

A New Seismic Rehabilitation Standard - ASCE/SEI 41-06

Andrew D. Mitchell, S.E. ¹

Chris D. Poland, S.E. ²

The ASCE/SEI Standards Committee on Seismic Rehabilitation is pleased to announce the completion of the new standard, ASCE/SEI 41-06, *Seismic Rehabilitation of Existing Buildings*. This new national consensus standard represents state-of-the-art knowledge in earthquake engineering and is a valuable tool for the structural engineering profession to improve building performance in future earthquakes.

The ASCE/SEI 41-06 standard is the latest generation of a performance-based seismic rehabilitation methodology that began with the ATC-33 project in the early 1990's and was published as FEMA 273. ASCE/SEI 41-06 was developed from the FEMA 356, *Prestandard and Commentary for the Seismic Rehabilitation of Buildings*, which was based on FEMA 273, and published in 2000 as a starting point for the formal standard development process. While the FEMA 356 prestandard was a valuable document and represented a significant milestone in earthquake engineering, it is quickly becoming obsolete.

The evolution from prestandard to standard took place in the form of extensive committee review, discussion, and revisions conducted in accordance with the ASCE Rules for Standards Committees, which have been approved by the American National Standards Institute. The performance-based design philosophy has been maintained, but many significant improvements have been made by the committee to reflect current understanding of building behavior in earthquakes. A few such improvements found in ASCE/SEI 41-06 include:

- Improved C-coefficients for calculation of the pseudo-lateral force and target displacement based on recommendations in FEMA 440.
- Comprehensive soil-structure interaction provisions including kinematic effects and foundation damping effects.
- Revised acceptance criteria for steel moment frames to reflect final conclusions of the SAC Joint Venture research.
- Expanded acceptance criteria for concentrically braced frames defined as a function of brace slenderness, compactness and level of connection detailing.
- Updated nonstructural provisions to be consistent with current NEHRP Provisions for new buildings.

ASCE/SEI 41-06 has already begun being introduced into state and model building codes. The state of California has now adopted ASCE/SEI 41-06 into regulations governing buildings subject to state jurisdiction for the 2007 edition of the California Building Code. Several state agencies, including UC, CSU, DSA, DGS, and AOC have developed regulations adopting ASCE 41, while the OSHPD has agreed to permit use of ASCE/SEI 41 as an alternate means of compliance on a case-by-case basis until adopting the standard.

ASCE/SEI 41-06 is a valuable tool for structural engineers and the public for improving seismic performance of existing buildings. The completion of this new standard represents a considerable advancement for the earthquake engineering community. The committee is proud to have successfully achieved its stated purpose of developing seismic evaluation and rehabilitation national consensus standards and the committee is dedicated to continually advancing ASCE/SEI 31 and ASCE/SEI 41 as modern and progressive national standards in the future.

- ¹ Project Engineer, Degenkolb Engineers, 235 Montgomery Street, Suite 500, San Francisco, California 94104
Phone: 415.392.6952 Fax: 415.544.0782 Email: amitchell@degenkolb.com
- ² Chairman, President & CEO, Degenkolb Engineers, 235 Montgomery Street, Suite 500, San Francisco, California 94104 Phone: 415.392.6952 Fax: 415.544.0782 Email: cpoland@degenkolb.com