

COMMENTARY ON CHAPTER 17

By the Loads Advisory Committee of the
Massachusetts Board of Building Regulations and Standards

Currently, the 6th Edition of the State Building Code (SBC) requires a program of structural tests and inspections under the direction and control of the structural engineer of record (SER) for the structural work designed by him. The criteria for the program of structural tests and inspections in the Code were developed by the Boston Association of Structural Engineers (BASE) at the request of the Massachusetts Board of Building Regulations and Standards (BBRS). The State of Connecticut has similar requirements.

Chapter 17 of IBC 2003 is an untegrated compilation of the requirements from Chapter 17 of the IBC, BOCA, and SBC codes that IBC 2000 replaced. It requires “special inspection,” to be done by agencies and individuals hired by the owner or contractor, independent of the SER, who report directly to and are responsible to the building official. This is an old concept predating the 6th Edition of the SBC, and is generally ineffectual.

During the development of the NFPA Building Code (NFPA 5000), BASE developed a proposal to NFPA for quality assurance during construction based upon the requirements for structural tests and inspections in the 6th Edition of the SBC. It contains many improvements over that in the 6th Edition. The recommendations by the LAC for Chapter 17 of the 7th Edition of the SBC is based on the proposal by BASE to NFPA.

The principal differences between the quality assurance requirements of the 6th Edition and the proposed 7th Edition are as follows:

1. The title of the chapter has been changed from *Structural Tests and Inspections* to *Quality Assurance During Construction* to allow for non-structural requirements to be included. In the 7th Edition, there are requirements for quality assurance for sprayed fire-resistive materials and for smoke control systems. Other non-structural requirements could be added in the future.
2. The term *responsible registered design professional (responsible RDP)* is used throughout the 7th Edition, to account for architects or engineers who are responsible for the design of covered components and systems, and who are not usually under the control of the structural engineer of record (SER). Examples are curtain walls and smoke control systems. The term *responsible RDP* is also used in the section pertaining to structural components and systems, since the design of some these components and systems may be delegated by the owner or architect to an engineer other than the SER. An example is a metal building designed by an engineer who is independent of the SER, with the SER being responsible for the design of the foundations of the metal building and all the other structural work of the project.

3. The term *structural engineer of record (SER)* is used where the requirements of Chapter 17 are only applicable to the SER.
4. In the research for the BASE proposal for NFPA 5000, the BASE Committee found that the major structural design codes referenced in NFPA 5000 and IBC 2003, which will also be referenced in the 7th Edition of the SBC, have their own rules for quality assurance (or none at all), some of which are inappropriate or ambiguous. These rules collectively become an impediment to a simple uniform system of quality assurance without undue burdens, that is fair to all. Section 17.1.2 addresses the problem by requiring the responsible RDP to determine which of the quality assurance provisions in the referenced standards are appropriate and to incorporate the appropriate ones into his quality assurance program.
5. The entire text, and the tables of test and inspections for quality assurance, have been rewritten for the 7th Edition.

There are some sections in Chapter 17 of IBC 2003, and corresponding sections in Chapter 17 of the 6th Edition of the SBC, which apply to load testing or testing of products that cannot be practically analyzed. These sections have been moved to Chapter 16 or Chapter 23, and edited where required; they are:

7th Ed. SBC	IBC 2003	6th Ed. SBC
1624	1713	1709
1625	1710 & 1711	1706 & 1707
1626	1712	1708
1627	1714	1710
2303.13	1715	---

Section 1703 of IBC (and the corresponding sections in the 6th Edition of the SBC, 1703 and 1704) deal with preapproval of manufactured assemblies or products, and labeling, which do not relate to quality assurance during construction. 780 CMR R3 of the 6th Edition currently covers the topic of manufactured assemblies or products, and that standard will apply to the 7th Edition as well. Section 109.4 of the 7th Edition addresses approvals for alternate materials and equipment.