

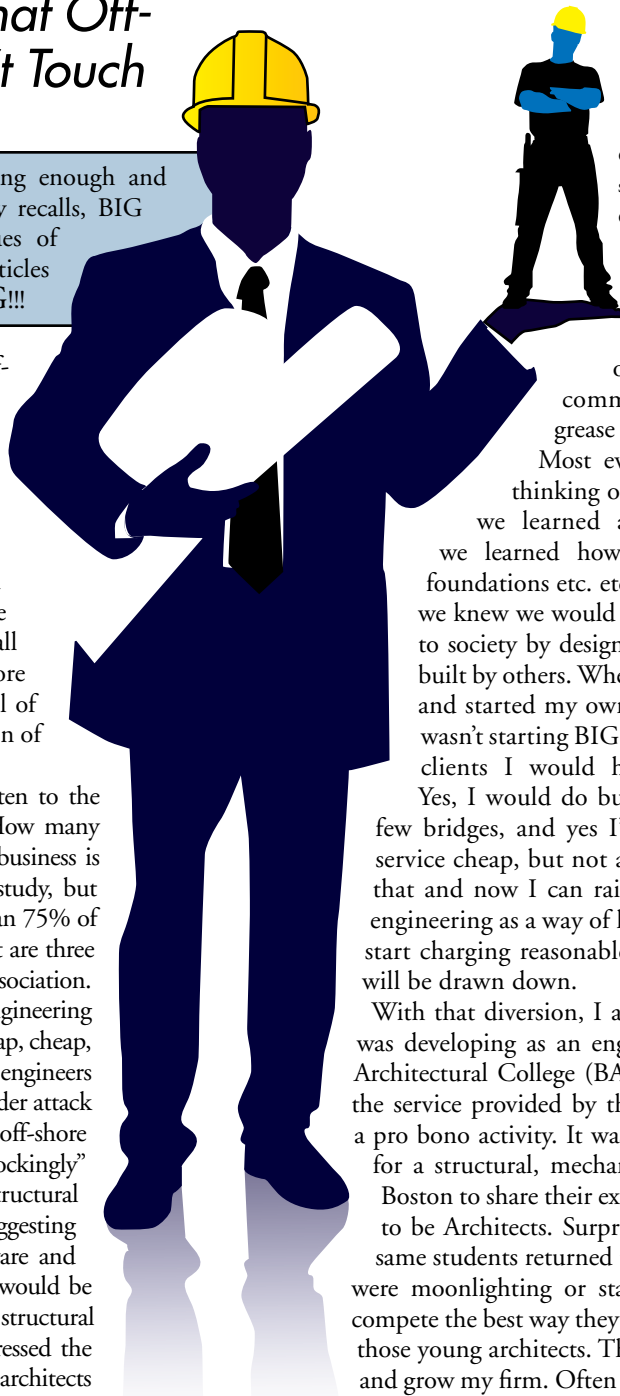
Structural Engineering That Off-Shore Engineering Won't Touch

By Craig E. Barnes, P.E., SECB

Lift your head from your computer screen long enough and you hear about BIG business, BIG oil, BIG toy recalls, BIG hamburger recalls. Thumb through a few issues of STRUCTURE® and you find that many feature articles are BIG projects. All around usBIG, BIG, BIG!!!

Big engineering projects are very attractive to off-shore entities. Which of you firm owners have not been exposed to some ad or mailer that promises ten- fifteen- or twenty-five dollars an hour for your BIG projects to be designed off-shore? Why bother to have BIG engineering firms when projects can be done off-shore for peanuts? Some architects love the concept. Why pay a BIG engineering firm with a BIG office, BIG bucks when you can have your BIG projects engineered for cheap? Some call the concept of BIGness and the intrusion of off-shore firms as progress, while others lament the downfall of engineering in this country and the commoditization of structural engineering.

Step back from that cacophony for a moment; listen to the conversation and you hear an undertone of small. How many times have we heard our legislators tell us that small business is the work horse of the economy? I don't recall the study, but somewhere I do remember a suggestion that more than 75% of all construction in this country involve structures that are three stories or less. Look at your own state professional association. How much of the membership comes from BIG engineering firms? Off-shores are promising instant results and cheap, cheap, cheap fees for projects of small scope as well. Domestic engineers earning an income from projects of that nature are under attack on two fronts. Not only is the fifteen dollar an hour off-shore engineer seeking to push you to the bread line, but "shockingly" often so is your architect benefactor. Do you recall the structural engineering software firm sweet talking architects by suggesting that the architects should be purchasing their software and in a matter of less than two projects the entire cost would be recovered in fees that they no longer had to pay their structural engineer? If you don't recall, or have mentally suppressed the event, the matter is fact. Think of it! In Illinois, where architects



can stamp anything, BIG and small structural firms could be put out of business by architectural firms willing to take the risk. It's a dizzying world out there!

I will briefly address what is well known by a segment of the structural engineering community that provides a lot of grease to the wheels of the economy.

Most everyone reading this article is thinking of entire buildings. As students, we learned analysis, we studied design, we learned how to design beams columns, foundations etc. etc. etc, and when we left school we knew we would be making great contributions to society by designing buildings or bridges to be built by others. When I left a BIG engineering firm and started my own practice in 1984, I certainly wasn't starting BIG. I knew that in order to attract clients I would have to engineer everything. Yes, I would do buildings, and I've even done a few bridges, and yes I'll admit it, I promised good service cheap, but not at off-shore prices. I grew past that and now I can rail at those who provide cheap engineering as a way of life. They need to grow up and start charging reasonable fees or the entire profession will be drawn down.

With that diversion, I am way off my story line. As I was developing as an engineer, I taught at the Boston Architectural College (BAC). It was not for income, as the service provided by the instructors at the BAC was a pro bono activity. It was considered a right of passage for a structural, mechanical, or electrical engineer in Boston to share their experience with students training to be Architects. Surprisingly, after graduation, those same students returned to ask for my assistance as they were moonlighting or starting a small firm, trying to compete the best way they could in a cold world. I helped those young architects. Their work helped keep me alive and grow my firm. Often those commissions were for no

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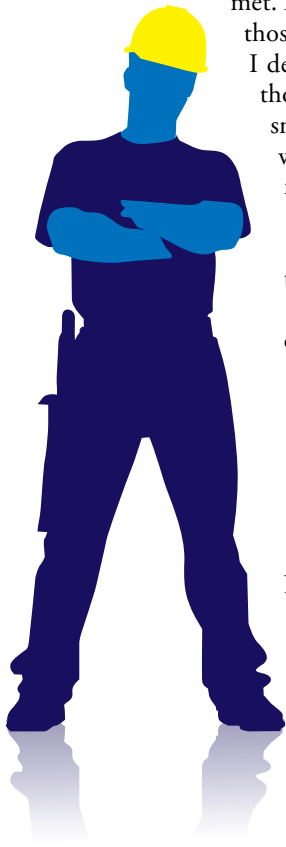
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more than the design of a beam or column or a plated connection of some sort, or trying to connect a new foundation to an existing, and so on. I discovered property managers and facility operators with really small engineering challenges that needed to be met. I had grown to a point where I could meet those challenges and charge a reasonable fee. I decided in the process to continue serving those clients and others in satisfying the smallest of engineering needs. Along the way I also found there are hundreds, if not thousands, of practitioners doing the same thing. Perhaps I am naïve, but I can not imagine the off-shores cutting into this service area.



On many occasions a new client will come to me questioning if their project is too small to be of interest to our twenty five person firm. Remember that old saw...no job too large, no job too small! I don't have to worry so much about the large jobs because they go to BIG firms, but we gladly do the small projects. A short while ago I was asked to speak to the Northeastern University ASCE student chapter on the general topic of structural engineering. Using my experiences, I prepared for the fifty or so students and instructors a picture of what I'm sure one of your professors said to you, something similar to, "Your schooling

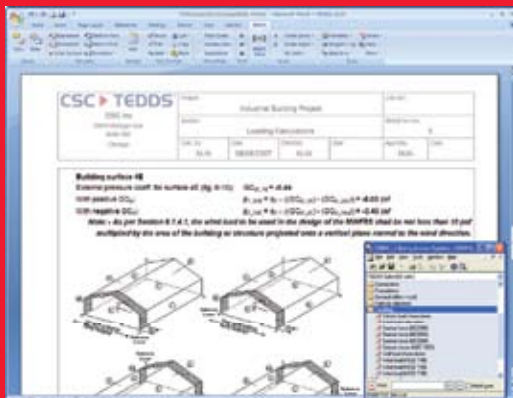
won't provide all the solutions but it certainly will provide the tools to arrive at the solution." I believe I used that statement, or similar, in my opening remarks and told the students that my lecture would be about things that they would not receive in school but would utilize the tools that they would be gifted with on graduation. I pulled from my files my experience on several projects that were essentially components of structural engineering. Students learned about the strengthening of an existing steel column to support increased loads, the evaluation of and the increase in size of a foundation to support additional loads, the engineer's involvement in the lifting of an existing building raised two stories, the practical way to reinforce steel beams and columns in an old hotel which members were substantially reduced by corrosion. The students were exposed to the design of a seismic mount to support a priceless artifact. The students learned about the practical application of arch action to evaluate existing masonry construction. The students were exposed to the practicalities of metal pan stair construction and the need for structural engineering. Followed by questions at the end of the presentation, I could sense the students lighting up, as they put what heretofore had been some abstract engineering concepts into solving real world problems. ■

Craig E. Barnes, P.E., SECB is principal and founder of CBI Consulting Inc. Registered in both the civil and structural fields, Mr. Barnes has over 40 years experience designing, coordinating, and managing structural and civil engineering projects throughout New England. Craig is a member of STRUCTURE® magazine's Editorial Board. Mr. Barnes can be reached via email at cbarnes@cbiconsultinginc.com.

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