



What Exactly is the Building Code?

By Gail S. Kelley, P.E., Esq.

To many A/Es, the words “building code” have a distinctly negative connotation. This is not entirely surprising – the words often come up in the context of an obscure requirement that no one can explain. Or even worse, two obscure requirements that appear to contradict each other. Nevertheless, being able to design to the applicable building code is a non-negotiable element of an A/E’s work.

An often-heard phrase is “the building code sets only minimum standards.” Or more colloquially, “the code sets a floor not a ceiling.” While this is true – if the code requires 2 x 6 construction, an A/E can specify 2 x 8s – it doesn’t really explain what the code is. Essentially, a building code is a collection of legal requirements governing building design. In the US, building codes fall within each state’s general “police power” to protect the health, safety and welfare of its communities. This means that each state can determine the design requirements for structures built within that state.

Model Codes

Rather than developing an entire building code, states generally base their codes on a model code developed by a standards organization. For most of the 20th century, there were three commonly-used model codes in the U.S. – the *Uniform Building Code* (UBC), the *BOCA National Building Code* (BOCA/NBC), and the *Standard Building Code* (SBC). The UBC was primarily used in the Midwest and western states, the BOCA/NBC was used in the northeast, and the SBC was used in the south. The organizations that published these codes merged in 1994 to form the International Code Council (ICC) and in 2000 discontinued publication of all three codes. In their place, the ICC publishes the *International Building Code* (IBC) which, with only a few exceptions, has now replaced the prior model codes as the basis for all state and local building codes.

Adoption of a Model Code

A model code does not become the law in any jurisdiction until it is adopted by a vote of the designated adopting authority. When a jurisdiction adopts a model building code, it adopts a specific edition of the model code,

When a jurisdiction adopts a model building code, it implicitly adopts all of the standards referenced by that model code.

for example, the 2009 International Building Code. When adopting the model code, the jurisdiction can add, delete, or modify sections to address concerns specific to the jurisdiction.

The IBC is updated on a three-year schedule; the most recent release is the 2012 edition. Although a jurisdiction can choose to continue using an older version of a model code, most jurisdictions update their codes regularly to avoid having to deal with A/Es seeking variances based on what is allowed by the newer edition of the model code. Nevertheless, there is always a lag between the release of a new edition of a model code and when a jurisdiction adopts it. The adopting authority must review the changes in the new edition, evaluate the effect on any amendments it has enacted, and ensure that its code inspectors are aware of the changes.

State Versus Local Codes

About two thirds of the states adopt their building codes at the state level. These states typically have an agency that is charged with administering the building codes. The agency will promulgate a set of regulations to carry out this responsibility; generally, the first regulation will be that the agency is adopting a specific edition of a model code. The other regulations will be changes to various sections or subsections of that code. These regulations are collected, along with regulations promulgated by other state agencies, in an administrative code for the state.

The other one-third of the states adopt their building codes at the local (city or county) level. Generally, codes are adopted through a vote of the city council or county commissioners, after a staff review. In the early 1900s, before model codes were widely available, it was common for cities to develop their own codes; many of these codes were written by insurance companies who were motivated by reducing the risk of fire to buildings they had insured. Over time, most cities have migrated to model codes and Chicago is the only major city that still uses its own code.

The ICC Website

Although references to the “building code” usually refer to the IBC, the ICC now publishes 15 “I-Codes.” All of the I-Codes published between 2000 and 2012, including the recently-released *International Green Building Code* can be viewed on-line for free. To see all of the codes, search for “ICC free resources” and select the International Codes option. To see a particular code, search for that code, for example “ICC IBC 2009” and select the link for publiccodes. For the 2009 IBC, this would be: <http://publiccodes.cyberregs.com/icod/IC-P-2009-000019.htm>. While the codes can be viewed for free, a paid subscription is required to either print or save any code or section of a code.

The ICC website also contains information about which codes have been adopted by which states. There is a webpage for each state that shows the codes adopted by that state; the webpage also contains contact information and links for relevant state agencies. For example www.iccsafe.org/gr/Pages/MA.aspx is the web page for Massachusetts.

The webpage at: www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf explains the code adoption process in each state. The webpage at: www.iccsafe.org/gr/Documents/stateadoptions.pdf lists which codes have been adopted in each state. The webpage at: www.iccsafe.org/gr/Documents/jurisdictionadoptions.pdf shows which codes have been adopted by local (city or county) governments. The ICC website is somewhat disorganized and is not always up to date, but it does provide a starting point for researching applicable codes.

Code References

Confusion sometimes arises because A/Es refer to a number of documents as “codes.” For example, ACI 318, *Building Code Requirements for Structural Concrete*, is referred to as “the concrete code” or just “the code” by engineers who specialize in

concrete construction. However, while ACI 318 can be used to set minimum concrete construction requirements in jurisdictions where there is no legally adopted building code, it is not written as a document that can be directly adopted as a building code. Instead, it is written to be incorporated into a building code. ACI 318 § 1.1.1 states:

This Code provides minimum requirements for design and construction of structural concrete members of any structure erected under requirements of the legally adopted general building code of which this Code forms a part.

When a jurisdiction adopts a model building code, it implicitly adopts all of the standards referenced by that model code. Generally, the standards referenced will be the most current editions as of the model code's publication date. However, given the time lag in adopting a model code, the applicable standard in any particular jurisdiction may not be the most current edition of that standard.

This can present a problem if the current edition of a standard prohibits construction allowed by earlier editions, or increases safety factors or loading requirements. In such cases, the A/E must consider what a "reasonable A/E under the same circumstances" would do. If most A/Es working in that city or county would know of the changes to the standard and would agree that the changes should be followed, the "professional standard of care" requires the A/E to follow the new, stricter requirements.

Conclusion

Designing to at least the minimum requirements set by the building code does not require a standard of care analysis; it is a non-negotiable element of an A/E's work. An A/E whose plans are rejected because they don't incorporate the requirements of a newly adopted code could be liable for any costs associated with the delay in getting the plans approved.

Designing to the wrong code may carry similar liability. For example, most states have a residential building code, based on the ICC's model *International Residential Code* (IRC), that applies to one- and two-family dwellings. There are substantial differences between the IBC and the IRC, particularly with respect to egress requirements. An A/E whose plans for the renovation of a three-family

building are rejected because they were done in accordance with the IRC may face a charge of professional negligence.

Likewise, a number of states have adopted an *Existing Building Code* based on the ICC's model *International Existing Building Code*. The *Existing Building Code* provides alternatives to some of the IBC requirements for structures being renovated. A/Es who represent themselves as experienced in renovation would be expected to know of these alternatives. Failure to implement alternatives that would be beneficial to

their clients could be considered professional negligence. ■

Gail S. Kelley, P.E., Esq., is a LEED Accredited Professional as well as a licensed attorney in Maryland and the District of Columbia. She is the author of Construction Law: An Introduction for Engineers, Architect, and Contractors, published in 2012 by John Wiley & Sons. Ms. Kelley can be reached at Gail.Kelley.Esq@gmail.com.

COMMERCIAL & STRUCTURAL

INNOVATION

TYFO® FIBRWRAP® SYSTEMS **STRENGTHEN VITAL INFRASTRUCTURE**
SUCH AS BRIDGES, PIPELINES, BUILDINGS AND OTHER STRUCTURES.



ADVERTISEMENT For Advertiser Information, visit www.STRUCTUREmag.org

The Tyfo® Fibrwrap® systems are an innovative concept that was originally tested and validated at the structures lab in UC San Diego. With continuous testing, we invent and improve our systems worldwide. Our latest full-scale testing at UCSD has verified our patent pending anchor detailing which provides shear enhancement to columns and connections having access to only three sides.

Fyfe engineers provide personalized technical support with comprehensive design and specification support packages at no obligation and at no cost.



858.642.0694
www.fyfeco.com

Fyfe Company is proud to be a part of the Aegion Commercial & Structural platform.

© 2013 Aegion Corporation