

Building Codes and the Contractor

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The process of building has been around for a long time as made evident through the many ancient structures and archeological sites around the world. During those early ages, the roles of designer and constructor were rolled up into a single person: the “master-builder.” The first known architect-builder was Imhotep, who oversaw the design and construction of the mortuary complex for Zoser at Saqqara, Egypt, around 2723 BC. From there, the role of master-builder would continue to grow, not only in responsibility, but also in stature. But in Babylon, the ruler Hammurabi (1795-1750 BC) placed a minor restriction on the builders of the time by setting in place a rudimentary building code that held the builder responsible for poor construction. For the first time in recorded history builders had an artificial limitation placed upon them.

During the Renaissance (1450-1650 AD), the era of the master-builder started to fade away, as the architect started to slowly withdraw from daily construction activities. Over time, the duties of contractor and architect would develop into the separate professions we know today. But as they developed, so did building codes. Building codes have expanded from the basic performance requirements of Hammurabi, to materials and design-related requirements to protect buildings for insurance companies, to eventually include construction methods and procedures applicable to work in the field; thereby increasing the contractor’s involvement with code compliance.

Before I begin, I should point out that building codes don’t identify the responsible party to which a requirement applies. That determination is left to licensing laws, owner-architect agreements, construction contract documents, and any other law or contract that could specifically assign code compliance responsibility. However, there are some exceptions to this in the 2003 IBC:

- Section 106.1 states that the construction documents submitted to the building official shall be prepared by a registered professional.
- Sections 1705 and 1706 provide quality assurance requirements for contractors installing seismic- and windforce-resisting systems, respectively.

The most common interface between code compliance and the contractor is through the inspection process, which will require an article in itself. Due to this, I’m going to defer any discussion on inspections until the next issue.

As we get into the specifics of the code and how it applies to the contractor, I think it is important to briefly discuss the contractor’s obligation under the contract documents. According to AIA Document A201, 1997 Edition, Section 3.2.2 states in part:

*The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, **building codes**, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Architect.*

This statement does not necessarily relieve the contractor from complying with the code; it merely states that it isn’t the contractor’s responsibility to check the drawings and specifications to make sure the architect and the architect’s consultants did their jobs in complying with the code. If the contractor does

discover an error during a review of the documents, either through his own discovery or that of a subcontractor, he must inform the architect.

An example where the above might come into play is the requirement for a fire barrier between two adjacent, but different occupancies. The task of locating and designing fire barriers lies entirely upon the architect's shoulders. The contractor, when reviewing the documents during the course of construction, is not required to check the plans to make sure the architect properly identified all the fire barriers.

However, there are some requirements that are not directly indicated on construction drawings or specifications, and it's these requirements that the contractor should be most familiar with. For example, the attachment of rough framing is typically not spelled out in great detail in the construction documents. Arcom's MasterSpec guide specification for Section 06100 "Rough Carpentry" provides the following requirement for fastening wood framing:

Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

One of the options provided is:

Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

The contractor, as directed in the above statement, now has the responsibility to install the rough framing in accordance with the building code. The architect could retain that responsibility and identify on the drawings or in the specifications every possible fastening method, but that would be inefficient and could potentially lead to additional errors or omissions.

Similar conditions where code compliance is assigned to the contractor can be found in the following chapters:

- Chapter 15, Roofing: Clay and concrete tile attachment; wood shingle and shake attachment.
- Chapter 18, Soils and Foundations: Placement and protection of concrete footings and piles.
- Chapter 19, Concrete: Preparation, mixing, depositing, and curing.
- Chapter 21, Masonry: Preparation, construction, and protection.
- Chapter 23, Wood: Cutting and notching; bored holes.
- Chapter 24, Glass and Glazing: Glass thickness.
- Chapter 25, Gypsum Board and Plaster: Protection from weather; installation.
- Chapter 27, Electrical: Installation per the electrical code.
- Chapter 28, Mechanical: Installation per the mechanical and fuel-gas code.
- Chapter 29, Plumbing: Installation per the plumbing code.
- Chapter 30, Elevator and Conveying Systems: Installation per listed standards.

Since safety on the jobsite is the contractor's responsibility, Chapter 33, Safeguards During Construction, is an important chapter to the contractor. This chapter addresses the many safety-related concerns that are present during the construction of a building, including demolition, sitework, protection of pedestrians and adjoining property, fire extinguishers and standpipes, and exits. Many of these requirements cannot be annotated on the drawings since their application is dependent on the contractor's operations, or "means and methods" as it is sometimes referred to. Some of these requirements may be repeated in the project specifications in Section 01500, Temporary Facilities and Controls (Section 01 50 00 under the new MasterFormat).

One significant item to be concerned with is means of egress. When a building exceeds 50 feet in height, or four stories, at least one temporary, lighted stairway must be provided. Permanent stairways may be used in lieu of temporary stairways, if available. Section 3310.2 requires that any required means of egress must be “maintained during construction, demolition, remodeling or alterations and additions.” In other words, any exits must remain accessible and not blocked by construction operations, materials, or equipment. This is essential when construction activities involve occupied buildings.

Of particular concern during construction is fire protection since the collection of combustible materials is quite common in and around a construction site. In Chapter 33, described above, there are two sections that are applicable to fire protection. The first is Section 3309, Fire Extinguishers. According to the IBC, fire extinguishers are required at each stairway on all floors, in every storage and construction shed, and where special hazards exist, such as storage of flammable and combustible liquids. The second is Section 3311, Standpipes, which requires that buildings four or more stories in height must have a functioning standpipe with fire department hose connections available during construction. The standpipe can be either temporary or part of the permanent fire protection system, and be with or without a water supply. Nevertheless, a supply of water will be required if combustible materials accumulate on the project site. These requirements are also included in the *International Fire Code*.

The *International Fire Code*, or IFC, has additional requirements in Chapter 14, Fire Safety During Construction and Demolition, that the contractor needs to be aware of, including temporary heating equipment, smoking, waste disposal, electrical, welding, and cutting. Of particular importance is access to project sites. The IFC requires that vehicular access be provided to within 100 feet of temporary or permanent fire department connections. This access must be an all-weather surface that is either temporary or permanent. If temporary, then the vehicular access must remain in place until permanent access is available.

Codes are just as critical to the contractor as they are to the designer. The content of state licensing exams illustrates the necessity for contractors to understand building code requirements related to construction. The Arizona licensing exam for a B-1 General Commercial Contracting license, for example, devotes 8% of the exam questions to general building code requirements. Other questions related to the building code are distributed throughout the other 11 subject areas of the exam. The International Code Council, publishers of the *International* family of codes, has developed a standardized contractor test that is required for licensing in several states, including Arizona’s neighboring states of Nevada and Colorado.

The National Association of State Contractors Licensing Agencies (NASCLA), located in Scottsdale, is in the early stages of developing a standardized National Contractor Competency Exam that will “encourage the mobility of contractors throughout this country.” No doubt that when this exam is fully developed, a sizable portion of its content will be devoted to testing the candidate’s understanding of the building code.

We have seen a slight movement in the construction industry back towards the master-builder era with the introduction of design-build and construction management at risk (CMAR) delivery methods, where the designer and builder are included in a closely integrated project team. This intimate involvement in the design process is an excellent reason for the contractor to gain a more informed perspective of building construction from a building code point of view. Having a basic understanding of the building code is essential to the contractor, but achieving a deeper knowledge can reap benefits for the astute

project manager, project engineer, or superintendent. As the German poet and author of *Faust*, Johann Wolfgang von Goethe, once stated, “No one has ever completed their apprenticeship.”

To comment on this article, suggest other topics, or submit a question regarding codes, contact the author at ron@specsandcodes.com.

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