Aashto Lrfd Seismic Bridge Design Windows

These Guide Specifications address major changes in the way seismic hazard is now defined in the United States, as well as changes in the state of the art of seismic isolation design for highway bridges. It also reflects changes in the definition of the seismic hazard as now defined in the AASHTO LRFD Bridge Design Specifications and the Guide Specifications for LRFD Seismic Bridge Design, industry trends in the design and construction of isolators, and provisions in the design specifications that impact the design and testing of isolation bearings. This new edition has been revised and greatly expanded with the addition of Appendix B, which contains 14 design examples: two benchmark bridges and six design variations of each one.

This manual is intended to provide a technical resource for bridge engineers responsible for seismic analysis and design. It serves as a reference manual for use with the 5-day National Highway Institute (NHI) 130093 course “LRFD Seismic Analysis and Design of Bridges”, and the 3-day 130093A course “Displacement-Based LRFD Seismic Analysis and Design of Bridges”. The manual covers fundamental topics such as engineering seismology; seismic and geotechnical hazards; structural dynamics (Single-Degree-of-Freedom (SDOF) and Multiple-Degree-of-Freedom (MDOF)); and methods for modeling and analyzing bridges subject to earthquake ground motions. It also presents the principles of capacity design; applications of capacity design to piers, foundations, superstructures and connections; and discusses the requirements and recommendations of the seismic provision in each of the AASHTO LRFD Bridge Design Specifications and AASHTO Guide Specifications for LRFD Seismic Bridge Design, and their common features. Lastly, the manual addresses seismic isolation design in accordance with AASHTO Guide Specifications for Seismic Isolation Design, and retrofitting strategies in accordance with the 2006 Federal Highway Administration (FHWA) Seismic Retrofitting Manual for Highway Structures.

This handbook contains up-to-date existing structures, computer applications, and infonnation on planning, analysis, and design seismic design of wood structures. A new and very useful feature of this edition of earthquake-resistant building structures. Its intention is to provide engineers, architects, is the inclusion of a companion CD-ROM disc developers, and students of structural containing the complete digital version of the handbook itself and the following very engineering and architecture with authoritative, yet practical, design infonnation. It represents important publications: an attempt to bridge the persisting gap between 1. UBC-IBC (1997-2000) Structural advances in the theories and concepts of Comparisons and Cross References, ICBO, earthquake-resistant design and their 2000. implementation in seismic design practice. 2. NEHRP Guidelines for the Seismic The distinguished panel of contributors is Rehabilitation of Buildings, FEMA-273, Federal Emergency Management Agency, composed of 22 experts from industry and universities, recognized for their knowledge and 1997. extensive practical experience in their fields. 3. NEHRP Commentary on the Guidelinesfor They have aimed to present clearly and the Seismic Rehabilitation of Buildings, FEMA-274, Federal Emergency concisely the basic principles and procedures pertinent to each subject and to illustrate with Management Agency, 1997. practical examples the application of these 4. NEHRP Recommended Provisions for principles and procedures in seismic design Seismic Regulations for New Buildings and practice. Where applicable, the provisions of Older Structures, Part 1 - Provisions, various seismic design standards such as mc FEMA-302, Federal Emergency 2000, UBC-97, FEMA-273/274 and ATC-40 Management Agency, 1997.

Over 140 experts, 14 countries, and 89 chapters are represented in the second edition of the Bridge Engineering Handbook. This extensive collection highlights bridge engineering specimens from around the world, contains detailed information on bridge engineering, and thoroughly explains the concepts and practical applications surrounding the subject. Published in five books: Fundamentals, Superstructure Design, Substructure Design, Seismic Design, and Construction and Maintenance, this new edition provides numerous worked-out examples that give readers step-by-step design procedures, includes contributions by leading experts from around the world in their respective areas of bridge engineering, contains 26 completely new chapters, and updates most other chapters. It offers design concepts, specifications, and practice, as well as the various types of bridges. The text includes over 2,500 tables, charts, illustrations, and photos. The book covers new, innovative and traditional methods and practices; explores rehabilitation, retrofit, and maintenance; and examines seismic design and building materials. The fourth book, Seismic Design contains 18 chapters, and covers seismic bridge analysis and design. What’s New in the Second Edition: Includes seven new chapters: Seismic Random Response Analysis, Displacement-Based Seismic Design of Bridges, Seismic Design of Thin-Walled Steel and CFT Piers, Seismic Design of Cable-Supported Bridges, and three chapters covering Seismic Design Practice in California, China, and Italy Combines Seismic Retrofit Practice and Seismic Retrofit Technology into one chapter called Seismic Retrofit Technology Rewrites Earthquake Damage to Bridges and Seismic Design of Concrete Bridges chapters Rewrites Seismic Design Philosophies and Performance-Based Design Criteria chapter and retitles it as Seismic Bridge Design Specifications for the United States Revamps Seismic Isolation and Supplemental Energy Dissipation chapter and retitles it as Seismic Isolation Design for Bridges This text is an ideal reference for practicing bridge engineers and consultants (design, construction, maintenance), and can also be used as a reference for students in bridge engineering courses.

Up-to-date coverage of bridge design and analysis—revised to reflect the fifth edition of the AASHTO LRFDspecifications Design of Highway Bridges, Third Edition offers detailedcoverage of engineering basics for the design of short- andmedium-span bridges. Revised to conform with the latest fifthedition of the American Association of State Highway andTransportation Officials (AASHTO) LRFD Bridge DesignSpecifications, it is an excellent engineering resource for bothprofessionals and students. This updated edition has beenreorganized throughout, spreading the material into twenty shorter,more focused chapters that make information even easier to find andnavigate. It also features: Expanded coverage of computer modeling, calibration of servicelimit states, rigid method system analysis, and concrete shear Information on key bridge types, selection principles, andaesthetic issues Dozens of worked problems that allow techniques to be appliedto real-world problems and design specifications A new color insert of bridge photographs, including examples ofhistorical and aesthetic significance New coverage of the "green" aspects of recycled steel Selected references for further study From gaining a quick familiarity with the AASHTO LRFDspecifications to seeking broader guidance on highway bridgedesign—Design of Highway Bridges is the one-stop, readyreference that puts information at your fingertips, while alsoserving as an excellent study guide and reference for the U.S.Professional Engineering Examination.

Segmental concrete bridges have become one of the main options for major transportation projects world-wide. They offer expedited construction with minimal traffic disruption, lower life cycle costs, appealing aesthetics and 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 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 Design Specifications for each of the main bridge types. It outlines design techniques and relationships between analytical methods, specifications, theory, design, construction and practice. It combines mathematics and engineering mechanics with the authors’ design and teaching experience.

"This report presents the analytical study of the shear capacity of reinforced concrete columns using both the AASHTO LRFD bridge design specifications and the AASHTO guide specifications for the LRFD seismic bridge design. The study investigates various levels of axial load, transverse reinforcement and longitudinal reinforcement to determine who the two specifications compare. The AASHTO guide specifications for the LRFD seismic bridge design permits the designer to use the AASHTO LRFD bridge design specifications or equations within the AASHTO guide specifications for the LRFD seismic bridge design with predetermined values. [...] A parametrical study was extended to conventional full-scale columns, using both the AASHTO LRFD bridge design specifications and the AASHTO guide specifications for the LRFD seismic bridge design to predict shear strength in order to analyze the direct effects of the parameters on the shear strength predictions."--Abstract

Multi-Storey Precast Concrete Framed Structures
Bridge Engineering Handbook, Second Edition
The Seismic Design Handbook
An LRFD Approach
Comprehensive Design Examples
Correlation of Shear Design Between AASHTO LRFD Bridge Design Specifications and AASHTO Guide Specifications for the LRFD Seismic Bridge Design
AASHTO Load and Resistance Factor Design Movable Highway Bridge Design Specifications
Fundamentals of Seismic Protection for Bridges
AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Edition) with 2012, 2014 and 2015 Interim Revisions

TRB's National Cooperative Highway Research Program (NCHRP) Report 681: Development of a Precast Bent Cap System for Seismic Regions explores the development and validation of precast concrete bent cap systems for use throughout the nation's seismic regions. The report also includes a series of recommended updates to the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Guide Specification for LRFD Seismic Bridge Design, and AASHTO LRFD Bridge Construction Specifications that will provide safe and reliable seismic resistance in a cost-effective, durable, and constructible manner. A number of deliverables are provided as attachments to NCHRP Report 681, including design flow charts, design examples, example connection details, specimen drawings, specimen test reports, and an implementation plan from the research agency's final report. These attachments, which are only available online.

Developed to comply with the fifth edition of the AASHTO LRFD Bridge Design Specifications [2010]--Simplified LRFD Bridge Design is "How To" use the Specifications book. Most engineering books utilize traditional deductive practices, beginning with in-depth theories and progressing to the application of theories. The inductive method in the book uses alternative approaches, literally teaching 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 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 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 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 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 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 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 use of articles, tables, and figures from the AASHTO LFRD Bridge Design Specifications. Whenever articles, tables, and figures in examples appear throughout the text, AASHTO LRFD specification numbers are also cited, so that users can cross-reference the material.

AASHTO has issued proposed interim revisions to the AASHTO Guide Specifications for LFRD Seismic Bridge Design (2009). This packet contains the revised pages. They are not designed to replace the corresponding pages in the book but rather to be kept with the book for fast reference.

Gain Confidence in Modeling Techniques Used for Complicated Bridge StructuresBridge structures vary considerably in form, size, complexity, and importance. The methods for their computational analysis and design range from approximate to refined analyses, and rapidly improving computer technology has made the more refined and complex methods of ana

AASHTO has issued interim revisions to AASHTO Guide Specifications for LRFD Seismic Bridge Design, Second Edition (2011). This packet contains the revised pages. They are not designed to replace the corresponding pages in the book but rather to be kept with the book for quick reference.

AASHTO Guide Specifications for LRFD Seismic Bridge DesignAASHTO

Covers seismic design for typical bridge types and applies to non-critical and non-essential bridges. Approved as an alternate to the seismic provisions in the AASHTO LRFD Bridge Design Specifications. Differs from the current procedures in the LRFD Specifications in the use of displacement-based design procedures, instead of the traditional force-based R-Factor method. Includes detailed guidance and commentary on earthquake-resisting elements and systems, global design strategies, demand modeling, capacity calculation, and liquefaction effects. Capacity design procedures underpin the Guide Specifications' methodology; includes prescriptive detailing for plastic hinging regions and design requirements for capacity protection of those elements that should not experience damage.

Recent Developments In Bridge Engineering

The Manual for Bridge Evaluation
AASHTO LRFD Bridge Design Guide Specifications for GFRP-reinforced Concrete Bridge Decks and Traffic Railings
Reference Manual
Guide Specifications for Seismic Isolation Design
Concrete Segmental Bridges
Performance-Based Seismic Bridge Design
Seismic Design Considerations

TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 532: Seismic Design of Non-Conventional Bridges documents seismic design approaches and criteria used for "non-conventional" bridges, such as long-span cable-supported bridges, bridges with truss tower substructures, and arch bridges. Design of conventional bridges for seismic demands in the United States is based on one of two American Association of State Highway Transportation Officials (AASHTO) documents: the AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications (AASHTO BDS) (1) or the AASHTO Guide Specifications for LRFD Seismic Bridge Design (Guide Spec) (2). The stated scope of these documents for seismic design is limited to conventional bridges. Non-conventional bridges outside the scope of these two AASHTO documents, such as cable-supported bridges and long-span arch bridges, are typically high value investments designed with special project criteria. There is no current AASHTO standard seismic design criteria document specific to these non-conventional bridges. Seismic design criteria for these non-conventional bridges are typically part of a broader project-specific criteria document that addresses the special character of the bridge type.

Over 140 experts, 14 countries, and 89 chapters are represented in the second edition of the Bridge Engineering Handbook. This extensive collection provides detailed information on bridge engineering, and thoroughly explains the concepts and practical applications surrounding the subject, and also highlights bridges from around the world.Published

With chapters culled from the acclaimed Bridge Engineering Handbook, Bridge Engineering: Substructure Design focuses on the various components comprising and affecting bridge substructures. These include bearings, piers and columns, towers, abutments and retaining structures, footings and foundations, and bridge hydraulics. For each component, the

With special reference to United States.

Nonlinear static monotonic (pushover) analysis has become a common practice in performance-based bridge seismic design. The popularity of pushover analysis is due to its ability to identify the failure modes and the design limit states of bridge piers and to provide the progressive collapse sequence of damaged bridges when subjected to major earthquakes. Seismic Design Aids for Nonlinear Pushover Analysis of Reinforced Concrete and Steel Bridges fills the need for a complete reference on pushover analysis for practicing engineers. This technical reference covers the pushover analysis of reinforced concrete and steel bridges with confined and unconfined concrete column members of either circular or rectangular cross sections as well as steel members of standard shapes. It provides step-by-step procedures for pushover analysis with various nonlinear member stiffness formulations, including: Finite segment – finite string (FSFS) Finite segment – moment curvature (FSMC) Axial load – moment interaction (PM) Constant moment ratio (CMR) Plastic hinge length (PHL) Ranging from the simplest to the most sophisticated, the methods are suitable for engineers with varying levels of experience in nonlinear structural analysis. The authors also provide a downloadable computer program, INSTRUCT (INelastic STRUCTural Analysis of Reinforced-Concrete and Steel Structures), that allows readers to perform their own pushover analyses. Numerous real-world examples demonstrate the accuracy of analytical prediction by comparing numerical results with full- or large-scale test results. A useful reference for researchers and engineers working in structural engineering, this book also offers an organized collection of nonlinear pushover analysis applications for students.

"TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 440, Performance-Based Seismic Bridge Design (PBSD) summarizes the current state of knowledge and practice for PBSD. PBSD is the process that links decision making for facility design with seismic input, facility response, and potential facility damage. The goal of PBSD is to provide decision makers and stakeholders with data that will enable them to allocate resources for construction based on levels of desired seismic performance"--Publisher's description.

This document presents three geotechnical design examples intended to illustrate the principles and methodologies for LRFD seismic analysis and design of geotechnical features and structural foundations for bridges as presented in NHI Course 132094, "LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations" and its associated reference manual (FHWA-NHI-11-032), which also serves as FHWA Geotechnical Engineering Circular No. 3 (GEC-3). These design examples were developed in conjunction with the development of the structural design examples for the 130093 training course "LRFD Seismic Analysis and Design of Bridges" (FHWA-NHI-11-074), September 2011. Both sets of design examples were developed to illustrate the superstructure and substructure features and procedures needed to be addressed in the seismic design process in accordance with AASHTO specifications for LRFD seismic design. A different bridge is used in each design example but the same three bridges are used in both sets of examples.

Seismic Evaluation of Bridge Columns with Energy Dissipating Mechanisms
LRFD Guide Specifications for the Design of Pedestrian Bridges
Design of Highway Bridges
LRFD Seismic Analysis and Design of Bridges
Comprehensive Specification for the Seismic Design of Bridges
Development of a Precast Bent Cap System for Seismic Regions
Substructure Design
AASHTO LRFD Bridge Design Specifications, Customary U.S. Units
Seismic Design Aids for Nonlinear Pushover Analysis of Reinforced Concrete and Steel Bridges

This book contains a selected number of papers that were presented at the Second New York City Bridge Conference organized by the Bridge Engineering Association. It represents the state-of-the-art papers from different countries on a wide spectrum of topics in bridge engineering.

This work offers guidance on bridge design for extreme events induced by human beings. This document provides the designer with information on the response of concrete bridge columns subjected to blast loads as well as blast-resistant design and detailing guidelines and analytical models of blast load distribution. The content of this guideline should be considered in situations where resisting blast loads is deemed warranted by the owner or designer.

Because of their structural simplicity, bridges tend to beparticularly vulnerable to damage and even collapse when subjectedto earthquakes or other forms of seismic activity. Recentearthquakes, such as the ones in Kobe, Japan, and Oakland,California, have led to a heightened awareness of seismic risk andhave revolutionized bridge design and retrofit philosophies. In Seismic Design and Retrofit of Bridges, three of the world's topauthorities on the subject have collaborated to produce the mostexhaustive reference on seismic bridge design currently available.Following a detailed examination of the seismic effects of actualearthquakes on local area bridges, the authors demonstrate designstrategies that will make these and similar structures optimallyresistant to the damaging effects of future seismicdisturbances. Relying heavily on worldwide research associated with recentquakes, Seismic Design and Retrofit of Bridges begins with anin-depth treatment of seismic design philosophy as it applies tobridges. The authors then describe the various geotechnicalconsiderations specific to bridge design, such as soil-structureinteraction and traveling wave effects. Subsequent chapters coverconceptual and actual design of various bridge superstructures, andmodeling and analysis of these structures. As the basis for their design strategies, the authors' focus is onthe widely accepted capacity design approach, in which particularlyvulnerable locations of potentially inelastic flexural deformationare identified and strengthened to accommodate a greater degree ofstress. The text illustrates how accurate application of thecapacity design philosophy to the design of new bridges results instructures that can be expected to survive most earthquakes withonly minor, repairable damage. Because the majority of today's bridges were built before thecapacity design approach was understood, the authors also devoteseveral chapters to the seismic assessment of existing bridges,with the aim of designing and implementing retrofit measures toprotect them against the damaging effects of future earthquakes.These retrofitting techniques, though not considered appropriate inthe design of new bridges, are given considerable emphasis, sincethey currently offer the best solution for the preservation ofthese vital and often historically valued thoroughfares. Practical and applications-oriented, Seismic Design and Retrofit ofBridges is enhanced with over 300 photos and line drawings toillustrate key concepts and detailed design procedures. As the onlytext currently available on the vital topic of seismic bridgedesign, it provides an indispensable reference for civil,structural, and geotechnical engineers, as well as students inrelated engineering courses. A state-of-the-art text on earthquake-proof design and retrofit ofbridges Seismic Design and Retrofit of Bridges fills the urgent need for acomprehensive and up-to-date text on seismic-ally resistant bridgedesign. The authors, all recognized leaders in the field,systematically cover all aspects of bridge design related toseismic resistance for both new and existing bridges. * A complete overview of current design philosophy for bridges,with related seismic and geotechnical considerations * Coverage of conceptual design constraints and their relationshipto current design alternatives * Modeling and analysis of bridge structures * An exhaustive look at common building materials and theirresponse to seismic activity * A hands-on approach to the capacity design process * Use of isolation and dissipation devices in bridge design * Important coverage of seismic assessment and retrofit design ofexisting bridges

"The NCHRP Report 776 provides proposed revisions to Section 1.3--Design Philosophy of the AASHTO LRFD Bridge Design Specifications with detailed examples of the application of the proposed revisions. The proposed revisions include system factors that can be used during the design and safety assessment of bridges subjected to distributed lateral load being evaluated using the displacement-based approached specified in the AASHTO Guide Specifications for LRFD Seismic Bridge Design or the traditional force-based approach. Also, the report presents system factors calibrated for application with bridge systems subjected to vertical vehicular loads. The material in this report will be of immediate interest to highway design engineers."--Project information.

TRB's National Cooperative Highway Research Program (NCHRP) Research Report 864: Seismic Evaluation of Bridge Columns with Energy Dissipating Mechanisms, Volume 1: Research Overview and Volume 2: Guidelines describes the evaluation of new materials and techniques for design and construction of novel bridge columns meant to improve seismic performance. These techniques include shape memory alloy (SMA), engineered cementitious composite (ECC), fiber-reinforced polymer (FRP), and rocking mechanisms. The guidelines contained in Volume 2 explore a quantitative evaluation method to rate novel columns as well as design and construction methods for SMA-reinforced ECC columns, SMA-reinforced FRP-confined concrete/columns, and FRP-confined hybrid rocking columns. The project explores the behavior of the selected columns and develops proposed design guidelines according to the AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for LRFD Seismic Bridge Design. Appendices A-I are available online.

Glass fiber reinforced polymer (GFRP) materials have emerged as an alternative material for producing reinforcing bars for concrete structures. GFRP reinforcing bars offer advantages over steel reinforcement due to their noncorrosive nature and nonconductive behavior. Due to other differences in the physical and mechanical behavior of GFRP materials as opposed to steel, unique guidance on the engineering and construction of concrete bridge decks reinforced with GFRP bars is needed. These guide specifications offer a description of the unique material properties of GFRP composite materials as well as provisions for the design and construction of concrete bridge decks and railings reinforced with GFRP reinforcing bars.

This edition is based on the work of NCHRP project 20-7, task 262 and updates the 2nd (1999) edition -- P. ix.

Simplified LRFD Bridge Design
2012 Interim Revisions
LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations
Seismic Design and Retrofit of Bridges
Bridge Engineering Handbook, Five Volume Set
Final Report
AASHTO LRFD Bridge Design Specifications: Section 6-Index
Seismic Design
Computational Analysis and Design of Bridge Structures

Precast reinforced and prestressed concrete frames provide ahigh strength, stable, durable and robust solution for anymulti-storey structure, and are widely regarded as a high quality,economic and architecturally versatile technology for theconstruction of multi-storey buildings. The resulting buildingssatisfy a wide range of commercial and industrial needs. Precastconcrete buildings behave in a different way to those where theconcrete is cast in-situ, with the components subject to differentforces and movements. These factors are explored in detail in thesecond edition of Multi-Storey Precast Concrete FramedStructures, providing a detailed understanding of theprocedures involved in precast structural design. This new editionhas been fully updated to reflect recent developments, and includesmany structural calculations based on EUROCODE standards. These areshown in parallel with similar calculations based on BritishStandards to ensure the designer is fully aware of the differencesrequired in designing to EUROCODE standards. Civil and structural engineers as well as final year undergraduateand postgraduate students of civil and structural engineering willall find this book to be thorough overview of this importantconstruction technology.

The report explores the development and validation of precast concrete bent cap systems for use throughout the nation's seismic regions. The report also includes a series of recommended updates to the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Guide Specification for LRFD Seismic Bridge Design, and AASHTO LRFD Bridge Construction Specifications that will provide safe and reliable seismic resistance in a cost-effective, durable, and constructible manner. A number of deliverables are provided as attachments to NCHRP Report 681, including design flow charts, design examples, example connection details, specimen drawings, specimen test reports, and an implementation plan from the research agency's final report. These attachments are only available online at http://www.trb.org/Publications/Blurbs/Development_of_a_Precast_Bent_Cap_System_for_Seism_164866.aspx.TRB's National Cooperative Highway Research Program (NCHRP) Report 681: Development of a Precast Bent Cap System for Seismic Regions explores the development and validation of precast concrete bent cap systems for use throughout the nation's seismic regions. The report also includes a series of recommended updates to the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Guide Specification for LRFD Seismic Bridge Design, and AASHTO LRFD Bridge Construction Specifications that will provide safe and reliable seismic resistance in a cost-effective, durable, and constructible manner. A number of deliverables are provided as attachments to NCHRP Report 681, including design flow charts, design examples, example connection details, specimen drawings, specimen test reports, and an implementation plan from the research agency's final report. These attachments, which are only available online.

Covers seismic design for typical bridge types and applies to non-critical and non-essential bridges. Approved as an alternate to the seismic provisions in the AASHTO LRFD Bridge Design Specifications. Differs from the current procedures in the LRFD Specifications in the use of displacement-based design procedures, instead of the traditional force-based "R-Factor" method. Includes detailed guidance and commentary on earthquake resisting elements and systems, global design strategies, demand modeling, capacity calculation, and liquefaction effects. Capacity design procedures underpin the Guide Specifications' methodology; includes prescriptive detailing for plastic hinging regions and design requirements for capacity protection of those elements that should not experience damage.

Bridge System Safety and Redundancy
Theory, Design, and Construction to AASHTO LRFD Specifications
AASHTO Guide Specifications for LRFD Seismic Bridge Design
Seismic Design of Non-conventional Bridges
AASHTO LRFD Bridge Design Specifications, Customary U.S. Units: Section 7-Index
Bridge Engineering