

# Prestandard for Performance-Based Design

**American Society of Civil Engineers**



CHARLES PANKOW  
FOUNDATION



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## Executive Summary

*Prestandard for Performance-Based Wind Design* developed by the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE) presents a recommended alternative to the prescriptive procedures for wind design of buildings contained in the nationally adopted standard *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7) and in the *International Building Code* (IBC). The intended audience for this document includes structural engineers, architects, building component and cladding specifiers/designers, and building officials engaged in the wind design and review of buildings. Properly implemented, this prestandard results in buildings that are capable of achieving the wind performance objectives specified by ASCE 7, and in many instances, superior performance to such objectives. Designers, peer reviewers, or AHJ who possess an understanding of wind engineering may adapt and modify these provisions to achieve higher wind performance objectives other than those specifically required by this prestandard.

SEI has published the first edition of this prestandard in response to the increasing interest in using performance-based approaches for the design of buildings. In addition, this prestandard aims to help resolve conflicts in performance objectives that exist when using prescriptive procedures for the wind design and performance-based procedures for the seismic design of individual buildings. Major innovations introduced here include nonlinear dynamic analysis for wind design, limited inelasticity in the Main Wind Force Resisting System elements, system-based performance criteria, and enhanced design criteria for the building envelope.

## Participants

The Structural Engineering Institute of ASCE acknowledges the work of the participants in developing this prestandard. The group of participants comprises individuals from many backgrounds, including consulting engineering, research, wind tunnel laboratories and consultants, education, government, design, and private practice.

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### Disclaimer

The Structural Engineering Institute and ASCE, the Charles Pankow Foundation, sponsors, participants and their firms or employees, and contributors offer no warranty, either expressed or implied, as to the suitability of the provisions of this prestandard for application to individual buildings or projects.

This prestandard was prepared through careful deliberations and review using current state of practice and decades of standards development experience. Although further research is needed, and methodologies and criteria will evolve as more knowledge is gained in this area, this prestandard represents the best knowledge available at the time of publication.

## Abbreviations

AHJ	Authority Having Jurisdiction
BRB	Buckling-restrained braces
C&C	Components and cladding
CQC	Complete quadratic combination
EOR	Engineer of Record
ESWL	Equivalent static wind load
GFRS	Gravity-Force-Resisting System
IBC	International Building Code
LRFD	Load and resistance factor design
MWFRS	Main Wind Force Resisting System
MRI	Mean recurrence interval
NLTHA	Nonlinear time history analysis
PBD	Performance-based design
PBSD	Performance-based seismic design
PBWD	Performance-based wind design
SSI	Soil–structure interaction