2012 International Building Code Handbook

1604.3 Serviceability

The requirements for serviceability mean that structural systems and members must have adequate stiffness to limit deflection and lateral drift to an appropriate degree based on the intended use. Specific requirements are given in Sections 1604.3.1 through 1604.3.6. Table 1604.3 contains deflection limits of structural members as a function of span and load type.

The general statement is adapted from Section 1.3.2 of ASCE 7, which reads as follows: “Structural systems, and members thereof, shall be designed to have adequate stiffness to limit deflections, lateral drift, vibration, or any other deformations that adversely affect the intended use and performance of buildings and other structures.” Note that the IBC excludes any reference to vibration or any other deformations that have an adverse impact on intended use and performance of the structure because:

1. The code has no objectively defined standard for structural vibration. Acceptable vibration limits are frequently subjective and highly dependent on the specific requirements of occupants of a building. This information is not necessarily available to the building official.

2. It is impossible for the building official to anticipate everything that can “adversely affect the intended use and performance” of a building. Sections 1604.3.1 through 1604.3.6 provide objectively defined deflection limits that are deemed to suffice for a wide range of structures. Limits more restrictive than these should be a matter of the design professional understanding the client’s needs and goals. But they are not typically part of a minimum life-safety building code. For example, there are situations in which sensitive computer, optical, or mechanical equipment requires extraordinary measures to limit their movement or vibration. These measures are often very complex and well beyond the life-safety requirements of most structures.