SEI/ASCE 8-02

ASCE STANDARD

American Society of Civil Engineers

Specification for the Design of Cold-Formed Stainless Steel Structural Members

This document uses both Système International (SI) units and customary units.

ASCE

SEI
Structural Engineering Institute

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ABSTRACT
ASCE's standard *Specification for the Design of Cold-Formed Stainless Steel Structural Members* (ASCE 8-02) provides design criteria for the determination of the strength of stainless steel structural members and connections for use in buildings and other statically loaded structures. The members may be cold-formed to shape from annealed and cold-rolled sheet, strip, plate, or flat bar stainless steel material. Design criteria are provided for axially loaded tension or compression members, flexural members subjected to bending and shear, and members subjected to combined axial load and bending. The specification provides the design strength criteria using the load and resistance factor design (LRFD) and the allowable stress design (ASD) methods. The reasoning behind, and the justification for, various provisions of the specification are also presented. The design strength requirements of this standard are intended for use by structural engineers and those engaged in preparing and administrating local building codes.

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STANDARDS

In April 1980, the Board of Direction approved ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by the Society. All such standards are developed by a consensus standards process managed by the Management Group F (MGF), Codes and Standards. The consensus process includes balloting by the balanced standards committee made up of Society members and nonmembers, balloting by the membership of ASCE as a whole, and balloting by the public. All standards are updated or reaffirmed by the same process at intervals not exceeding 5 years.

The following Standards have been issued.

ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures

ANSI/ASCE 2-91 Measurement of Oxygen Transfer in Clean Water

ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs

ASCE 4-98 Seismic Analysis of Safety-Related Nuclear Structures

Building Code Requirements for Masonry Structures (ACI 530-99/ASCE 5-99/TMS 402-99) and Specifications for Masonry Structures (ACI 530.1-99/ASCE 6-99/TMS 602-99)

ASCE 7-98 Minimum Design Loads for Buildings and Other Structures

ASCE 8-90 Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members

ANSI/ASCE 9-91 listed with ASCE 3-91

ASCE 10-97 Design of Latticed Steel Transmission Structures

SEI/ASCE 11-99 Guideline for Structural Condition Assessment of Existing Buildings

ANSI/ASCE 12-91 Guideline for the Design of Urban Subsurface Drainage

ASCE 13-93 Standard Guidelines for Installation of Urban Subsurface Drainage

ASCE 14-93 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage

ASCE 15-98 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)

ASCE 16-95 Standard for Load and Resistance Factor Design (LRFD) of Engineered Wood Construction

ASCE 17-96 Air-Supported Structures

ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing

ASCE 19-96 Structural Applications of Steel Cables for Buildings

ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations

ASCE 21-96 Automated People Mover Standards—Part 1

ASCE 21-98 Automated People Mover Standards—Part 2

ASCE 21-00 Automated People Mover Standards—Part 3

SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings

SEI/ASCE 24-98 Flood Resistant Design and Construction

ASCE 25-97 Earthquake-Actuated Automatic Gas Shut-Off Devices

ASCE 26-97 Standard Practice for Design of Buried Precast Concrete Box Sections

ASCE 27-00 Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction

ASCE 28-00 Standard Practice for Direct Design of Precast Concrete Box Sections for Jacking in Trenchless Construction

SEI/ASCE 30-00 Guideline for Condition Assessment of the Building Envelope

EWRI/ASCE 33-01 Comprehensive Transboundary International Water Quality Management Agreement

EWRI/ASCE 34-01 Standard Guidelines for Artificial Recharge of Ground Water

EWRI/ASCE 35-01 Guidelines for Quality Assurance of Installed Fine-Pore Aeration Equipment

CI/ASCE 36-01 Standard Construction Guidelines for Microtunneling

SEI/ASCE 37-02 Design Loads on Structures During Construction

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FOREWORD

Prior to 1990, the design of cold-formed stainless steel structural members was based on the allowable stress design specification issued by the American Iron and Steel Institute. Based on the initiative of Chromium Steels Research Group at Rand Afrikaans University in 1989, a new ASCE Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members was developed at the University of Missouri-Rolla under the Sponsorship of the American Society of Civil Engineers. It was subsequently reviewed and approved by the ASCE Stainless Steel Cold-Formed Sections Standards Committee in 1990. This ASCE project was financially supported by the Chromium Centre in South Africa, the Nickel Development Institute in Canada, and the Specialty Steel Industry of the United States. The development of this new ASCE Standard Specification was primarily based on the 1974 Edition of the AISI specification for stainless steel design and the recent extensive research conducted by Chromium Steels Research Group at Rand Afrikaans University under the sponsorship of Columbus Stainless Steel (the Middleburg Steel and Alloys) in South Africa.

This new ASCE Standard Specification includes both the load and resistance factor design (LRFD) method and the allowable stress design (ASD) method. In the LRFD method, separate load and resistance factors are applied to specified loads and nominal resistance to ensure that the probability of reaching a limit state is acceptably small. These factors reflect the uncertainties of analysis, design, loading, material properties, and fabrication.

The material presented in this publication has been prepared in accordance with recognized engineering principles. This Standard and Commentary should not be used without first securing competent advice with respect to suitability for any given application. The publication of the material contained herein is not intended as a representation or warranty on the part of the American Society of Civil Engineers, or of any other person named herein, that this information is suitable for any general or particular use or promises freedom from infringement of any patent or patents. Anyone making use of this information assumes all liability from such use.

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ASCE acknowledges the work of the Stainless Steel Cold-Formed Section Standards Committee of the Management Group F. Codes and Standards. This group comprises individuals from many backgrounds including: consulting engineering, research, construction industry, education, government, design, and private practice.

This Standard was prepared through the consensus standards process by balloting in compliance with procedures of ASCE's Management Group F. Codes and Standards. Those individuals who serve on the Standards Committee are:

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