ASCE STANDARD

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41-17

Seismic Evaluation and Retrofit of Existing Buildings

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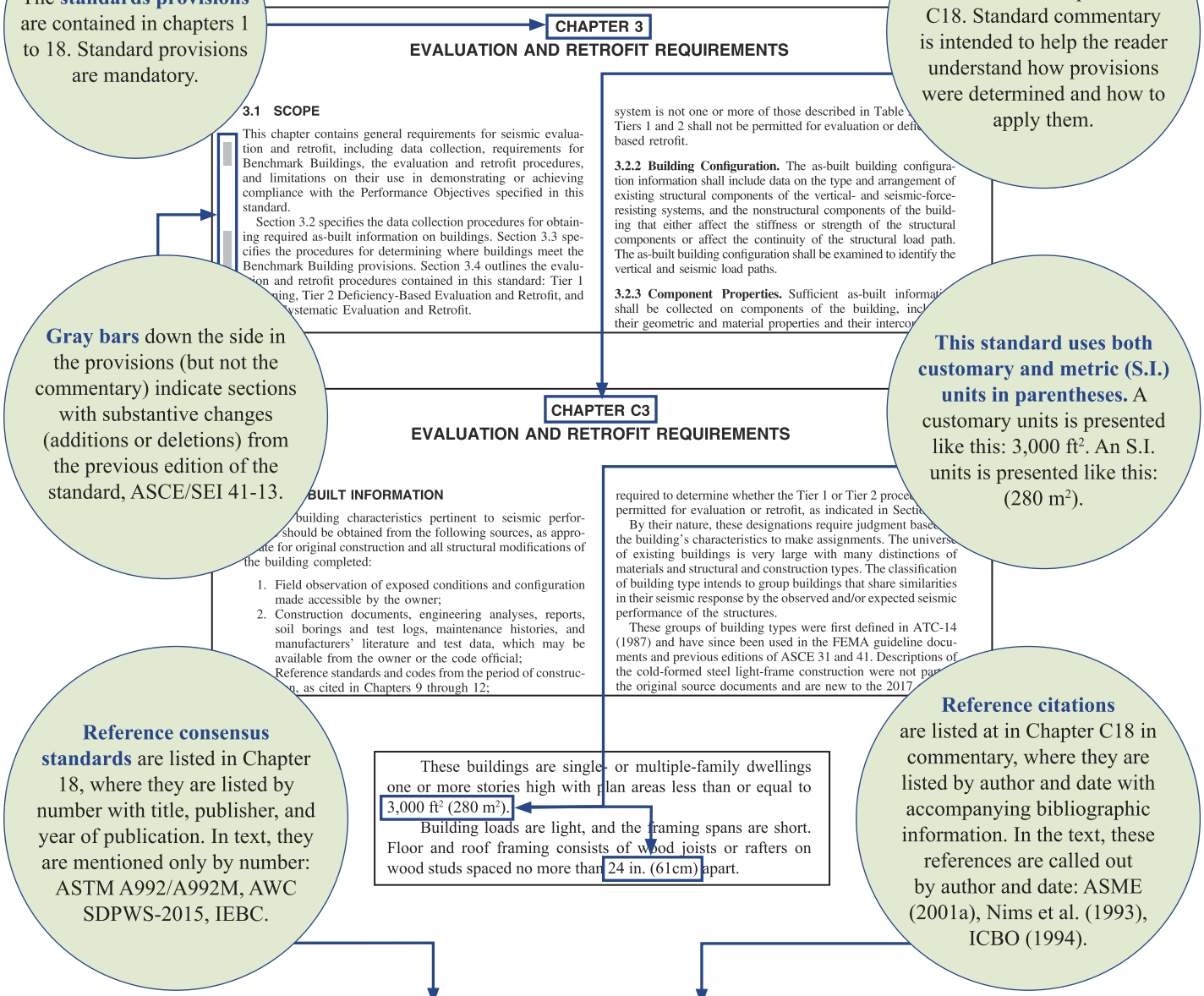
A complete list of currently available standards is available in the ASCE Library (http://ascelibrary.org/page/books/s-standards).

Tips for Using This Standard

The **standards provisions** are contained in chapters 1 to 18. Standard provisions are mandatory.

The **standard commentary** is contained in chapters C1 to C18. Standard commentary is intended to help the reader understand how provisions were determined and how to apply them.



CHAPTER 3

EVALUATION AND RETROFIT REQUIREMENTS

3.1 SCOPE

This chapter contains general requirements for seismic evaluation and retrofit, including data collection, requirements for Benchmark Buildings, the evaluation and retrofit procedures, and limitations on their use in demonstrating or achieving compliance with the Performance Objectives specified in this standard.

Section 3.2 specifies the data collection procedures for obtaining required as-built information on buildings. Section 3.3 specifies the procedures for determining where buildings meet the Benchmark Building provisions. Section 3.4 outlines the evalu- ion and retrofit procedures contained in this standard: Tier 1 ning, Tier 2 Deficiency-Based Evaluation and Retrofit, and ystematic Evaluation and Retrofit.

system is not one or more of those described in Table Tiers 1 and 2 shall not be permitted for evaluation or defi based retrofit.

3.2.2 Building Configuration. The as-built building configuration information shall include data on the type and arrangement of existing structural components of the vertical- and seismic-force-resisting systems, and the nonstructural components of the building that either affect the stiffness or strength of the structural components or affect the continuity of the structural load path. The as-built building configuration shall be examined to identify the vertical and seismic load paths.

3.2.3 Component Properties. Sufficient as-built informati shall be collected on components of the building, incl their geometric and material properties and their interco

CHAPTER C3

EVALUATION AND RETROFIT REQUIREMENTS

BUILT INFORMATION

building characteristics pertinent to seismic perfor- should be obtained from the following sources, as appro- ate for original construction and all structural modifications of the building completed:

1. Field observation of exposed conditions and configuration made accessible by the owner;
2. Construction documents, engineering analyses, reports, soil borings and test logs, maintenance histories, and manufacturers' literature and test data, which may be available from the owner or the code official;
3. Reference standards and codes from the period of construc- n, as cited in Chapters 9 through 12;

required to determine whether the Tier 1 or Tier 2 proce permitted for evaluation or retrofit, as indicated in Sectio

By their nature, these designations require judgment base the building's characteristics to make assignments. The univers of existing buildings is very large with many distinctions of materials and structural and construction types. The classification of building type intends to group buildings that share similarities in their seismic response by the observed and/or expected seismic performance of the structures.

These groups of building types were first defined in ATC-14 (1987) and have since been used in the FEMA guideline documents and previous editions of ASCE 31 and 41. Descriptions of the cold-formed steel light-frame construction were not par the original source documents and are new to the 2017

These buildings are single- or multiple-family dwellings one or more stories high with plan areas less than or equal to 3,000 ft² (280 m²).

Building loads are light, and the framing spans are short. Floor and roof framing consists of wood joists or rafters on wood studs spaced no more than 24 in. (61cm) apart.

Gray bars down the side in the provisions (but not the commentary) indicate sections with substantive changes (additions or deletions) from the previous edition of the standard, ASCE/SEI 41-13.

This standard uses both customary and metric (S.I.) units in parentheses. A customary units is presented like this: 3,000 ft². An S.I. units is presented like this: (280 m²).

Reference consensus standards are listed in Chapter 18, where they are listed by number with title, publisher, and year of publication. In text, they are mentioned only by number: ASTM A992/A992M, AWC SDPWS-2015, IEBC.

Reference citations are listed at in Chapter C18 in commentary, where they are listed by author and date with accompanying bibliographic information. In the text, these references are called out by author and date: ASME (2001a), Nims et al. (1993), ICBO (1994).

18.1 CONSENSUS STANDARDS AND OTHER REFERENCED DOCUMENTS

This section contains both consensus standards and other documents cited within the provisions of the standard.

ASTM A992/A992M, Standard Specification for Structural Steel Shapes, American Society for Testing and Materials, 2004.

AWC SDPWS-2015, Special Design Provisions for Wind and Seismic Standard with Commentary, American Wood Council, 2015.

IEBC, International Existing Building Code, International Code Council, 2018.

C18.1 COMMENTARY REFERENCES

This section contains all references cited within the commentary to the standard, as well as other relevant references (not cited).

ASME. (2001a). "Power piping." *ASME B31.1,* New York.

Nims, D. F., Richter, P. J., and Bachman, R. E. (1993). "The use of the energy dissipation restraint for seismic hazard mitigation." *Earthq. Spectra* 9(3), 467–498.

ICBO (International Conference of Building Officials). (1994). *Uniform building code*, Whittier, CA.

Supplements, errata, and interpretations may become available in the future.
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