ASCE 7-05 reference section(s)	2001 CBC reference section(s)	Other standard reference section(s)
11.2 12.2.1 Table 12.2-1 Table 15.4-1 & 15.4-2	1627 1629.6 1629.9.2 1634.2 Table 16-N	1997 UBC Table 16-N

The structural systems most commonly used to resist earthquakes are listed in ASCE 7-05 Table 12.2-1 and 1997 UBC Table 16-N. While the ASCE 7 table refers to them as "seismic force-resisting systems" (SFRSs) it is important to note that these are distinct elements within a possible combination of systems to form the overall lateral force-resisting system of a building, which would include diaphragms, foundations, and other load path components. The text of ASCE 7-05, however, is not careful about maintaining these distinctions, so the more common term "seismic force-resisting system," or SFRS, is used here. That is, the SFRS is the "basic" system contemplated by ASCE 7-05. (Previously, in the title of ASCE 7-02 Table 9.5.2.2 listing SFRSs, the word "basic" was included.) While SFRS is difficult to define, it is commonly understood to mean the set of vertically oriented structural elements above the foundation that are expected to act together to resist interstory drifts and to carry design earthquake forces between levels of the structure.

Diaphragms, collectors, and other load path components, though essential to acceptable performance, are commonly analyzed and designed separately from the SFRS. This is a useful distinction, as it simplifies analysis and design, but it relies on the assumption that these other components are not needed as primary sources of ductility or interstory strength or stiffness. In other words, if the diaphragm, collectors, or other elements apart from the systems tabulated in ASCE 7-05 Table 12-2-1 must provide reliable inelasticity in order to develop the presumed SFRS, then these attributes must be considered integral to the SFRS design. Most codes avoid this complexity with provisions that attempt to limit inelasticity to the "basic" SFRS.

Consistent with typical code-based design practice, diaphragms, collectors, and other load path components are not considered part of the SFRS for purposes of this discussion and are discussed in separate articles.

The code tables give design parameters and height limits for each listed SFRS. AISC 7– 05 Table 12.2-1 also includes an additional column that references applicable detailing provisions.

Several of the specific SFRSs are discussed in depth in separate Blue Book articles.

System Selection

Selection of the SFRS for a specific building is as much art as science. It is clearly a design decision of fundamental importance, yet there is no system that is best for all buildings. Factors to consider when selecting a seismic force-resisting system include:

- Performance. All of the code-approved systems are expected to meet the performance objective of the code. For enhanced performance objectives, however, some systems might be better than others. For example, some systems are better able to meet tight drift limits or assure speedy repair.

- Architectural and nonstructural coordination. A moment-resisting frame system can accommodate open spaces and unrestricted bays between columns. Braced frame and shear wall systems generally offer less flexibility in space planning and fenestration. The spacing of gravity columns, fire-rated partitions, and utility cores can also affect the relative efficiency of certain systems.

- Construction cost. The project budget might dictate systems of certain materials or cost-effective fabrication and erection procedures.