

*Guidelines for*  
**Performance-Based Seismic  
Design of Highway Bridges**

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202-624-5800 phone/202-624-5806 fax  
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# SECTION 1

## INTRODUCTION

### 1.1—INTRODUCTION

The concept of life safety design for seismic performance, as implemented in the *AASHTO Standard Specifications for Highway Bridge Design*, and later the *AASHTO LRFD Bridge Design Specifications* and the companion *AASHTO Guide Specifications for LRFD Seismic Bridge Design (LRFD Seismic Bridge Design)*, has resulted in a dramatic improvement in the performance of bridges during seismic events and has fulfilled the goal of limiting loss of life due to bridge failure. However, as the understanding of seismic bridge performance has improved, there is a need to allow for differing levels of bridge performance during a seismic event, depending on the needs of the Owner and the larger community of bridge users. These Guidelines represent the first implementation, on a national level, of Performance-Based Seismic Design (PBSD) for bridges in the United States. The goal of these Guidelines is to provide Designers and Owners with a methodology for selecting the appropriate level of performance for a given bridge and implementing a design process that will reasonably result in achieving that level of performance under the design ground motions.

The intended use of these Guidelines is as an adjunct to *LRFD Seismic Bridge Design* for the design of new bridges. The minimum requirements of *LRFD Seismic Bridge Design*, based on the life safety performance goal, still apply, and bridges within the scope of those requirements and designed using PBSD still must meet those requirements. Bridges outside the scope of *LRFD Seismic Bridge Design* should be designed using project-specific criteria established in conjunction with the Owner and peer review.