

STANDARD SPECIFICATIONS
for
HIGHWAY BRIDGES

SIXTEENTH EDITION

1996



Adopted and Published by the
American Association of State Highway
and Transportation Officials, Inc.

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INTRODUCTION

The compilation of these specifications began in 1921 with the organization of the Committee on Bridges and Structures of the American Association of State Highway Officials. During the period from 1921, until printed in 1931, the specifications were gradually developed, and as the several divisions were approved from time to time, they were made available in mimeographed form for use of the State Highway Departments and other organizations. A complete specification was available in 1926 and it was revised in 1928. Though not in printed form, the specifications were valuable to the bridge engineering profession during the period of development.

The first edition of the Standard Specifications was published in 1931, and it was followed by the 1935, 1941, 1944, 1949, 1953, 1957, 1961, 1965, 1969, 1973, 1977, 1983, 1989, and 1992 revised editions. The present sixteenth edition constitutes a revision of the 1992 specifications, including those changes adopted since the publication of the fifteenth edition and those through 1995. The constant research and development in steel, concrete, and timber structures practically dictates the necessity of revising the specifications every few years, and the 1996 edition continues this trend.

Interim Specifications are usually published in the middle of the calendar year, and a revised edition of this book is generally published every 4 years. The Interim Specifications have the same status as standards of the American Association of State Highway and Transportation Officials, but are tentative revisions approved by at least two-thirds of the Subcommittee on Bridges and Structures. These revisions are voted on by the Association Member Departments prior to the publication of each new edition of this book, and if approved by at least two-thirds of the members, they are included in the new edition as standards of the Association. Members of the Association are the 50 State Highway or Transportation Departments, the District of Columbia, and Puerto Rico. Each member has one vote. The U.S. Department of Transportation is a nonvoting member.

Annual Interim Specifications are generally used by the States after their adoption by the Bridge Subcommittee. Orders for these annual Interim Specifications should be sent to the Publication Sales Office of the Association at 444 North Capitol Street, N.W., Suite 249, Washington, D.C. 20001, (202)624-5800.

The *Standard Specifications for Highway Bridges* are intended to serve as a standard or guide for the preparation of State specifications and for reference by bridge engineers.

Primarily, the specifications set forth minimum requirements which are consistent with current practice, and certain modifications may be necessary to suit local conditions. They apply to ordinary highway bridges and supplemental specifications may be required for unusual types and for bridges with spans longer than 500 feet.

Specifications of the American Society for Testing and Materials, the American Welding Society, the American Wood Preservers Association, and the National Forest Products Association are referred to, or are recognized. Numerous research bulletins are noted for references.

The American Association of State Highway and Transportation Officials wishes to express its sincere appreciation to the above organizations, as well as to those universities and representatives of industry whose research efforts and consultations have been most helpful in continual improvement of these specifications.

Extensive references have been made to the *Standard Specifications for Transportation Materials* published by the American Association of State Highway and Transportation Officials, including equivalent ASTM specifications which have been reproduced in the Association's Standard Specifications by permission of the American Society for Testing and Materials.

Attention is also directed to the following publications prepared and published by the Bridge Subcommittee:

Construction Manual for Highway Bridges and Incidental Structures—1973 Edition

Guide Specifications for Fracture Critical Non-Redundant Steel Bridge Members—1978 Edition, updated to 1986

Guide Specifications for Horizontally Curved Highway Bridges—1980 Edition, updated to 1993

Standard Specifications for Movable Highway Bridges—1988 Edition

Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals—1985 Edition, updated to 1994

Guide Specifications for Alternate Load Factor Design Procedures for Steel Beam Bridges Using Braced Compact Sections—1991 Edition

AASHTO Commentary on ANSI/AASHTO/AWS Bridge Welding Code D1.5-88—1991 Edition

Guide Specifications for Strength Design of Truss Bridges (Load Factor Design)—1986 Edition

Guide Specifications for Fatigue Evaluation of Existing Steel Bridges—1990 Edition

Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges—1989 Edition

Guide Specifications for Design and Construction of Segmental Concrete Bridges—1989 Edition

Guide Specifications for Bridge Railings—1989 Edition

Guide Specifications for Structural Design of Sound Barriers—1989 Edition

AASHTO Guide Specifications—Thermal Effects in Concrete Bridge Superstructure—1989 Edition

ANSI/AASHTO/AWS Bridge Welding Code D1.5

Foundation Investigation Manual—1978 Edition

Guide Specification and Commentary for Vessel Collision Design of Highway Bridges—1991 Edition

Guide Specification for the Design of Stress-Laminated Wood Decks—1991 Edition

Guidelines for Bridge Management Systems—1993 Edition

Manual for Condition Evaluation of Bridges—1994 Edition

Guide Specifications for Distribution of Loads for Highway Bridges—1994 Edition

Guide Specifications for Aluminum Highway Bridges—1991 Edition

Guide Specifications for Seismic Isolation Design—1991 Edition

Guide Specifications for Fatigue Design of Steel Bridges—1989 Edition

*AASHTO LRFD Bridge Design Specifications—1994 U.S. Units Edition, 1994
SI Units Edition*

Guide Design Specifications for Bridge Temporary Work—1995 Edition

Construction Handbook for Bridge Temporary Work—1995 Edition

Guide for Painting Steel Structures—1996 Edition

The following have served as chairmen of the Committee since its inception in 1921: Messrs, E.F. Kelley, who pioneered the work of the Committee, Albin L. Gemeny, R. B. McMinn, Raymond Archiband, G. S. Paxson, E. M. Johnson, Ward Goodman, Charles Matlock, Joseph S. Jones, Sidney Poleynard, Jack Freidenrich, Henry W. Derthick, Robert C. Cassano, Clellon Loveall, and James E. Siebels. The Committee expresses its sincere appreciation of the work of these men and of those active members of the past, whose names, because of retirement, are no longer on the roll.

Suggestions for the improvement of the specifications are welcomed. They should be sent to the Chairman, Subcommittee on Bridges and Structures, AASHTO, 444 North Capitol Street, N.W., Suite 249, Washington, D.C. 20001. Inquiries as to the intent or application of the specifications should be sent to the same address.

ABBREVIATIONS

AASHTO	—American Association of State Highway and Transportation Officials
ACI	—American Concrete Institute
AITC	—American Institute of Timber Construction
ASCE	—American Society of Civil Engineers
ASTM	—American Society for Testing and Materials
ANSI	—American National Standards Institute
AWS	—American Welding Society
AWPA	—American Wood Preservers Association
CS	—Commercial Standards
NDS	—National Design Specifications for Stress Grade Lumber and Its Fastenings
NFPA	—National Forest Products Association
SAE	—Society of Automotive Engineers
WPA	—Western Pine Association
WWPA	—Western Wood Products Association

**AASHTO STANDARD SPECIFICATIONS
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