

Improving Our Lot

How Can Structural Engineers Enhance Their Value?

By Richard C. Boggs, P.E., Jon A. Schmidt, P.E., and William C. Sherman, P.E.

The success of a structural engineering practice, like any business venture, depends upon the firm's ability to convince clients to hire it, and to perform the work for which it is hired efficiently and effectively enough for income to exceed costs. This sounds simple enough, but based on the results of a recent survey conducted by the Clients & Prospects (C&P) Subcommittee of the NCSEA Advocacy of Profession Committee, many of our peers throughout the country are struggling to accomplish this objective, particularly in light of the even greater and more immediate goal of maintaining public safety. This article discusses some of the initiatives that are underway to help address this challenge, along with some of the authors' thoughts about how we got where we are... and how to get where we would like to be.

Clients & Prospects Subcommittee Goals and Initiatives

The mission of C&P is to enhance the real and perceived value of structural engineers to their current and prospective clients. C&P's objectives include:

- To understand and address the relationship between structural engineers and those who engage or should engage their services in light of their respective needs, desires, and priorities.
- To educate owners, project managers, and other design professionals—as well as structural engineers themselves—on the appropriate roles and responsibilities of structural engineers.
- To highlight the important distinctions between the work of structural engineers and that of other design professionals.
- To encourage the negotiation of scopes of services and compensation arrangements for structural engineers that are consistent with the above.

In 2004, C&P developed a survey to ascertain best practices, lessons learned, and persistent misconceptions encountered in structural engineers' interactions with clients and prospects. The survey appeared on the STRUCTURE magazine website. After reviewing more than 200 responses, C&P identified the following key recurring themes:

- In client relationships, "soft" skills such as communication, responsiveness, and timeliness are often as important as, or more important than, technical skills.
- Structural engineers need to do a better job of educating their clients about what they do, and how they can most effectively do it.
- Structural engineers should be involved in projects at the conceptual phase so that they can contribute to significant design decisions as equals, not subordinates.
- Structural engineers should remain involved in projects through the construction phase so that they can assist with quality assurance.

- Structural engineers are not a commodity, and should be compensated properly for the value that they add to projects.

C&P's chief goal for 2005 is to formulate and promote ideas for what we as structural engineers can do to address these issues within our profession. We cannot expect those who retain our services to view us more highly than we do ourselves. It is a worthwhile exercise to give some thought to our self-image and where we fit into the relationships among engineers of all disciplines, architects, construction managers, property managers, and building owners.

"...structural engineers are asked to do more and more with less information, less time, and less compensation."

Where We Are and How We Got Here

Since the early 1990's, there has been an overall weakening of all participants in the construction process. Owners are more demanding but less informed, construction managers seem to contribute less and less in terms of actual management of construction, fewer architects recognize their responsibilities regarding dimensioning and coordination, fewer still are sufficiently knowledgeable about code issues, and MEP engineers struggle more than ever to develop cost-appropriate systems that can work within architectural constraints. As the party responsible for the first elements to be constructed when a project starts, structural engineers are asked to do more and more with less information, less time, and less compensation. While as a group we still rise to the challenge more often than not, we cannot in all honesty claim that our success rate has improved.

Building owners generally are mistrustful of architects, who are often perceived (fairly or not) as more interested in creating monuments to themselves than adhering to budgetary constraints or looking out for the owner's interests. Construction managers have filled this gap to some degree by promising delivery of the desired building on time and under budget, but frankly their most significant contribution is usually getting others (design professionals and/or subcontractors) to provide work products at minimal cost to the owner. While this service is helpful to the owner, it really provides little value to the project itself.

"...we are clearly interested in making things work and minimizing complexity and cost."

Getting Where We Would Like to Go

The opportunity is there for structural engineers to take on a larger role on projects – perhaps even the lead role – which would serve the mutual interests of all stakeholders. We are in a unique position. Our work is integrally linked to the architectural effort, but we are clearly interested in making things work and minimizing complexity and cost. Once they know us and realize what we do, owners seem to trust us instinctively.

Unfortunately, one of the biggest challenges, even in a multidisciplinary firm, is simply getting the architects to listen to us. There is a perception that we just do not understand the subtleties of the architect's work. No matter how many times

you prove your worth, there seems to be a limit to how much weight an architect will give to your opinion if you are an engineer. Even in cases where a good relationship exists and there is general recognition that the structural engineer does a good job, that awareness seldom inspires the architect to draw the engineer into discussions earlier or consider the engineer's opinions more carefully. The structural engineer is lumped in with all of "the engineers" and considered "the help" rather than an integral team member – a subordinate, rather than an equal.

As noted in C&P's objectives, we need to accentuate the differences between us and everyone else on the design team. Think about our training and what we do with it. The best and brightest graduates of structural engineering programs generally move into careers where they design significant structures – buildings, bridges and the like. We take our theoretical knowledge and immediately start to economize from day one. On the other hand, the best and brightest mechanical and electrical engineering graduates generally move into other fields, such as manufacturing, circuit design, computer applications, the aerospace industry, and so on. While this may sound a bit elitist, in general it is true. The academic experience of architects is very demanding and intensive, but most programs focus on "design" and aesthetic considerations. It is often much more of an artistic endeavor than a practical one. For structural engineers, the focus is always on making the architect's vision work in as simple, elegant, and cost-effective a manner as possible.

Furthermore, structural engineers have a uniquely significant responsibility for protecting the public relative to the other disciplines.

Architectural, mechanical, and electrical system failures usually result in unattractiveness, poor functionality, discomfort, and/or inconvenience. A structural system failure almost always has more serious consequences; even in the best cases, there are often substantial costs associated with correcting what is or could become a life-threatening situation. This is a key reason for the separate licensure of structural engineers in several states, as well as the recent development of national board certification at the initiative of NCSEA.

Getting more clout on our project teams would be great, but no one wants more responsibility or more work without additional compensation. This may be our biggest challenge. We need more time and money to expand our range of services, which we cannot get until we can convince our clients that these expanded services are worthwhile.

We may have to be willing to demonstrate the value of our larger role before we can get compensated for it. This would obviously be risky, because it depends on the clients' ability to perceive, appreciate, and ultimately pay more for this value. In addition, there will always be those who claim to add value without really doing so, which makes it tougher for those of us who do.

"A structural system failure almost always has more serious consequences..."

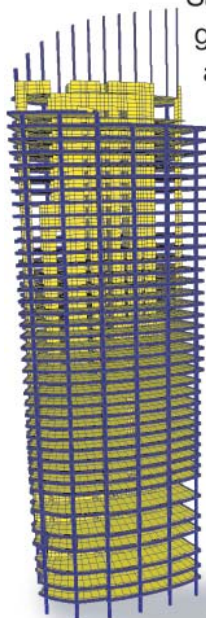
Raising the Bar and Gaining More Clout

The big question, then, if we accept that a larger role is a good thing, is how to get this larger role. Do we publish articles and give presentations in order to demonstrate the money and headaches that we can save everyone, and then wait for the architects and building owners to come around? Do we actively push for an expanded role

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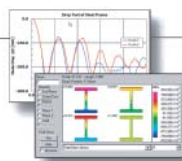
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on current projects without additional compensation, in the slim hope that our clients will begin paying us later for something that we have been providing for free? Do we give up on architects who are already practicing and focus our efforts on architects in training?

A good place to start may be CASE Document 962 D, A Guideline Addressing Coordination and Completeness of Structural Construction Documents. This publication has received significant positive attention throughout the design and construction industries, not just among structural engineers. Higher-quality design and detailing practices can reduce change orders during construction and subsequent facility operations and maintenance

“Higher-quality design and detailing practices can reduce change orders...”

costs. By getting our own house in order, we have positioned ourselves to help the other disciplines do likewise. Appropriate adjustments to the National Practice Guidelines for the Structural Engineer of Record could also be very useful in advancing this cause.

Another worthwhile course of action would be to educate our peers about the benefits of higher standards and greater regulation of our practice. Lower fees inevitably tend to result in lower quality and a lower standard of care. “Raising the bar” through board certification and separate licensure will increase others’ awareness of the special capabilities that are necessary in order to provide top-notch structural engineering services, especially if we are diligent in qualifying for, promoting, and using the corresponding designations – regardless of whether we perform work in jurisdictions that require them. A national branding campaign that communicates the meaning and significance of the initials “S.E.” is one possibility along these lines.

Most of us are already familiar with the saying, “Good, fast, and cheap – choose only two.” If we (rightly) insist on providing high-quality work to our clients, then the choice is narrowed down to just one of the two remaining items. However, clients usually “want it all.” Furthermore, the choice between speed and cost cannot be taken to extremes – there are lower bounds beyond which quality must suffer. The client’s expectations regarding quality must be very clearly defined before we begin negotiating schedules and fees.

Finally, we need to take seriously the fact that we are licensed professionals, not mere technicians or passive “cogs in the machine,” and constantly remind owners and others on the design team of this. Our highest duty is not to our supervisors, our employers, or even our clients – it is to the public, whose safety, health, and welfare are entrusted to us. Many of the issues that are of concern to structural engineers today would take care of themselves if we would rigorously live by this principle in all of our business relationships.

C&P welcomes input from the structural engineering community as a whole. Please contact one of the authors if you wish to contribute a comment or suggestion, or get personally involved in the subcommittee’s future activities.■

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