STRUCTURAL LOAD DETERMINATION

UNDER 2009 IBC® AND ASCE/SEI 7-05

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PREFACE

The purpose of *Structural Load Determination under 2009 IBC and ASCE/SEI 7-05* is to provide a detailed guide to the proper determination of structural loads in accordance with the 2009 *International Building Code*® (IBC®) and *Minimum Design Loads for Buildings and Other Structures* (ASCE/SEI 7-05) with Supplement No. 2. The 2009 IBC references the 2005 edition of the ASCE/SEI 7 standard for many code-prescribed loads, most notably environmental loads such as flood, snow, wind and seismic load effects. In general, the IBC contains only the structural design criteria for environmental loads, while the technical design provisions for these loads are contained in the ASCE/SEI 7 standard.

This book is an essential resource for civil and structural engineers, architects, plan check engineers and students who need an efficient and practical approach to load determination under the 2009 IBC and ASCE/SEI 7-05 standard. The book is especially valuable to code users who are familiar with the structural load provisions of the previous legacy codes such as the *Uniform Building Code* (UBC). It has been reported that one of the most significant changes for code users transitioning from the UBC to the IBC is the way snow loads, wind pressures and earthquake ground motion load effects are determined under the IBC and ASCE/SEI 7-05 compared to previous legacy codes. *Structural Load Determination under 2009 IBC and ASCE/SEI 7-05* is a practical resource that will help code users make the transition quickly.

The book illustrates the application of code provisions and methodology for determining structural loads through the use of numerous flowcharts and practical design examples. Included are load combinations for allowable stress design, load and resistance factor (strength) design, seismic load combinations with vertical load effect and special seismic load combinations; dead loads, live loads and rain loads; snow loads, flood loads, wind loads and earthquake load effects. For wind load determination, flowcharts and design examples are presented for the simplified procedure (Method 1), the analytical procedure (Method 2) and the new alternate all-heights method in the 2009 IBC. Seismic design criteria, determination of seismic design category, the simplified method, equivalent lateral force procedure and nonbuilding structures are some of the topics illustrated through flowcharts and design examples.

This publication is an update to the previous publication, *Structural Load Determination under 2006 IBC and ASCE/SEI 7-05*. A new section has been added to Chapter 5 that covers the alternate all-heights wind design method in 2009 IBC Section 1609.6. This method is a simplified procedure based on Method 2 of ASCE/SEI 7-05 that applies to regularly-shaped buildings and structures that meet the five conditions given in IBC 1609.6.1. Net wind pressures p_{net} are calculated using design pressure coefficients C_{net}, which are given in IBC Table 1609.6.2(2) for main wind-force-resisting systems and components and cladding. A flowchart on how to determine p_{net} is provided along with examples on how to apply the alternate all-heights method.

A new Chapter 7 was added covering the determination of flood loads in accordance with IBC Section 1612, ASCE/SEI 7-05 and ASCE/SEI 24-05. Section 1612 of the IBC requires all structures sited in designated flood hazard areas to be designed and constructed to resist the effects of flood hazards and flood loads. Flood hazards may include erosion and scour whereas flood loads include flotation, lateral hydrostatic pressures, hydrodynamic pressures (due to moving water), wave impact and debris impact. Chapter 7 covers (1) identification of the various types of flood hazard areas and zones, (2) design and construction requirements and (3) determination of flood loads in accordance with IBC 1612, Chapter 5 of ASCE/SEI 7-05 and ASCE/SEI 24-05. Examples that clearly illustrate the provisions are included for residential structures in a Non-Coastal A Zone, a Coastal A Zone and a V Zone.

Load Determination under 2009 IBC and ASCE/SEI 7-05 is a multipurpose resource for civil and structural engineers, architects and plan check engineers because it can be used as a self-learning guide as well as a reference manual.

About the International Code Council

The International Code Council® (ICC®) is a nonprofit membership association dedicated to protecting the health, safety, and welfare of people by creating better buildings and safer communities. The mission of ICC is to provide the highest quality codes, standards, products and services for all concerned with the safety and performance of the built environment. ICC is the publisher of the family of the International Codes® (I-Codes®), a single set of comprehensive and coordinated model codes. This unified approach to building codes enhances safety, efficiency and affordability in the construction of buildings. The Code Council is also dedicated to innovation, sustainability and energy efficiency. Code Council subsidiary, ICC Evaluation Service, issues Evaluation Reports for innovative products and reports of Sustainable Attributes Verification and Evaluation (SAVE).

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