

Get Free Structural Engineering
Bridge Design

Structural Engineering Bridge Design

Emanating from a
lifelong career in
bridge engineering, this

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well-illustrated volume
is an invaluable
reference for students
and practitioners
involved in the design,
construction,
maintenance and repair

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of concrete bridges.
Focussing mainly on the
structural concept of
bridges, Mondorf covers
the design criteria of
an array of bridges,
including slab-and-

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girder, frame, arch, suspension, single and multispans bridges, as well as the maintenance and aesthetics. For each type, the factors affecting structural

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design are highlighted
and the design
requirements are used to
demonstrate how project
requirements may guide
the choice of a design
solution. A valuable

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guide from an
established authority,
Concrete Bridges will be
an asset to any
structural engineer,
both student and
practising.

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Over 140 experts, 14 countries, and 89 chapters are represented in the second edition of the Bridge Engineering Handbook. This extensive collection provides

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detailed information on bridge engineering, and thoroughly explains the concepts and practical applications surrounding the subject, and also highlights bridges from

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around the
world. Published

A comprehensive guide to
bridge design Bridge
Design - Concepts and
Analysis provides a
unique approach,

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combining the fundamentals of concept design and structural analysis of bridges in a single volume. The book discusses design solutions from the

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authors' practical experience and provides insights into conceptual design with concrete, steel or composite bridge solutions as alternatives. Key

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features: Principal design concepts and analysis are dealt with in a unified approach. Execution methods and evolution of the static scheme during

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construction are dealt with for steel, concrete and composite bridges. Aesthetics and environmental integration of bridges are considered as an

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issue for concept design. Bridge analysis, including modelling and detail design aspects, is discussed for different bridge typologies and

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structural materials.
Specific design
verification aspects are
discussed on the basis
of present design rules
in Eurocodes. The book
is an invaluable guide

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for postgraduate
students studying bridge
design, bridge designers
and structural
engineers.

The state of the art in
highway bridge

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engineering Fully
updated with the latest
codes and standards,
including load and
resistance factor design
(LRFD), Bridge
Engineering, Third

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Edition covers highway bridge planning, design, construction, maintenance, and rehabilitation. This thoroughly revised reference contains

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cutting-edge analytical,
design, and construction
practices, the most
current information on
new materials and
methods, and proven,
cost-effective

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maintenance and repair techniques. Real-world case studies and hundreds of helpful photos and illustrations are also included in this practical resource.

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BRIDGE ENGINEERING,
THIRD EDITION FEATURES
COMPLETE COVERAGE OF:
Highway bridge
structures Project
inception Project
funding Design standards

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Bridge inspection and
site survey Physical
testing As-built plans
and other record data
Superstructure types
Deck types Wearing
surface types Deck joint

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types Design loads

Design methods Internal
forces Load distribution

Concrete deck slabs

Composite steel members

Plate girder design

Continuous beams

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Protecting steel
superstructures Load
rating Prestressed
concrete Substructure
design Abutments Piers
Bearings Managing the
design process Contract

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documents Bridge
management systems
Bridge Design,
Assessment and
Monitoring
Planning and Design of
Bridges

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Steel Bridges

PPI PE Structural

Bridges Practice

Problems with Solutions

- Practice Problems with

Full Solutions for the

NCEES PE Structural

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Engineering (SE) Exam
Bridge Engineering,
Third Edition

***This 2nd edition references
the latest SE Exam bridge
code, AASHTO LRFD 7th***

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Edition and includes 12 new pages explaining the changes to the AASHTO code and updated problem solutions. This book is a comprehensive study guide containing 40 multiple choice bridge

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questions with detailed solutions for the Vertical Component of the NCEES SE Exam. It is specifically written for the "building" structural engineer that does not commonly design bridges in

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everyday practice, but must have basic knowledge of bridge design for the SE Exam. Also, it is a good review for the "bridge" structural engineer.

The stresses imposed on UK

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***roads by forty tonne vehicles
have led to an extensive
programme of bridge
improvements across the
country. This book draws on
case studies to create an
essential tool for all bridge***

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***engineers involved in
strengthening steel bridges to
meet these
challenges. Resulting from the
Highways Agency's
assessment and strengthening
of steel and steel/concrete***

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composite bridges, this report disseminates the knowledge gained and ingenuity used during this work and will be an invaluable reference for future work.

An essential exploration of the

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***engineering aesthetics of
celebrated structures from
long-span bridges to high-rise
buildings What do structures
such as the Eiffel Tower, the
Brooklyn Bridge, and the
concrete roofs of Pier Luigi***

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***Nervi have in common?
According to The Tower and
the Bridge, all are striking
examples of structural art, an
exciting area distinct from
either architecture or machine
design. Aided by stunning***

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photographs, David Billington discusses the technical concerns and artistic principles underpinning the well-known projects of leading structural engineer-artists, including Othmar Ammann,

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***Félix Candela, Gustave Eiffel,
Fazlur Khan, Robert Maillart,
John Roebling, and many
others. A classic work, The
Tower and the Bridge
introduces readers to the
fundamental aesthetics of***

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engineering.

***This English translation of the
successful French edition
presents the conception and
design of steel and steel-
concrete composite bridges,
from simple beam bridges to***

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***cable supported structures.
The book focuses primarily on
road bridges, emphasizing the
basis of their conception and
the fundamentals that must be
considered to assure
structural safety and***

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serviceability, as well as highlighting the necessary design checks. The principles are extended in later chapters to railway bridges as well as bridges for pedestrians and cyclists. Particular attention is

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***paid to consideration of the
dynamic performance.***

***Bridge Problems for the
Structural Engineering (Se)
Exam***

***Bridge Problems for the
Structural Engineering (SE)***

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Exam - 3rd Edition

Concrete Segmental Bridges

Highway Bridge

Superstructure Engineering

LRFD Bridge Design

How to Read Bridges

How to Read Bridges is a

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practical introduction to
looking at the structure
and purpose of bridges. It
is a guide to reading the
structural clues embedded
in every bridge that
allows their variety and

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ingenuity to be better appreciated. Small enough to carry in your pocket and serious enough to provide real answers, this comprehensive guide: - analyses and explores all

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types of bridges from
around the world from the
first millennium to the
present day. - explores
fundamental concepts of
bridge design, key
materials and engineering

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techniques. - provides an accessible visual guide with intelligent text, using detailed illustrations and cross-sections of technical features.

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Bridge Problems for the
Structural Engineering
(SE) Exam: Vertical Loads
is a comprehensive study
guide containing 40
multiple choice bridge
questions with detailed

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solutions for the Vertical
Component of the NCEES
Structural Engineering
(SE) Exam. It is
specifically written for
the "building" structural
engineer that does not

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commonly design bridges in everyday practice, but must have basic knowledge of bridge design for the SE Exam. Also, it is a good review for the "bridge" structural

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engineer. References the latest SE Exam bridge code, AASHTO LRFD 6th Edition.

This comprehensive and up-to-date reference work and resource book covers state-

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of-the-art and state-of-the-practice for bridge engineering worldwide. Countries covered include Canada and the United States in North America; Argentina and Brazil in

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South America; Bosnia,
Bulgaria, Croatia, Czech
Republic, Denmark,
Finland, France, Greece,
Macedonia,
Bridges play important
role in modern

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infrastructural system.
This book provides an up-
to-date overview of the
field of bridge
engineering, as well as
the recent significant
contributions to the

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process of making rational decisions in bridge design, assessment and monitoring and resources optimization deployment for the purpose of enhancing the welfare of

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society. Tang specifies the purposes and requirements of the conceptual bridge design, considering bridge types, basic elements, structural systems and load

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conditions. Cremona and Poulin propose an assessment procedure for existing bridges. Kallias et al. develop a framework for the performance assessment of metallic

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bridges under atmospheric exposure by integrating coating deterioration and corrosion modelling.

Soriano et al. employ a simplified approach to estimate the maximum

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traffic load effect on a highway bridge and compare the results with other approaches based on on-site weigh-in-motion data. Akiyama et al. propose a method for reliability-

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based durability design
and service life
assessment of reinforced
concrete deck slab of
jetty structures. Chen et
al. propose a meso-scale
model to simulate the

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uniform and pitting corrosion of rebar in concrete and to obtain the crack patterns of the concrete with different rebar arrangements. Ruan et al. present a traffic

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load model for long span
multi-pylon cable- stayed
bridges. Khuc and Catbas
implement a non-target
vision- based method for
the measurement of both
static and dynamic

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displacements time
histories. Finally, Cruz
presents the career of the
outstanding bridge
engineer Edgar Cardoso in
the fields of bridge
design and experimental

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analysis. The book serves as a valuable reference to all concerned with bridge structure and infrastructure systems, including students, researchers, engineers,

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consultants and
contractors from all areas
sections of bridge
engineering. The chapters
originally published as a
special issue in Structure
and Infrastructure

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Engineering.
Bridge Engineering
Handbook, Five Volume Set
Bridge Design for the
Civil and Structural
Professional Engineering
Exams

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Design and Construction of
Modern Steel Railway
Bridges
Bridge Engineering
Handbook
Analysis, Design,
Structural Health

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Monitoring, and
Rehabilitation

Bridge Engineering

**This book combines the two
previously published books
Bridge Problems for the
Structural Engineering**

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**(SE) Exam: Vertical Loads
and Bridge Problems for
the Structural Engineering
(SE) Exam: Lateral Loads
into a single volume. It
is a comprehensive study
guide containing 80**

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multiple choice bridge questions with detailed solutions for the Vertical and Lateral Components of the NCEES SE Exam. It is specifically written for the "building" structural

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engineer that does not commonly design bridges in everyday practice, but must have basic knowledge of bridge design for the SE Exam. Also, it is a good review for the

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**"bridge" structural
engineer. References the
latest SE Exam bridge
code, AASHTO LRFD 6th
Edition. Website:
www.davidconnorse.com E-
mail:**

Get Free Structural Engineering Bridge Design

davidconnorse@gmail.com

First Published in 1999:

The Bridge Engineering

**Handbook is a unique,
comprehensive, and state-**

**of-the-art reference work
and resource book covering**

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**the major areas of bridge
engineering with the theme
"bridge to the 21st
century."**

**Developed to comply with
the fifth edition of the
AASHTO LFRD Bridge Design**

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Specifications

**[2010]—Simplified LRFD
Bridge Design is "How To"
use the Specifications
book. Most engineering
books utilize traditional
deductive practices,**

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beginning with in-depth theories and progressing to the application of theories. The inductive method in the book uses alternative approaches, literally teaching

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backwards. The book introduces topics by presenting specific design examples. Theories can be understood by students because they appear in the text only after specific

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design examples are presented, establishing the need to know theories. The emphasis of the book is on step-by-step design procedures of highway bridges by the LRFD

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**method, and "How to Use"
the AASHTO Specifications
to solve design problems.
Some of the design
examples and practice
problems covered include:
Load combinations and load**

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**factors Strength limit
states for superstructure
design Design Live Load
HL- 93 Un-factored and
Factored Design Loads
Fatigue Limit State and
fatigue life; Service**

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**Limit State Number of
design lanes Multiple
presence factor of live
load Dynamic load
allowance Distribution of
Live Loads per Lane Wind
Loads, Earthquake Loads**

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**Plastic moment capacity of
composite steel-concrete
beam LRFR Load Rating
Simplified LRFD Bridge
Design is a study guide
for engineers preparing
for the PE examination as**

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**well as a classroom text
for civil engineering
students and a reference
for practicing engineers.
Eight design examples and
three practice problems
describe and introduce the**

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**use of articles, tables,
and figures from the
AASHTO LFRD Bridge Design
Specifications. Whenever
articles, tables, and
figures in examples appear
throughout the text,**

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AASHTO LRFD specification numbers are also cited, so that users can cross-reference the material. Segmental concrete bridges have become one of the main options for major

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**transportation projects
world-wide. They offer
expedited construction
with minimal traffic
disruption, lower life
cycle costs, appealing
aesthetics and**

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adaptability to a curved roadway alignment. The literature is focused on construction, so this fills the need for a design-oriented book for less experienced bridge

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**engineers and for senior
university students. It
presents comprehensive
theory, design and key
construction methods, with
a simple design example
based on the AASHTO LRFD**

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Design Specifications for each of the main bridge types. It outlines design techniques and relationships between analytical methods, specifications, theory,

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**design, construction and
practice. It combines
mathematics and
engineering mechanics with
the authors' design and
teaching experience.
Vertical Loads - 2nd Ed.**

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**Conceptual and Structural
Design of Steel and Steel-
Concrete Composite Bridges
Concrete Bridges
Bridge Design and
Evaluation
Earthquake-Resistant**

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Structures Preliminary Design of Bridges for Architects and Engineers

Presents a perspective for
the design and
construction of steel

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bridges, particularly from considerations of economy, durability and ease of maintenance during service life. Apart from a study of the evolution in the design of steel bridges,

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this book also discusses basic topics, such as design philosophies and characteristics of steel and loads.

Elements of bridge design appear in problems on the

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civil and structural PE exams. This book will help you solve these problems successfully. The authors summarize the basics of bridge design for different types of loads,

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using five design examples. Two practice problems encourage you to test your design skills. Step-by-step solutions are included.

Perhaps the first book on

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this topic in more than 50 years, Design of Modern Steel Railway Bridges focuses not only on new steel superstructures but also outlines principles and methods that are

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useful for the maintenance and rehabilitation of existing steel railway bridges. It complements the recommended practices of the American Railway Engineering and

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Maintenance-of-way
Association (AREMA), in
particular Chapter
15-Steel Structures in
AREMA's Manual for Railway
Engineering (MRE). The
book has been carefully

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designed to remain valid through many editions of the MRE. After covering the basics, the author examines the methods for analysis and design of modern steel railway

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bridges. He details the history of steel railway bridges in the development of transportation systems, discusses modern materials, and presents an extensive treatment of

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railway bridge loads and moving load analysis. He then outlines the design of steel structural members and connections in accordance with AREMA recommended practice,

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demonstrating the concepts
with worked examples.

Topics include: A history
of iron and steel railway
bridges Engineering
properties of structural
steel typically used in

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modern steel railway
bridge design and
fabrication Planning and
preliminary design Loads
and forces on railway
superstructures Criteria
for the maximum effects

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from moving loads and
their use in developing
design live loads Design
of axial and flexural
members Combinations of
forces on steel railway
superstructures Copiously

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illustrated with more than 300 figures and charts, the book presents a clear picture of the importance of railway bridges in the national transportation system. A practical

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reference and learning
tool, it provides a
fundamental understanding
of AREMA recommended
practice that enables more
effective design.

A How-To Guide for Bridge

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Engineers and Designers
Highway Bridge
Superstructure
Engineering: LRFD
Approaches to Design and
Analysis provides a
detailed discussion of

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traditional structural design perspectives, and serves as a state-of-the-art resource on the latest design and analysis of highway bridge superstructures. This book

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is applicable to highway bridges of all construction and material types, and is based on the load and resistance factor design (LRFD) philosophy. It discusses the theory of

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probability (with an explanation leading to the calibration process and reliability), and includes fully solved design examples of steel, reinforced and prestressed

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concrete bridge
superstructures. It also
contains step-by-step
calculations for
determining the
distribution factors for
several different types of

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bridge superstructures
(which form the basis of
load and resistance design
specifications) and can be
found in the AASHTO LRFD
Bridge Design
Specifications. Fully

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Realize the Basis and
Significance of LRFD
Specifications Divided
into six chapters, this
instructive text:
Introduces bridge
engineering as a

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discipline of structural
design Describes numerous
types of highway bridge
superstructures systems
Presents a detailed
discussion of various
types of loads that act on

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bridge superstructures and
substructures Discusses
the methods of analyses of
highway bridge
superstructures Includes a
detailed discussion of
reinforced and prestressed

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concrete bridges, and slab-
steel girder bridges

Highway Bridge

Superstructure

Engineering: LRFD

Approaches to Design and

Analysis can be used for

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teaching highway bridge design courses to undergraduate- and graduate-level classes, and as an excellent resource for practicing engineers.

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Design and Behaviour from
Bridges to Buildings
Safety, Economy,
Sustainability and
Aesthetics : Proceedings
of the International
Conference Organized by

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the Institution of Civil
Engineers and Held in
Singapore on 4-5 October
1999

The Manual of Bridge
Engineering
Lateral Loads

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Design of Modern Steel
Railway Bridges
Current and Future Trends
in Bridge Design,
Construction and
Maintenance

This 3rd edition references the latest

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SE Exam bridge code, AASHTO LRFD 8th Edition and includes a summary explaining the changes to the AASHTO code. This book is a comprehensive study guide containing 80 multiple choice bridge questions with detailed solutions for

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the Vertical and Lateral Component of the NCEES SE Exam. It is specifically written for the "building" structural engineer that does not commonly design bridges in everyday practice, but must have basic knowledge of bridge design for

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the SE Exam. Also, it is a good review for the "bridge" structural engineer.

Innovative Bridge Design Handbook: Construction, Rehabilitation, and Maintenance, Second Edition, brings together the essentials of

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bridge engineering across design, assessment, research and construction. Written by an international group of experts, each chapter is divided into two parts: the first covers design issues, while the second presents current research

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into the innovative design approaches used across the world. This new edition includes new topics such as foot bridges, new materials in bridge engineering and soil-foundation structure interaction. All chapters have been updated to

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include the latest concepts in design, construction, and maintenance to reduce project cost, increase structural safety, and maximize durability. Code and standard references have been updated. Completely revised and

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updated with the latest in bridge engineering and design Provides detailed design procedures for specific bridges with solved examples Presents structural analysis including numerical methods (FEM), dynamics, risk and

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reliability, and innovative structural typologies

Focusing on the conceptual and preliminary stages in bridge design, this book addresses the new conceptual criteria employed when evaluating project proposals,

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considering elements from architectural aspects and structural aesthetics to environmental compatibility.;College or university bookstores may order five or more copies at a special student price. Price is available on request.

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Bridge Engineering: Classifications, Design Loading, and Analysis Methods begins with a clear and concise exposition of theory and practice of bridge engineering, design and planning, materials and construction, loads and load

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distribution, and deck systems. This is followed by chapters concerning applications for bridges, such as: Reinforced and Prestressed Concrete Bridges, Steel Bridges, Truss Bridges, Arch Bridges, Cable Stayed Bridges, Suspension

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Bridges, Bridge Piers, and Bridge Substructures. In addition, the book addresses issues commonly found in inspection, monitoring, repair, strengthening, and replacement of bridge structures. Includes easy to understand explanations for bridge

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classifications, design loading,
analysis methods, and construction
Provides an overview of international
codes and standards Covers
structural features of different types
of bridges, including beam bridges,
arch bridges, truss bridges,

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suspension bridges, and cable-stayed bridges Features step-by-step explanations of commonly used structural calculations along with worked out examples

Bridge Design

Construction, Rehabilitation and

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Maintenance

LRFD Approaches to Design and
Analysis

Steel Bridge Strengthening

Theory, Design, and Construction to
AASHTO LRFD Specifications

Simplified LRFD Bridge Design

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The major expansion of transport networks in the twentieth century has been accompanied by extensive bridge construction. At the end of the century, the field of bridge engineering continues to grow and develop. Recent years

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have seen the construction of revolutionary new bridges, advances in materials and construction techniques and the development of international codes and standards aimed at producing more durable and reliable

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structures.

This book offers a valuable guide for practicing bridge engineers and graduate students in structural engineering; its main purpose is to present the latest concepts in bridge engineering in fairly easy-to-

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follow terms. The book provides details of easy-to-use computer programs for:

- Analysing slab-on-girder bridges for live load distribution.
- Analysing slab and other solid bridge components for live load distribution.
- Analysing

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and designing concrete deck slab overhangs of girder bridges under vehicular loads. · Determining the failure loads of concrete deck slabs of girder bridges under concentrated wheel loads. In addition, the book includes

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extensive chapters dealing with the design of wood bridges and soil-steel bridges. Further, a unique chapter on structural health monitoring (SHM) will help bridge engineers determine the actual load carrying capacities of bridges, as

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opposed to their perceived analytical capacities. The chapter addressing structures made with fibre-reinforced polymers will allow engineers to design highly durable, economical and sustainable structures. This chapter also

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provides guidance on rehabilitating deteriorated structures with these new materials. The book also deals with the philosophy of bridge design without resorting to complex equations. Additional material to this book can be downloaded from

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<http://extras.springer.com>

Gain Confidence in Modeling
Techniques Used for Complicated
Bridge Structures Bridge structures
vary considerably in form, size,
complexity, and importance. The
methods for their computational

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analysis and design range from approximate to refined analyses, and rapidly improving computer technology has made the more refined and complex methods of ana

Earthquake engineering is the

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ultimate challenge for structural engineers. Even if natural phenomena involve great uncertainties, structural engineers need to design buildings, bridges, and dams capable of resisting the destructive forces produced by

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them. These disasters have created a new awareness about the disaster preparedness and mitigation. Before a building, utility system, or transportation structure is built, engineers spend a great deal of time analyzing those

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structures to make sure they will perform reliably under seismic and other loads. The purpose of this book is to provide structural engineers with tools and information to improve current building and bridge design and

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construction practices and enhance their sustainability during and after seismic events. In this book, Khan explains the latest theory, design applications and Code Provisions. Earthquake-Resistant Structures features seismic design and

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retrofitting techniques for low and high rise buildings, single and multi-span bridges, dams and nuclear facilities. The author also compares and contrasts various seismic resistant techniques in USA, Russia, Japan, Turkey, India,

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China, New Zealand, and Pakistan.
Written by a world renowned author
and educator Seismic design and
retrofitting techniques for all
structures Tools improve current
building and bridge designs Latest
methods for building earthquake-

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resistant structures Combines
physical and geophysical science
with structural engineering
Design and Construction of Steel
Bridges
A Crash Course Spanning the
Centuries

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Computational Analysis and Design
of Bridge Structures

How Structures Work

Innovative Bridge Design

Handbook

A Study of Assessment and
Strengthening Experience and

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Identification of Solutions

Bridge

Engineering Classifications,

Design Loading, and Analysis

Methods Butterworth-Heinemann

**As known, each bridge presents a
unique set of design,
construction, and maintenance**

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challenges. The designer must determine the appropriate methods and level of refinement necessary to design and analyze each bridge on a case-by-case basis. The Innovative Bridge Design Handbook: Construction, Rehabilitation, and Maintenance

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encompasses the state of the art in bridge design, construction, maintenance, and safety assessment. Written by an international group of experts, this book provides innovative design approaches used in various parts of the world and

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explores concepts in design, construction, and maintenance that will reduce project costs and increase structural safety and durability. Furthermore, research and innovative solutions are described throughout chapters. The Innovative Bridge Design

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Handbook: Construction, Rehabilitation, and Maintenance brings together the specific knowledge of a bevy of experts and academics in bridge engineering in the areas of design, assessment, research, and construction. The handbook

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begins with an analysis of the history and development of bridge aesthetics and design; various types of loads including seismic and wind loads are then described, together with fatigue and fracture. Bridge design based on material such as reinforced

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concrete, prestressed reinforced concrete, steel and composite, timber, masonry bridges is analyzed and detailed according to international codes and standards. Then bridge design based on geometry, such as arch bridges, girders, cable stayed and

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suspension bridges, is illustrated. This is followed by a discussion of a number of special topics, including integral, movable, highway and railway bridges, together with seismic component devices, cables, orthotropic decks, foundations, and case

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studies. Finally, bridge construction equipment, bridge assessment retrofit and management, bridge monitoring, fiber-reinforced polymers to reinforce bridges, bridge collapse issues are covered. Loads including seismic and wind loads,

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**fatigue and fracture, local effects
Structural analysis including
numerical methods (FEM),
dynamics, risk and reliability,
innovative structural typologies
Bridge design based on material
type: RC and PRC, steel and
composite, timber and masonry**

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**bridges Bridge design based on
geometry: arch bridges, girders,
cable stayed and suspension
bridges Special topics: integral,
movable, highway, railway
bridges, seismic component
devices, cables, orthotropic
decks, foundations Construction**

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including construction case studies, construction equipment, bridge assessment, bridge management, retrofit and strengthening, monitoring procedures

This book examines and explains material from the 9th edition of

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References the latest SE
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Retrofit

LRFD and LRFR

Structural engineering is central to the design of a building. How the building behaves when subjected to various forces - the

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weight of the materials used to build it, the weight of the occupants or the traffic it carries, the force of the wind etc - is fundamental to its stability. The alliance

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between architecture and structural engineering is therefore critical to the successful design and completion of the buildings and infrastructure that

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of such crucial
considerations as
selecting the optimum
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