The IRC – Does It Really Matter?

By Stephanie J. Young, P.E.

Let's face facts. It is unlikely that the majority of practicing structural engineers are familiar with the material contained within the *International Residential Code* (IRC).

Why *would* we?

When we provide a design for a new project, our guidance comes from the contents of the *International Building Code* (IBC) and related references. We must be familiar with this information, be comfortable with the concepts, and understand how to comply with these standards. Structures have become more complex. The Code and the material standards must keep pace with these changes. The result is a collection of books that would rival my childhood encyclopedia set.

A request that structural engineers add the contents of the IRC to our repertoire would probably result in a groan or at least a small chuckle.

Besides, the IRC itself indicates that its purpose is to allow for the construction of one- and two-family dwellings without the need for an engineered design.

> *IRC Section R301.1 – "… The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets the requirements for the transfer of loads from their point of origin through the load-resisting elements to the foundation."*

It sounds like we are off the hook now, right?

Well, maybe not. Our services could still be required. IRC language exists which allows for the engineered design of a specific element or system, should that portion of the structure fall outside the criteria for an IRC building. However, the remaining portion of the building may continue to be constructed per the IRC prescriptive requirements.

> *IRC Section R301.1.3 – "… Where a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice."*

In this case, the engineer involved will likely provide the specific design based on the principles and practices they find most comfortable – namely those contained in the IBC.

There still seems to be no compelling reason to get involved with a residential code, correct?

So then, why *should* we?

Our primary duty as engineers is to "hold paramount the safety, health, and welfare of the public." The *public* is not only a generic group of people, but includes our friends, families, and ourselves. Most people spend nearly half of every 24 hours in their homes. This is more time than is spent in their offices, schools, churches, or shopping centers. Yet we treat these facilities as somehow more worthy of our attention. We, as engineers, have knowledge that can make life at home safer.

I expect you can tell that this issue is important to me. Our firm offers engineering services to homeowners – something that is becoming more and more rare. It has been an important part of our 35-year history, and we intend to continue doing so. Contractors and homeowners contact us for assistance with everything from investigating a failing foundation wall to the addition of another level on their house. Through our involvement in these projects, we have found it necessary to rely on the IRC to better understand the basis for the original construction.

Residential designs for new construction have also become more creative, pushing the limits of what can easily be addressed in a prescriptive code. Our firm is often asked to help interpret various IRC sections that have been recently added to keep up with new materials and systems.

While we have found that the majority of the information contained in the design tables follow accepted engineering practices and equations, several assumptions and limitations were involved in their development. Code language generally remains unchanged unless someone speaks up. Maybe "the way things have been done for 20 years," is just not good enough anymore. It is here where the value of structural engineering knowledge comes into play.

What *can* we do?

I have been the Chair of the NCSEA Code Advisory IRC Working Group for the past two, 3-year code cycles, and I feel our work has been interesting and productive. Our group has been successful in making code changes that corrected discrepancies and improved clarity.

It is not our vision to change the IRC to become an engineering guideline like the IBC. Each of the codes has specific uses and targeted audiences and serve them well. Our goal is to ensure that the IRC is not just a collection of empirical past practices but is based on proven engineering concepts. Codes are generally considered a summary of *minimum* requirements and, as our engineering knowledge increases and construction practices change, structural engineers should be monitoring these documents to make sure they remain current and relevant.

So, if you should encounter the IRC during your day-to-day activities, do not shy away. Take a bit of time to review and understand its contents. If you find a concerning issue, bring it to the attention of our committee and we will do our best to address it through the code revision process. If you have a bit more time and interest, volunteer to serve on your State or local Code Advisory Group, or join us at the NCSEA level. All participation is welcome and appreciated.

Structural engineers should do their best to elevate the performance of all structures, including those we call home.▪

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