

structural forum

Structural Engineer of Record – A Role Under Attack

By Richard A. Meloy, PE, SE

I believe that the traditional role of the Structural Engineer of Record is being eroded, and that reinforcing it is essential to maintaining and improving the practice of our profession.

The term “Engineer of Record” is widely used, but the meaning varies with the audience. For this article I would like to use definitions from CASE’s *National Practice Guidelines for the Structural Engineer of Record*. I highly recommend CASE’s publications to the practicing structural engineer:

“STRUCTURAL ENGINEER OF RECORD (SER): The Structural Engineer who is legally eligible to seal the Structural Documents [...]. The SER is responsible for the design of the Primary Structural System.”

“SPECIALTY STRUCTURAL ENGINEER (SSE): A licensed professional engineer, not the [SER], who performs Structural Engineering functions necessary for the structure to be completed [...].”

Unlicensed Corporate Practice of Engineering

Many states require certificates of authority for corporations practicing engineering. Engineering firms are familiar with such. But, there are engineered system companies that do not comply with this. These companies supply “per order” design plus sealed drawings or calculations, which can be directly used by contractors or owners. However, these companies do not provide the integrated design of the entire structure as would the SER.

Disregard of “Immediate Personal Supervision”

Most states have specific requirements for a licensed engineer to personally supervise the creation of the documents that he seals. I have been aware, in engineering and industry, of engineers sealing documents while having little or nothing to do with their creation. Young engineers observing this are less motivated to become licensed. Others may be more amenable to pushing designs to the limit, or making questionable decisions since it is not their license on the line. Failure to follow this provision breeds contempt for licensing regulations and the responsibility inherent in the SER role.

Design-Build Construction

Design-build advocates trumpet design professionals, suppliers, and contractors working as a team. Owners see a single source contract as

a way to manage risks and budgets. But design-build frequently places the design professional under the general contractor. The SER no longer has a direct link to the owner, to provide him with counsel regarding design questions and alternatives. If an owner chooses not to hire the SER for construction observation, he would be advised about its significance. The

footing design, steel structural design by the building supplier’s engineer, the mechanical contractor hiring a mechanical engineer, and so on. The design-builder can hard bid all of the subcontracts - engineering included. Communication between various design professionals is restricted. There is no one able to provide services as the SER.

With design being performed by various SSE’s, removed from the owner by layers of subcontractors and suppliers, concerns for public safety can be lessened. As the old saying goes, “no man can serve two masters.” Decisions will be required where the SSE is caught between the interests of his employer, and the public.

Reduced Fees and Scope

When pressure drives the SER’s scope far enough, he must give up oversight of the overall structure and himself become an SSE also.

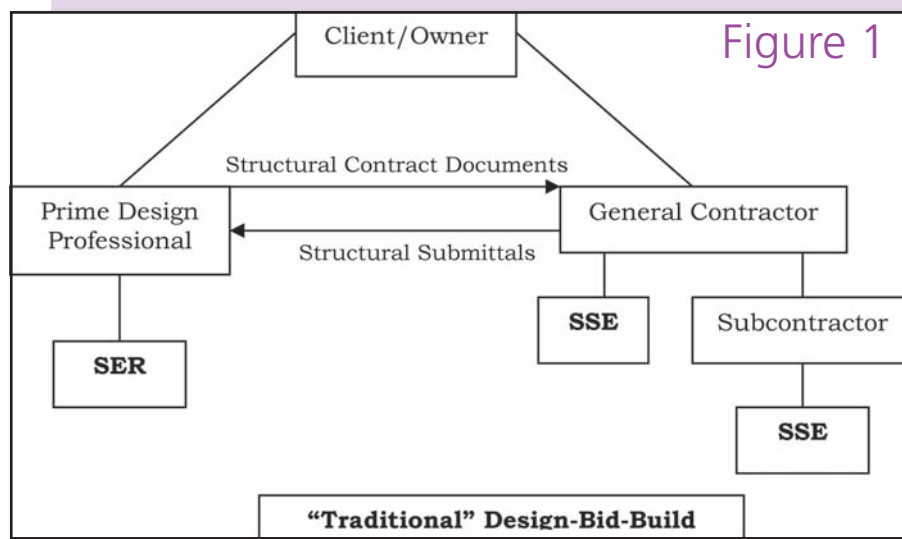


Figure 1

general contractor can make the same choice, but the owner is out of the loop in deciding on a typical quality-control issue.

Some forms of design-build actually fragment the A/E team. The contractor can buy some or all of the design through specialty suppliers or subcontractors. It’s possible for a project to be performed with a foundation subcontractor hiring an engineer for

Engineered Building Systems

Engineered building systems lend themselves to the design-build methods described. An owner or contractor can go to one source and buy a complete building structure. Just add foundation design. Their distributors, typically not engineers, are instructed to boil down the project information to a structural

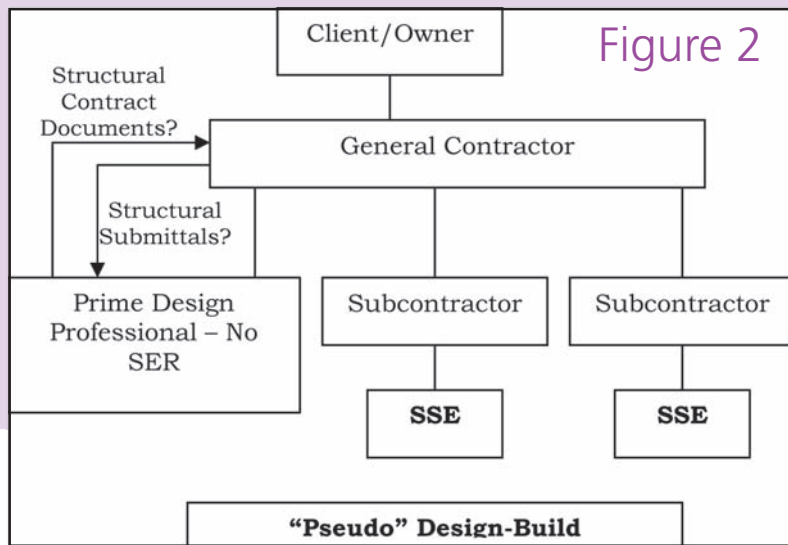


Figure 2

Conclusions

Please, consider the following ideas:

We must take the time to study our state licensing laws, and challenge ourselves to follow them even if it requires change.

Improve enforcement of our licensing regulations by personal involvement. It's our responsibility. File complaints when necessary. If we're not willing to do this, there's little point in adding to our regulations under the guise of improving our profession.

Get involved in reviewing and keeping our professional regulations up-to-date. NCEES publishes a Model Law that is good source material.

Require corporations practicing engineering to not only have a certificate of authority, but to place the certificate number on all sealed documents.

Work with local building code officials regarding essential checks for structural information and seals on permit application documents.

Adopt engineering responsibility regulations based on the CASE

Guidelines or Florida's regulations.

Discuss these issues with other engineering disciplines and with architects. We may find that there are similar concerns in their areas of practice. ■

Richard Meloy is a licensed P.E. and S.E. with over 25 years experience in consulting and industry. Mr. Meloy has served as Chairman for past 2 years of the Professional Practice Committee of the Structural Engineers Association of Kansas and Missouri (SEAKM). He has also served as President of the Kansas City Chapter of SEAKM and is a member of the Specialty Structural Engineers Sub-Committee of the CASE National Guidelines Committee.

schematic and fill in the order form. The building manufacturer disclaims responsibility for just about everything but filling the order. The drawings supplied by the manufacturer with an engineer's seal are often used for code review and permits.

The marketplace has picked up on this. Watch for advertisements in trade periodicals that offer "pre-engineered" mezzanine systems, wood framed structures, and vehicular steel bridges. Many of these ads promise sealed drawings for building permits. The net effect is that a significant portion of construction in this country is being performed without an SER being involved, and it is growing.

Boiler Plate Specifications

Good specifications are an essential part of building construction documents. They contain essential information unsuited to construction drawings. But, poorly written specs create disdain among suppliers who whisper in the owner's ear about the overly conservative engineer, and sell lower-priced options by taking exception to them.

Unsophisticated Building Code Enforcement

Consulting engineers are familiar with the process of developing construction documents for building permits. Most building codes are clear about the requirements. Drawings are generally required to indicate the proposed construction, with enough detail to show code compliance. Deferred submittals allow some information to be delivered later, subject to review by the engineer of record. But, adequate staffs are necessary to properly administer the code which smaller communities may lack even though they have significant construction activity. Their plan checkers may carefully check safety and health issues, while accepting about anything on a structural plan as long as it bears an engineer's seal.

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