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TITLE

Evaluation and retrofit provisions for San Francisco's soft-story woodframe buildings

SESSION

This paper would be most appropriate in the SEAONC EBC-proposed session on *Assessment and Retrofit of Soft-Story Residential Buildings*, or in a general session on the adaptation and implementation of existing retrofit codes and standards.

ABSTRACT

In July 2008, San Francisco Mayor Gavin Newsom charged the city's Department of Building Inspection to develop a retrofit program for soft-story multi-unit residential buildings, several thousand of which are believed to exist in the city. In March 2009, DBI proposed a program calling for mandated evaluation and, if needed, retrofit of these buildings. Of particular interest was the objective suggested by DBI's report: that the retrofitted buildings should remain occupiable – "green-tagged" – following a design-level earthquake. The technical provisions were left to be developed.

The Structural Engineers Association of Northern California strode into the breach, convening an *ad hoc* committee to anticipate technical issues and to work with DBI to develop program details. This presentation will review the issues the committee addressed, the options it considered, and the recommendations it produced, with emphasis on lessons from and for other California jurisdictions. The issues included:

- Definition of a performance objective to suit the city's policy goal.
- Application of existing code provisions (SFBC Chapter 34), model codes (IEBC Appendix A4), and standards (ASCE 31 and ASCE 41) to the buildings and deficiencies of interest.
- Applicability of prescriptive systems and details.
- Design criteria for specific retrofit materials and systems.

Some of the San Francisco's vulnerable buildings are similar to the post-World War II tuck-unders that performed poorly in the Northridge earthquake. Many, however, date from the 1920s or even from the Victorian era. The Victorians in particular have ground floor commercial uses, as opposed to just parking. San Francisco buildings also typically lack the separations required of new construction. And of course San Francisco is famous for its hills, which render even stock building types irregular. All of these conditions informed the committee's work.

CONTACT

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