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Dream School  
Charter Builders and SEIW Architects

# Bridging the Gap

By John Spencer, International Construction Data, Inc.

About 15 years ago, the Sunday *Parade* Magazine ran an article by Carl Sagan that began by telling a story about the mythical inventor of the chessboard. In the story, the ruler of the kingdom was so pleased that he promised to grant his subject any wish he named. To which the commoner simply replied, "Place one coin on the first square, two on the second, four on the third, eight on the fourth, and so on until you get to the end."

The king, thinking this a very meager request, granted the wish immediately—only to realize he had lost his entire wealth long before the last square was reached.

Sagan used this story to illustrate the power of the doubling effect. He went on to say that it took all of human history to produce the first billion people in the 1800s and 150 years to double that. In 1950, the earth's population "stood" at 2.5 billion. In 1990, we were over 5 billion. In the next 12 years, those 5 billion souls have produced another billion to bring us up to the 6 billion this planet supports today.

This explosive growth has fueled an economy that cannot afford to slow down. It is an unrelenting driver, one that has created unequalled opportunity in our

industry. Like all good opportunities, it comes as the proverbial double-edge sword. One area that is impacted greatly is the "gap" between paper and concrete—designer and builder. I know in my 30 years of working between the two, the pressure has had a profound effect.

The demand on architects and engineers to produce more and more complicated structures in less and less time has put an added burden on the builder who may not realize that a serious design question exists until it stops the field operations. The designers, with their ever-increasing load, are working two or three projects ahead of the builder only to be stopped to address a problem many thought behind them.

This ping-pong effect between designer and builder is causing the entire system to actually slow down at a time when it needs to produce at a greater rate. Business-as-usual will not feed the planet nor will it help our industry be as efficient as possible. The hope for both lies in new technology as well as new thinking. (I am hardly qualified to speak about feeding the planet; however, from what I read, genetic engineering, new methods of farming, and new hardware are making a difference.)

There is an area of our business that I have spent most of my time trying to improve. For the past several years, I have been "pre-building" projects using the published plans before the crews try to do it in the field. By working closely with the designers, we can find design problems by "building" with electrons rather than concrete and steel. What we do is intense, but the payoff comes when construction starts. The data is downloaded straight from the computer to the field equipment, making it possible to check what is being built. (The tape measure still rules.) The concept is in its infancy, but already several firms have embraced the technology, including the featured builder of the month. Charter Builders has integrated the system into their daily field operations with measurable results. We have a solid alliance with the designers of these projects, since they know we are checking the design as we "build." This attention to detail has allowed them more time to concentrate on their future agendas.

As technology improves and inertia gives way to urgency, I see a day (in the not-so-distant future) when owners and architects seek out someone to pre-build their projects, making sure all the parts fit before construction begins. This procedure should be the final step in the design process, and I know if I were an owner or architect my project would be done this way. It is a rewarding experience to bring all the components together (many for the first time) to see if they will work as planned. It will require some new thinking, but logic and now-actual results will attract the forward thinkers.

The time is coming when the construction worker will don a special set of glasses (safety lenses, of course) and the entire site will be bathed in digital light. Instead of finding the right sheet in the plans, he will reach for the tiny dial on his glasses and scroll to the next layer to be built. And there, in front of him, is the image of the part exactly where it belongs. The technology for this "Star Wars" scene is getting closer and I hope to be a part of it. No matter how advanced the hardware, the data still has to be correct.

How long will it take for 6 billion soul to put the 7th billion here? How long for 7 to produce 8 to make 9... No one knows, but one thing is for sure—our industry (as well as others) will have to make some fundamental changes or risk not keeping up with the incredible demand. The small but significant area I have addressed is making a promising impact in that direction.

## "Congratulations, Charter Builders - We Wish You Continued Success!"

- John E. Spencer, I.C.D.

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