



# editorial

## What It Means To Be a Structural Engineer

Ronald O. Hamburger, SE, President NCSEA

Recently, the Structural Engineering Certification Board developed a definition for “structural engineer” and “structural engineering.” After reviewing definitions adopted by several states the Board settled on the following:

*A structural engineer is a professional engineer who is competent, due to specialized education, expertise and experience, to engage in the practice of structural engineering. Structural engineering is the application of mathematics, materials science, and the physical principles of statics and dynamics, to the design, analysis, construction and rehabilitation of buildings, bridges, towers and other structures, and parts thereof, to make them safe and serviceable while enduring the effects of various loads.*

While this seems a reasonable technical definition, there is much it doesn't say. Like the proverbial Boy or Girl Scout most structural engineers I know are unfailingly:

**Trustworthy.** The public trusts us with their lives and their welfare on a daily and hourly basis, as they do few other professionals. Though most members of the public don't know who we are or that we even exist, every decision we make potentially affects the public. We have seldom let the public down by providing unsafe construction.

**Loyal.** Engineers are loyal beyond all reason. We routinely perform services in excess of contracted scope without additional fees. We continue to work for clients who refuse to pay us in a timely manner then cheerfully ask for additional opportunities to do more work. One could attribute this to our poor training as businessmen, but I think it goes beyond this. As employees, many of us work untold hours of overtime without complaint and often without pay. As professionals, we volunteer countless hours developing provisions for building codes and standards, or training other engineers.

**Honest.** You have to look pretty hard to find a dishonest structural engineer. Recently, the newspapers have had many articles on corporate officers, accountants, lawyers doctors, and politicians, who enriched themselves unjustly and dishonestly at the expense of others. Engineers are so honest that, as a group, we fail to charge clients for the value of our services; and, instead, routinely charge them for what we think it will cost us to provide the service. When we estimate wrong, we rarely go back and ask for more.

**Thrifty.** From the time we enroll in our first design course, we are trained to be thrifty. I know I was told that structural engineering is all about optimization, using the least amount of materials and labor to accomplish the required task in a safe manner. This professional thriftiness seems to permeate our personal lives as well. Rarely do we have extravagant lifestyles, or live beyond our means.

**Conservative.** No doubt we are conservative (not necessarily in the political sense) as a result of knowing that our personal decisions can have extreme consequences in terms of loss of life and personal reputations. As with other things, this conservative approach to our work tends to carry over into our personal lives.

As admirable as these characteristics are, they tend to result in a profession that is viewed by many as rather boring. Add to this the technical nature of our work, and most people, including our clients, can't and don't understand what we do or how we do it. As a result, the only person qualified to judge our competence and talent is another structural engineer. Architects judge us by our ability to accommodate their design whims. Contractors judge our competence by how well a structure comes together, and by how accommodating we are to alleviating their troubles in the field, whether these troubles are a result of our detailing or their incompetence. Most owners can judge us only by what they are told by architects and contractors.

Given all of this, I have often wondered why we must rely on others to regulate our profession. Clearly, it is not because we lack honesty or trustworthiness. Perhaps it is because we have been too busy working to improve society and lack the political interest or influence to obtain self-regulation. Regardless, I hope all my trusty, loyal, honest, thrifty, conservative, and indeed, intelligent colleagues, will accept these wishes for a successful and happy 2005. ■

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