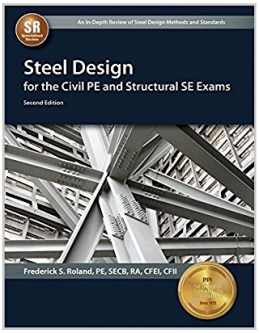

Steel Design for the Civil PE and Structural SE Exams

By Frederick S. Roland PE SECB RA CFEI CFII

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An In-Depth Review of Steel Design Methods and Standards
***Steel Design for the Civil PE and Structural SE Exams*, Second Edition**

Steel Design for the Civil PE and Structural SE Exams gives you a thorough overview of the concepts and methods you'll need to solve problems in steel analysis and design on the Civil and Structural PE exams. Sharpen your problem-solving skills and assess your knowledge of how to apply important specifications with 37 exam-like, multiple-choice practice problems, each one accompanied by a detailed, step-by-step solution showing both LRFD and ASD methods.

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- Clear explanations of required codes and standards
- Detailed examples illustrating a wide range of common situations
- Confidence-building practice problems
- Side-by-side LRFD and ASD solutions
- Thorough index and easy-to-use lists of tables, figures, problems, and nomenclature

Topics Covered

- Allowable Strength Design (ASD)
- Bolted Connections
- Combined Stress Members
- Composite Steel Members
- Flanges and Weds with Concentrated Loads
- History and Development of Structural Steel
- Load and Resistance Factor Design (LRFD)
- Loads and Load Combinations
- Plate Girders
- Steel Beam Design
- Steel Column Design

- Tension Member Design
- Welded Connections

Referenced Codes and Standards

- *Steel Construction Manual and Specification* (AISC 325 and AISC 360)
- *Minimum Design Loads for Buildings and Other Structures* (ASCE 7)
- *International Building Code* (IBC)

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Editorial Review

About the Author

Frederick S. Roland, PE, SECB, RA, CFEI, CFII, holds professional licenses in both engineering and architecture in a number of states. He has taught courses, including PE exam review, at the University of Delaware and for the School of PE. Mr. Roland earned his bachelor of architecture degree and master of science degree in structural engineering from the University of Illinois. Formerly vice president of Delaware's largest architectural-engineering firm, he now works on multibillion-dollar projects for KBR. His wide experience, including with forensic investigations, has led to his providing expert witness testimony in numerous legal cases. He is a contributing author for several books published by PPI and a contributing editor for others. Mr. Roland retired from the U.S. Army and Army Reserve as lieutenant colonel with 28 years of service.

ABOUT THIS BOOK

The main purpose of this book, *Steel Design for the Civil PE and Structural SE Exams,*is to be a study reference for engineers and students who are preparing to take either the civil structural PE exam or the structural SE exam, both of which are given by the National Council of Examiners for Engineering and Surveying (NCEES). These exams—even the breadth section of the civil PE exam, which is more general in its scope—often contain structural questions that go beyond the basics. If you want to be prepared for all questions in steel design, this book will give you the thorough review
you need.

However, anyone who wants to learn more about the most current steel design methods can benefit from this book. It can serve as a guide for those who are studying on their own or as a text in a formal course.

After a quick review of some basics in the early chapters, each chapter in turn explores in greater detail a different aspect of steel design. Among the topics covered are

- loads and load combinations
- analysis methods
- design of beams, columns, and plate girders
- design of members under combined stresses
- design of composite members
- bolted and welded connections

Many examples are included with detailed, step-by-step solutions to show you how to attack various kinds of problems and apply the relevant AISC criteria. The principles, equations, and information that you'll learn in this book are those you will need to solve the kinds of problems in structural steel that you're most likely to encounter on the civil structural PE and structural SE exams.

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