

## PREFACE

The first edition of the *Bridge Design Practice Manual (BDP)* was published in 1960, and the second and third editions were published in 1963 and 1971, respectively. The *BDP* has been published as a live document continuously since the 1990s. The primary purpose of the *BDP* is to provide bridge design engineers with application of the California Department of Transportation (Caltrans) design standards and practices that lead to consistency in the design of bridge and highway structure projects on the California highway systems.

The fourth edition of the *BDP* is divided into three volumes and covers the major areas in bridge and highway structure design. The *BDP* conforms to the *AASHTO LRFD Bridge Design Specifications* (Customary US units), sixth Edition with the 2014 *California Amendments*, except as noted; describes the basic design concepts and assumptions; provides step-by-step design examples; introduces innovative practice; and serves as a comprehensive reference manual for Caltrans bridge design engineers. A total of 15 chapters are published in February 2015, with more to follow.

Development of the fourth edition of the *BDP* was a team effort and product of the Caltrans Division of Engineering Services Technical Organization. Many people gave unselfishly of their time and talent; their effort is gratefully acknowledged. Recognition of those individuals and groups who have made major contributions is as follows:

### **VOLUME I: FUNDAMENTALS AND SUPERSTRUCTURE DESIGN**

- Chapter 1, “Bridge Design Specifications” was written by Lian Duan.
- Chapter 2, “Bridge Architecture and Aesthetics” originally written by Javier Chavez, was revised and updated for this edition by Bob Travis and Vanessa Gehringer.
- Chapter 3, “Loads and Load Combinations” originally written by Marc Friedheim, was revised and updated for this edition by Kammy Bhala.
- Chapter 4, “Structural Modeling and Analysis” was written by Mina Pezeshpour, Lian Duan, and Paul Chung.
- Chapter 5, “Concrete Design Theory” was written by Jinrong Wang.
- Chapter 6, “Steel Design Theory” was written by Lian Duan.
- Chapter 7, “Post-Tensioned Concrete Girders” was written by Bartt Gunter, Gabriel Galo, Edward Mercado, and Daryoush Balbas.
- Chapter 8, “Precast Pretensioned Concrete Girders” was written by Say-Gunn Low, Eric Matsumoto, Bartt Gunter, and Jim Ma.
- Chapter 9, “Steel Plate Girders” was written by Lian Duan, Yusuf Saleh, and Yong-Pil Kim.
- Chapter 10, “Concrete Decks” originally written by Newton Armstrong, was revised and updated for this edition by Lian Duan.



## **VOLUME II: SUBSTRUCTURE DESIGN**

- Chapter 12, “Concrete Bent Caps” was written by Don Nguyen-Tan, Krishnakant Andurlekar, and Ahmed Ibrahim.
- Chapter 13, “Concrete Columns” was written by Ashraf Ahmed.
- Chapter 15, “Shallow Foundations” was written by Amir Malek and Hernan Perez with supports from Mohammed Islam and Jinxing Zha.
- Chapter 16, “Deep Foundations” was written by Amir Malek, Sam Ataya, Ryan Stiltz, and Mohey El-Mously with support from Mark Mahan.

## **VOLUME III: SEISMIC DESIGN**

- Chapter 21, “Seismic Design of Concrete Bridges” was written by Christian Unanwa, Mark Mahan, Surjit Dhillon, Tariq Masroor, and Jay Quiogue.

The fourth edition of the *BDP* was prepared under the direction of Roberto Lacalle, *BDP* Manager; and Lian Duan, *BDP* Editor. Division of Engineering Services Technical Committees performed technical reviews; Tom Ruckman, James Choi, and Don Reding conducted independent quality assurance reviews; and Janet Barnett performed grammar review.

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