding commitments and statements on behalf of the test facility.

inspection. An examination or measurement to verify whether an item or activity conforms to specified requirements.

inspector. A person who performs inspection activities to verify conformance to specified requirements.

performance test description. A document that defines the dimensions, positions, and Welding Procedure Specifications (WPSs) to be used to make a test weldment.

qualification. Conformance to a prescribed set of parameters.

Qualification and Certification Committee. The Qualification and Certification Committee of the American Welding Society.

qualified test facility. A test facility that meets or exceeds the requirements of this specification.

test facility. A facility that conducts welder performance qualification tests.

test supervisor. A current AWS Certified Welding Inspector (CWI) designated by the test facility.

test weldment. Workpieces joined by welding to qualify welding procedures, welders, or welding operators.

verification. The act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting the conformance of items, processes, services, and documents to specified requirements.

weldment. An assembly whose component parts are joined by welding.

4. Levels of Qualification

There is one level of qualification for test facilities. Once the test facility has met the requirements of this standard, the test facility shall be known as a qualified test facility.

5. Test Facility Requirements

5.1 General Requirements. The test facility shall have the following:

(1) An organizational structure, including a quality program that enables it to maintain the capability to perform satisfactorily the technical functions for which qualification is sought;

(2) The ability to demonstrate, upon request from assessors, that it is capable of administering and evaluating the required welder qualification tests;

(3) A written company policy stating that staff members shall have the freedom and authority to identify problems to a supervisor;

(4) An organization in which each staff member is aware of both the extent and limitation of areas of responsibility and a clear designation of who is the "facility representative";

(5) A facility representative who has the overall responsibility for the technical operation of the test facility;

(6) Adequate security rules and measures for the protection of proprietary and confidential information; and

(7) Personnel having responsibility for quality verification shall be designated by the test facility management. Personnel shall have access to top management.

5.2 Quality Program. The test facility shall operate under a Quality Program appropriate to the type, range, and volume of work performed. This program shall be documented in a Quality Manual to be used by the test facility staff to maintain quality. The manual shall be maintained current at all times and shall be available for review by both internal and external assessors.

5.2.1 Manual. The Quality Manual shall contain information regarding the following:

(1) Company Quality Policy;

(2) The organizational structure of the personnel of the test facility (organizational charts);

(3) The operational and functional duties of individuals performing quality functions and services pertaining to quality, so that those concerned will know the extent and limits of their responsibilities (job descriptions);

(4) General Quality Procedures (These procedures are to include but not be limited to material traceability, employee training, employee qualifications, purchasing, order review, etc.);

(5) Quality Procedures specific for each inspection or test including WPSs, as appropriate;

(6) Procedures for equipment maintenance and calibration;

(7) Arrangements for timely feedback and corrective action whenever nonconformances are detected;

(8) Procedures for assessing customer satisfaction;

(9) Provisions for any subcontracted activities (machine shop, nondestructive examination (NDE) tests) to comply with the quality requirements of the test facility and the methods used by the test facility to verify the compliance;

(10) Procedures for preparing and reviewing required records;

(11) Assignment of a schedule and an individual responsible for review of the Quality Manual;

(12) A record retention policy;

(13) Procedure for positive identification of a test candidate; and

(14) Provisions governing assessors (self-assessed test facilities only).

5.2.2 Management Review. The Quality Program shall be systematically reviewed by, or under the supervision of, test facility management to ensure the continued effectiveness of the organization, personnel, and procedures. The review shall be performed at a minimum frequency of once a year and shall be documented with the results of the corrective actions initiated by the review and the outcome of previous corrective actions.

5.3 Personnel. Test facility personnel shall have the necessary education, training, technical knowledge, and experience for their functions. The minimum personnel requirements for the test facility shall be:

(1) The inspection and testing services of the test facility shall be under the direction of a person charged with technical managerial responsibility. This person shall be a full-time employee of the facility having at least five documented years of technical experience in inspection and testing of welds and/or welders.

(2) Welder qualification shall be administered by a test supervisor who holds current credentials as a Certified Welding Inspector (CWI) or Senior Certified Welding Inspector (SCWI) under the AWS Specification QC1. ***Caution:*** *Some jurisdictions may require inspection personnel to be supervised by a professional engineer.*

(3) Nondestructive examination (NDE) personnel shall be qualified in accordance with and certified to AWS B5.15, *Specification for the Qualification of Radiographic Interpreters,* ASNT Recommended Practice SNT-TC-1A, or equivalent. Only individuals having an NDE Level II or higher certification may perform NDE examination. Documents shall identify the Level II or III individual involved.

(4) When testing is performed offsite, all provisions of this specification apply and the testing shall be under the control of the test facility.

5.3.1 Job Description. There shall be a job description for each technical position specifying the required education, training, technical knowledge, and experience.

5.3.2 Staffing. The proportion of supervisory to non-supervisory staff shall be such as to ensure adequate supervision. Suitable staff, designated as alternates, shall be available to handle the work of the senior technical and quality system managers in their absence. Information on the relevant qualification, training, and experience of the technical staff shall be maintained by the test facility.

5.4 Welding Equipment

5.4.1 Welding equipment to be used for the qualification of welders shall be located at the test facility or controlled under the provisions of this specification. The equipment shall be designed for the process to be used and shall be capable of providing the full range of variables specified in the WPSs.

5.4.2 Equipment shall be maintained in such a manner as to provide consistent electrical or mechanical characteristics required for successful welding of the test assemblies. Machine controls to change or adjust parameters shall be fully operational.

5.4.3 Upon agreement between the welder and the test facility, the welder may provide personal torches, tools, or other related welding equipment.

5.5 Measuring and Testing Equipment. The test facility shall have access to all necessary equipment required for the correct performance of the welding test, examinations, and measurements. All mechanical test equipment such as guided-bend test fixtures, nick break testing fixtures, etc., shall meet the dimensions and requirements of the governing standard. In the absence of such a standard, AWS B4.0, *Standard Methods for Mechanical Testing of Welds*, should be used.

5.5.1 Maintenance. All equipment should be properly maintained. Maintenance procedures and documentation for those items of equipment that require periodic maintenance shall be available.

5.5.2 Defective Equipment. Any equipment which has been subject to overloading, mishandling, or which gives suspect results, shall be taken out of service and clearly labeled. The equipment shall not be used for its intended function until it has been repaired and then shown by test or calibration to be performing its function satisfactorily.

5.5.3 Records. Records shall be maintained on each major item of equipment per the requirements of the facility quality manual. Each record shall include:

(1) The name of the item of equipment;

(2) The manufacturer's name and type identification, and serial number;

(3) Date of last calibration and calibration records, where appropriate;

(4) Current location, where appropriate;

(5) Details of maintenance;

(6) Manufacturer's operating manuals; and

(7) For measuring equipment, the record shall include the maximum period of time permitted between calibrations.

5.5.4 Personnel. Personnel operating equipment in the test facility shall be trained in the use and safe operation of the measuring and testing equipment.

5.6 Verification of Equipment. Welding power sources used for welder/operator performance tests shall have the electrical output verified to ensure that the equipment's actual output is within ±7% of the voltage shown and within ±10% of the amperage shown on the equipment voltage and amperage gauges. This shall be done before being put into service, after repair, and thereafter according to an established program.

5.6.1 Program. The overall program for the verification of equipment shall be designed and operated to ensure that measurements made in the test facility are traceable (where the concept is applicable) to national standards of measurement. Where the concept of traceability to national standards of measurement is not applicable, the test facility shall provide satisfactory evidence of the accuracy of test results.

5.6.2 In-Service. Where relevant, in-service welding and testing equipment shall be subjected to checks between regular recalibrations.

5.6.3 Verification Tag. A label or tag indicating the date of the last calibration of the volt-amp meter and the due date of the next calibration should be attached to the volt-amp meter that is used for equipment verification.

5.7 Metals and Materials. All materials used for qualification testing shall be obtained and maintained in accordance with the Quality Manual. Material Test Certificates and/or certificates of conformity shall be obtained and be retrievable for all materials used in testing. Base metal and test specimens shall be permanently marked with identification that will allow traceability to the source as described in the test facility Quality Manual. Filler metals utilized for testing shall be traceable to the source until consumed.

5.7.1 Filler Material. Welding filler materials provided by the test facility shall have a manufacturer's Certificate of Compliance or shall be certified in accordance with AWS A5.01M/A5.01, Schedule F. Welding materials shall be stored in accordance with the manufacturer's recommendations.

5.7.2 The test weldment shall be prepared in accordance with the requirements of the test methods and procedures of 5.8. The location and orientation of mechanical test specimens or cross sections shall be taken and tested in accordance with the requirements of the applicable code or other qualification specification.

5.8 Test Methods and Procedures. It is the test facility's responsibility to prepare and/or maintain adequate records of the performance test description used and supporting Standard Welding Procedure Specifications (SWPS) or WPS/Procedure Qualification Record (PQR). The WPS(s) utilized at the test facility are to be qualified or prequalified to a specific standard.

5.8.1 The test facility shall have adequately documented instructions on the use and operation of all facility weld test equipment, on the handling and preparation of test items, and on standard testing techniques.

5.8.2 All instructions, standards, manuals, and reference data relevant to the work of the test facility shall be maintained, up to date, and readily available to the staff.

5.8.3 The test facility shall use test methods and procedures required by the applicable qualification code or other standard. All calculations and data transfers shall be subject to appropriate review.

5.9 Environment. The environment in which the tests are undertaken shall not be such as to invalidate the test results or adversely affect the required accuracy of the measurement. The testing premises shall have adequate ventilation and shall be protected, as required, from conditions such as excessive dust, moisture, steam, vibration, electromagnetic disturbance, and interference, and shall be maintained accordingly (see ANSI Z49.1, *Safety in Welding, Cutting and Allied Processes*). There shall be sufficient space in each test booth to allow the welder sufficient access to perform the test comfortably and safely. Adequate measures shall be taken to ensure good housekeeping in the test facility.

5.10 Handling of Items to be Tested. A system for identifying samples or items to be tested shall be applied. The system may be either through documents or through marking. Any relevant instructions provided with the item shall be observed. There shall be clear rules for the receipt, retention, and disposal of test weldments and associated specimens.

5.11 Records and Test Reports

5.11.1 Record System. The test facility shall maintain a record system to suit its particular circumstances and comply with any existing regulations. It shall retain on record all original observations, calculations and derived data, calibration records, and the final test reports in accordance with the quality manual [5.2.1(12)]. The records for each qualification test performed must contain sufficient information to permit satisfactory repetition of the test.

5.11.2 Security. All records and test reports shall be held secure and in confidence to the client and to the assessor, unless otherwise required by law. Computer records shall be safeguarded sufficiently to prevent unauthorized access and loss.

5.11.3 Forms. Qualification records shall contain all information required by the qualification code or other standard. As a minimum, the essential variables of the welder qualification test shall be listed on the qualification test record. This specification does *not* mandate a particular format for report forms, however, all records shall be legible and accurate. It should be noted that many standards have sample qualification record forms contained in the body of the standard.

5.12 Welder Training. Test facilities may perform welder training.

6. Assessments

Externally or self-assessed test facilities should be assessed annually to verify personnel testing welders comply with this specification. The assessment of self-assessed test facilities should be performed by test facility personnel who are independent of the personnel testing welders (see Annex B).

Annex A (Informative)

Informative References

This annex is not part of this standard but is included for informational purposes only.

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions*, American Welding Society.

AWS A5.01M/A5.01, *Welding and Brazing Consumables—Procurement of Filler Metals and Fluxes*, American Welding Society.

AWS A5.32M/A5.32, *Welding Consumables—Gases and Gas Mixtures for Fusion Welding and Allied Processes*, American Welding Society.

AWS B1.11M/B1.11, *Guide for the Visual Examination of Welds*, American Welding Society.

AWS B2.1/B2.1M, *Specification for Welding Procedure and Performance Qualification*, American Welding Society.

AWS B2.2/B2.2M, *Standard for Brazing Procedure and Performance Qualification*, American Welding Society.

AWS B4.0, *Standard Methods for Mechanical Testing of Welds*, American Welding Society.

AWS B5.1, *Specification for the Qualification of Welding Inspectors*, American Welding Society.

AWS B5.4, *Specification for the Qualification of Welder Test Facilities*, American Welding Society.

AWS B5.5, *Specification for the Qualification of Welding Educators*, American Welding Society.

AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*, American Welding Society.

AWS B5.17, *Specification for the Qualification of Welding Fabricators*, American Welding Society.

AWS D1.1/D1.1M, *Structural Welding Code—Steel*, American Welding Society.

AWS D1.2/D1.2M, *Structural Welding Code—Aluminum*, American Welding Society.

AWS D1.3/D1.3M, *Structural Welding Code—Sheet Steel*, American Welding Society.

AWS D1.4/D1.4M, *Structural Welding Code—Reinforcing Steel*, American Welding Society.

AWS D1.5M/D1.5, *Bridge Welding Code*, American Welding Society.

AWS D1.6/D1.6M, *Structural Welding Code—Stainless Steel*, American Welding Society.

AWS D1.8/D1.8M, *Structural Welding Code—Seismic Supplement*, American Welding Society.

AWS D1.9/D1.9M, *Structural Welding Code—Titanium*, American Welding Society.

AWS D9.1/D9.1M, *Sheet Metal Welding Code*, American Welding Society.

AWS D14.1/D14.1M, *Specification for Welding of Industrial and Mill Crane and Other Material Handling Equipment*, American Welding Society.

AWS D14.2, *Specification for Metal Cutting Machine Tool Weldments*, American Welding Society.

AWS D14.3-D14.M, *Specification for Welding Earthmoving, Construction, Agricultural, and Ground-Based Material Handling Equipment*, American Welding Society.

AWS D14.4-D14.4M, *Specification for the Design of Welded Joints in Machinery and Equipment*, American Welding Society.

AWS D14.5/D14.5M, *Specification for Welding of Presses and Press Components*, American Welding Society.

AWS D14.6/D14.6M, *Specification for Welding of Rotating Elements of Equipment*, American Welding Society.

AWS D15.1/D15.1M, *Railroad Welding Specification for Cars and Locomotives*, American Welding Society.

AWS QC1, *Specification for AWS Certification of Welding Inspectors*, American Welding Society.

AWS QC4, *Standard for Accreditation of Test Facilities for AWS Certified Welder Program*, American Welding Society.

AWS QC5, *Standard for Certification of Welding Educators*, American Welding Society.

AWS QC7, *Standard for AWS Certified Welders*, American Welding Society.

API-6A, *Specification for Wellhead and Tree Equipment*, American Petroleum Institute.

API-16A, *Specification for Drill Through Equipment*, American Petroleum Institute.

API 1104, *Welding Pipelines and Related Facilities*, American Petroleum Institute.

ASME B31.1, *Power Piping*, American Society of Mechanical Engineers.

ASME B31.2, *Fuel Gas Piping*, American Society of Mechanical Engineers.

ASME B31.3, *Process Piping*, American Society of Mechanical Engineers.

ASME B31.4, *Pipeline Transportation Systems for Liquids and Slurries*, American Society of Mechanical Engineers.

ASME B31.5, *Refrigeration Piping and Heat Transfer Components*, American Society of Mechanical Engineers.

ASME B31.8, *Gas Transmission and Distribution Piping Systems*, American Society of Mechanical Engineers.

ASME B31.9, *Building Services Piping*, American Society of Mechanical Engineers.

ASME BPVC Section I, *Rules for Construction of Power Boilers*, American Society of Mechanical Engineers.

ASME BPVC Section II, *Materials*, American Society of Mechanical Engineers.

ASME BPVC Section III, *Rules for Construction of Nuclear Facility Components*, American Society of Mechanical Engineers.

ASME BPVC Section IV, *Rules for Construction of Heating Boilers*, American Society of Mechanical Engineers.

ASME BPVC Section V, *Nondestructive Examination*, American Society of Mechanical Engineers.

ASME BPVC Section VIII, *Rules for Construction of Pressure Vessels Division 1*, American Society of Mechanical Engineers.

ASME BPVC Section IX, *Welding, Brazing, and Fusing Qualifications*, American Society of Mechanical Engineers.

ASME BPVC Section XI, *Rules for Inservice Inspection of Nuclear Reactor Facility Components*, *Division 1, Rules for Inspection and Testing of Components of Light-Water-Cooled Plants*, American Society of Mechanical Engineers.

ASME Y14.100, *Engineering Drawing Practices*, American Society of Mechanical Engineers.

ASME Y14.24, *Types and Applications of Engineering Drawings*, American Society of Mechanical Engineers.

ASME Y14.34, *Associated Lists*, American Society of Mechanical Engineers.

ASME Y14.35, *Revision of Engineering Drawings and Associated Documents*, American Society of Mechanical Engineers.

ASME Y14.41, *Digital Product Definition Data Practices*, American Society of Mechanical Engineers.

ASNT SNT-TC-1A, *Personnel Qualification and Certification in Nondestructive Testing*, American Society for Nondestructive Testing.

ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*, ASTM International.

ASTM A488/A488M, *Standard Practice for Steel Castings, Welding, Qualifications of Procedures and Personnel*, ASTM International.

ASTM E94/E94M, *Standard Guide for Radiographic Examination Using Industrial Radiographic Film*, ASTM International.

ASTM E164, *Standard Practice for Contact Ultrasonic Testing of Weldments*, ASTM International.

ASTM E165/E165M, *Standard Practice for Liquid Penetrant Testing for General Industry*, ASTM International.

ASTM E709, *Standard Guide for Magnetic Particle Testing*, ASTM International.

ASTM E1032, *Standard Practice for Radiographic Examination of Weldments Using Industrial X-Ray Film*, ASTM International.

ASTM E1444/E1444M, *Standard Practice for Magnetic Particle Testing for Aerospace*, ASTM International.

Mil-Std 2035A, *Department of Defense Test Method: Nondestructive Testing Acceptance Criteria*, Military and Government Specs & Standards.

Mil-Std 1688A, *Military Standard: Fabrication, Welding, and Inspection of HY-80/100 Submarine Applications*, Military and Government Specs & Standards.

NAS 410, *Certification and Qualification of Nondestructive Test Personnel*, Aerospace Industries Association.

NAVSEA S9074-AQ-GIB-010/248, *Requirements for Welding and Brazing Procedure and Performance Qualification*, Naval Sea Systems Command.

NAVSEA T9074-AD-GIB-010/1688, *Requirements for Fabrication, Welding, and Inspection of Submarine Structure*, Naval Sea Systems Command.

NAVSEA T9074-AS-GIB-010/271, *Requirements for Nondestructive Testing Methods*, Naval Sea Systems Command.

SAE AMS-STD 1595, *Qualification of Aircraft, Missile, and Aerospace Fusion Welders*, SAE International.

NOTE: The test facility should have access to the latest edition of these recommended references.

This page is intentionally blank.

Annex B (Informative)
Qualification of Assessors

This annex is not part of this standard but is included for informational purposes only.

B1. Scope

B1.1 This annex describes the methods for qualification of personnel performing assessing activities and applies to the assessment of test facilities as described in Annex C.

B1.2 Personnel selected by the employer to perform assessment activities should have experience or training commensurate with the scope, complexity, or special nature of the activities to be performed.

B2. Reference

AWS QC1, *Specification for AWS Certification of Welding Inspectors*, American Welding Society.

B3. Levels of Certification

There should be two levels of assessors as follows:

B3.1 Lead Assessor. A lead assessor should be capable of organizing and directing assessments, reporting assessment findings, and evaluating corrective action to accepted quality standards.

B3.2 Assessor. An individual who participates in an assessment, such as a technical specialist, management representative, and assessors-in-training.

B4. Activities

The detailed activities, that a lead assessor should be capable of performing and/or demonstrating, include:

(1) Knowledge and understanding of quality programs, codes, other standards, regulations, etc. as applicable to this specification;

(2) Assessment techniques such as examining, questioning, evaluating, and reporting;

(3) Identifying and following up on corrective action and closure of assessment findings; and

(4) Assessment planning in any of the quality areas of this specification.

B5. Education and Experience

B5.1 As a minimum, any assessor candidate should be a high school graduate (or military or state-approved equivalent).

B5.2 A lead assessor should meet the following education and experience criteria:

(1) Graduate of a four-year accredited engineering or science college or university with a degree in Engineering or Science plus one year of experience in a comparable assignment; or

(2) Completion with a passing grade of at least two years of engineering or science study at an accredited university, college, or technical school plus two years of applicable experience in a comparable assignment; or

(3) High school graduation, or its equivalent, and four years applicable experience in a comparable assignment.

B5.3 Personnel performing assessments should be either a SCWI or a CWI per AWS QC1, or a person with equivalent training and experience.

B5.4 Personnel who perform assessments should receive on-the-job indoctrination in the technical objectives and requirements of the applicable codes, standards, and quality program elements of this specification.

B5.5 Training

B5.5.1 The need for additional training should be determined by the employer, and training completed as required to qualify personnel for the assessment activity to be performed. On-the-job training should be conducted as required with emphasis on obtaining the experience needed through actualperformance of the activity.

B5.5.2 A prospective lead assessor and assessor should have training to the extent necessary to assure competence in assessment skills identified above, this specification, and on-the-job training.

B6. Examination Requirements

B6.1 Determination of Initial Capability. Assessment candidates should have prior experience in assessment, which may include evidence of prior certification as an assessor or lead assessor including education, experience, training, and either test results or practical demonstration of proficiency should be provided by the applicant.

B6.2 A prospective lead assessor should have participated in quality assessments of educational, manufacturing, or field organization within a period of time not to exceed one (1) year.

B6.3 Job performance should be evaluated by the employer at intervals not to exceed three years. Reevaluation should be by evidence of continued satisfactory performance. If during this evaluation it is determined the capabilities are not in accordance with job requirements, the person should be removed from the activity until the required capability has been demonstrated. Any person who has not performed the activity for a period of one (1) year should also be reevaluated as above.

B7. Records

The following records are to be retained by the employer as applicable:

(1) Examination results

(2) Experience summaries

(3) Previous certification (when applicable)

(4) Education and Experience Verification Record

(5) Diplomas and other training certificates

(6) Employer’s job performance evaluation

Annex C (Informative)
Assessment Requirements

This annex is not part of this standard but is included for informational purposes only.

C1. Scope of Assessments

Test facilities qualified and operating in accordance with this specification should be assessed by an assessor qualified in accordance with Annex B. A typical assessment generally involves the following:

(1) An entry briefing with test facility management,

(2) Review of quality program manual,

(3) Interviews with the staff,

(4) Observation of selected tests,

(5) Examination of equipment and calibration records, and

(6) An exit briefing of assessor findings.

C2. Methods of Assessment

There are two methods for assessing these facilities.

C2.1 Qualified Test Facility—Externally Assessed. The test facility should be assessed by a qualified Accreditation Body in accordance with Clause 5, Test Facility Requirements, and Clause 6, Assessment Requirements.

C2.2 Qualified Test Facility—Self-Assessed. The test facility should be assessed by employees of the test facility who meet the requirements of Annex B, and the assessment should be performed in accordance with Clause 5, Test Facility Requirements, and Clause 6, Assessment Requirements.

C3. Checklist

Assessors should complete an assessment checklist while performing the assessment. Checklists are intended to ensure that assessments are conducted uniformly, accurately, and consistently among facilities.

C4. Objectives

The objective of an assessment is to establish that the test facility complies with the criteria contained within this specification.

C5. Assessment Report

At the conclusion of an assessment, a written report should be provided to the test facility and the accreditation body (if applicable).

C6. Frequency of Assessment

Externally or self-assessed test facilities should be assessed annually to verify personnel testing welders are in compliance with this specification. The assessment of self-assessed test facilities should be performed by test facility personnel who are independent of the personnel testing welders.

Annex D (Informative)

Requesting an Official Interpretation on an AWS Standard

This annex is not part of this standard but is included for informational purposes only.

D1. Introduction

The following procedures are here to assist standard users in submitting successful requests for official interpretations to AWS standards. Requests from the general public submitted to AWS staff or committee members that do not follow these rules may be returned to the sender unanswered. AWS reserves the right to decline answering specific requests; if AWS declines a request, AWS will provide the reason to the individual why the request was declined.

D2. Limitations

The activities of AWS technical committees regarding interpretations are limited strictly to the interpretation of provisions of standards prepared by the committees. Neither AWS staff nor the committees are in a position to offer interpretive or consulting services on (1) specific engineering problems, (2) requirements of standards applied to fabrications outside the scope of the document, or (3) points not specifically covered by the standard. In such cases, the inquirer should seek assistance from a competent engineer experienced in the particular field of interest.

D3. General Procedure for all Requests

D3.1 Submission. All requests shall be sent to the Managing Director, AWS Standards Development. For efficient handling, it is preferred that all requests should be submitted electronically through standards@aws.org. Alternatively, requests may be mailed to:

Managing Director
Certification Department
American Welding Society
8669 NW 36 St, # 130
Miami, FL 33166

D3.2 Contact Information. All inquiries shall contain the name, address, email, phone number, and employer of the inquirer.

D3.3 Scope. Each inquiry shall address one single provision of the standard unless the issue in question involves two or more interrelated provisions. The provision(s) shall be identified in the scope of the request along with the edition of the standard (e.g., D1.1:2006) that contains the provision(s) the inquirer is addressing.

D3.4 Question(s). All requests shall be stated in the form of a question that can be answered ‘yes’ or ‘no’. The request shall be concise, yet complete enough to enable the committee to understand the point of the issue in question. When the point is not clearly defined, the request will be returned for clarification. Sketches should be used whenever appropriate, and all paragraphs, figures, and tables (or annexes) that bear on the issue in question shall be cited.

D3.5 Proposed Answer(s). The inquirer shall provide proposed answer(s) to their own question(s).

D3.6 Background. Additional information on the topic may be provided but is not necessary. The question(s) and proposed answer(s) above shall stand on their own without the need for additional background information.

D4. AWS Policy on Interpretations

The American Welding Society (AWS) Board of Directors has adopted a policy whereby all official interpretations of AWS standards are handled in a formal manner. Under this policy, all official interpretations are approved by the technical committee that is responsible for the standard. Communication concerning an official interpretation is directed through the AWS staff member who works with that technical committee. The policy requires that all requests for an official interpretation be submitted in writing. Such requests will be handled as expeditiously as possible, but due to the procedures that must be followed, some requests for an official interpretation may take considerable time to complete.

D5. AWS Response to Requests

Upon approval by the committee, the interpretation is an official interpretation of the Society, and AWS shall transmit the response to the inquirer, publish it in the *Welding Journal*, and post it on the AWS website.

D6. Telephone Inquiries

Telephone inquiries to AWS Headquarters concerning AWS standards should be limited to questions of a general nature or to matters directly related to the use of the standard. The *AWS Board Policy Manual* requires that all AWS staff members respond to a telephone request for an official interpretation of any AWS standard with the information that such an interpretation can be obtained only through a written request. Headquarters staff cannot provide consulting services. However, the staff can refer a caller to any of those consultants whose names are on file at AWS Headquarters.

Annex E (Informative)

List of AWS Documents on Qualification and Certification

This annex is not part of this standard but is included for informational purposes only.

Qualification Designation	Title
B5.1	*Specification for the Qualification of Welding Inspectors*
B5.2	*Specification for the Training, Qualification, and Company Certification of Welding Inspector Specialists and Welding Inspector Assistants*
B5.4	*Specification for the Qualification of Welder Test Facilities*
B5.5	*Specification for the Qualification of Welding Educators*
B5.9	*Specification for the Qualification of Welding Supervisors*
B5.14	*Specification for the Qualification of Welding Sales Representatives*
B5.15	*Specification for the Qualification of Radiographic Interpreters*
B5.16	*Specification for the Qualification of Welding Engineers*
B5.17	*Specification for the Qualification of Welding Fabricators*

Certification Designation	Title
QC1	*Specification for AWS Certification of Welding Inspectors*
QC5	*AWS Standard for Certification of Welding Educators*
QC9	*Administrative Procedures for Alleged Violations of AWS Certification Programs*
QC13	*Specification for the Certification of Welding Supervisors*
QC14	*Specification for the Certification of Welding Sales Representatives*
QC15	*Specification for AWS Certification of Radiographic Interpreters*
QC17	*Specification for AWS Accreditation of Certified Welding Fabricators*
QC19	*Specification for AWS Certification of Robotic Arc Welding Personnel*
QC20	*Specification for AWS Certification of Resistance Welding Technicians*
QC47	*Specification for AWS Certification of Welders and Accreditation of Test Facilities*

This page is intentionally blank.