

Guide for Strengthening and Repairing Existing Structures



American Welding Society



AWS D1.7/D1.7M:2010
An American National Standard

Approved by the
American National Standards Institute
July 1, 2009

Guide for Strengthening and Repairing Existing Structures

1st Edition

Prepared by the
American Welding Society (AWS) D1 Structural Welding Committee

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This guide provides information on strengthening and repairing existing structures. Included are sections on weldability, evaluation of existing welds, testing and sampling, heat straightening, and damage repair.



American Welding Society

550 N.W. LeJeune Road, Miami, FL 33126

This is a preview. [Click here to purchase the full publication.](#)

International Standard Book Number: 978-0-87171-761-0

American Welding Society

550 N.W. LeJeune Road, Miami, FL 33126

© 2009 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 the 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 are entrusted to appropriately qualified and competent personnel.

This standard may be superseded by the issuance of new editions. Users should ensure that they have the latest edition.

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.

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

On occasion, text, tables, or figures are printed incorrectly, constituting errata. Such errata, when discovered, are posted on the AWS web page (www.aws.org).

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: Managing Director, Technical Services Division, 550 N.W. LeJeune Road, Miami, FL 33126 (see Annex B). 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 D1 Committee on Structural Welding. 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 required and should be addressed to AWS Headquarters. Such comments will receive careful consideration by the AWS D1 Committee on Structural Welding 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 AWS D1 Committee on Structural Welding 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 Technical Activities Committee. A copy of these Rules can be obtained from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

...

This is a preview. [Click here to purchase the full publication.](#)

This page is intentionally blank.

Personnel

AWS D1 Committee on Structural Welding

D. K. Miller, Chair	<i>The Lincoln Electric Company</i>
A. W. Sindel, 1st Vice Chair	<i>Alstom Power, Incorporated</i>
T. L. Niemann, 2nd Vice Chair	<i>Minnesota Department of Transportation</i>
S. Morales, Secretary	<i>American Welding Society</i>
N. J. Altebrando	<i>STV, Incorporated</i>
F. G. Armao	<i>The Lincoln Electric Company</i>
E. L. Bickford	<i>Acute Technological Services</i>
*F. C. Breismeister	<i>Strocal, Incorporated</i>
B. M. Butler	<i>Walt Disney World Company</i>
H. H. Campbell III	<i>Loadmaster Universal Rigs</i>
L. E. Collins	<i>Team Industries, Incorporated</i>
R. B. Corbit	<i>Exelon Nuclear Corporation</i>
R. A. Dennis	<i>Consultant</i>
M. A. Grieco	<i>Massachusetts Highway Department</i>
C. R. Hess	<i>High Steel Structures, Incorporated (Retired)</i>
C. W. Holmes	<i>Modjeski and Masters, Incorporated</i>
J. J. Kenney	<i>Shell International E & P</i>
J. H. Kiefer	<i>ConocoPhillips Company</i>
V. Kuruvilla	<i>Genesis Quality Systems, Incorporated</i>
J. Lawmon	<i>American Engineering & Manufacturing, Incorporated</i>
D. R. Lawrence II	<i>Butler Manufacturing Company</i>
N. S. Lindell	<i>Inspectech, Incorporated</i>
D. R. Luciani	<i>Canadian Welding Bureau</i>
S. L. Luckowski	<i>Department of the Army</i>
P. W. Marshall	<i>MHP Systems Engineering</i>
M. J. Mayes	<i>Mayes Testing Engineers, Incorporated</i>
D. L. McQuaid	<i>D. L. McQuaid and Associates, Incorporated</i>
R. D. Medlock	<i>High Steel Structures, Incorporated</i>
J. Merrill	<i>MACTEC, Incorporated</i>
J. B. Pearson, Jr.	<i>LTK Engineering Services</i>
D. C. Phillips	<i>Hobart Brothers Company</i>
J. W. Post	<i>J. W. Post and Associates, Incorporated</i>
D. D. Rager	<i>Rager Consulting, Incorporated</i>
T. J. Schlafly	<i>American Institute of Steel Construction</i>
D. R. Scott	<i>PSI (Retired)</i>
*D. A. Shapira	<i>URS—Washington Division</i>
R. E. Shaw, Jr.	<i>Steel Structures Technology Center, Incorporated</i>
R. W. Stieve	<i>Greenman-Pedersen, Incorporated</i>
P. J. Sullivan	<i>Massachusetts Highway Department (Retired)</i>
M. M. Tayarani	<i>Massachusetts Highway Department</i>
K. K. Verma	<i>Federal Highway Administration</i>
B. D. Wright	<i>Advantage Aviation Technologies</i>

*Deceased