

# **“By Accident”**

*From a Builder’s Point of View*

By F. Rutson Fuqua

**“If an Architect was producing a set of drawings that was for a project of his own, he would most assuredly do the drawings unerringly correct and in extensive detail.”** -- This was a comment that I made to an Architect friend of mine from London. This, I thought, had to be one of the foremost accepted concepts in the modern AEC world. It is most definitely a theory that I would have bet the ranch on. My insightful English friend then asked, “What makes you think that Architects (or designers) comprehend the significance of producing proper documents, even when their own time and money are at risk?” To quote this Brit; “The penny then dropped for me.” I came to a realization that since most Architects have never walked in the shoes of a builder, most can never fully understand the compelling need for complete plans and specs. I have personally built noteworthy residences for almost 30 years. I know that all project information must be communicated either through proper plans or through countless hours of on-the-job design development. If the information is not communicated by either approach, *Murphy’s Law* takes immediate control of the project and chaos ensues with a landslide of difficulties.

On-the-job design development is acceptable only as a last ditch approach, but certainly not as a proper operating methodology. The trouble with on site design is that it does not give any of the participants the opportunity to economically mull through the countless options. *Mulling* is quite thorny (expensive) with workmen standing around waiting for an answer so they can get back to work. In addition, it is next to impossible to instantaneously obtain the necessary and appropriate materials. (It’s much like shopping for your spouse at 5:55PM on Christmas Eve – What’s available is expensive and wrong.) Proper options are most assuredly limited when pressed for quick decisions. On-The-Fly decision making is in actuality an abusive and costly methodology for the client, the contractor, and the craftsman alike. One of my sub-contractors had a prominent sign in his place of business. The sign read, **“I refuse to let poor planning on your part, create a crisis on my part!”**

Lee Iacocca wrote the following about the contemporary U.S. Industrial Policy in his autobiography *Iacocca*: “Don’t they want America to be strong and healthy? Sure they do. But they want it to happen without any planning. They want America to be great by **accident.**” Ayn Rand wrote in *The Fountainhead*(1943): “Most people build as they live - as a matter of routine and senseless **accident.**” From a builder’s point of view, “by accident” is a harrowing way to conduct proper business<sup>1</sup>. From a neophyte (or deceitful) client’s point of view, “by accident” might appear to be acceptable in light that he saves money on design fees and he feels he can litigate or bully the building contractor for the balance of the unknown. Little does the client know, and no one is about to point it out, that the poor planning has just cost him buckets of money.

In the real day to day world of construction, if incomplete plans are released as construction documents, the contractor must fill in all of the design omissions. If the

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<sup>1</sup> This is assuming that the contractor has the best of intentions. If he is interested in stealing, hiding, or misrepresenting construction funds then the vague construction plans and documents suit him perfectly.

contractor is unable, the sub-contractor must fill in the design shortfall. If both of the above parties are unable, the workers will, in actuality, make up the missing design decisions as they go. This process of decision making travels downhill if left undefined at any juncture. The lower the level of decision making, the less is the chance that the decision maker will have the ability to consider all of the necessary factors involved with a proper design decision. The only participant capable of knowing all of the interwoven intricacies is the guy at the top that sees the big picture. No matter what the circumstances, a knowledgeable client really will not fancy the lowest common denominator making the defining design decisions in his project.

Many will argue that it is the one toting the hammer that has the real, actual knowledge. This is 100% true. But a building project is a team sport that must have a designated leader. This leader must take the knowledge from all of the practitioners and assemble the many pieces of information in the most efficient manner possible to accomplish the task at hand. This is a difficult, time consuming job that must be paid for, but if properly prepared it will pay for itself and much more.

Consider, with me, this simplistic example. Let's say that you draw a square on a piece of paper. You make 10 copies of your square and distribute the copies to your suppliers and workmen. After they review your plans, they each call you and ask, "What is this?" You say to 10 different people, "These are, *of course*, the plans for a dog house." They ask, "How big?" You say, "Scale it, for goodness sakes." They ask, "What scale?" You say, "Standard scale is 1/4"=1'0", of course." They say, "Where do we put it?" – Then, the lumber yard had some teak plywood that they couldn't get rid of, so at \$200/Pc, here is their opportunity. --- And so on. --- Crummy plans required that you explain what your square is to everyone involved. Chances are that you didn't explain your square the same way each time, as well. On the other hand, with complete proper plans, material lists, and schedules, everyone can efficiently go about their job straight away. Proper plans also shift the liability of performance from the designer to the workers and suppliers. Proper plans take far less time to communicate the information. Proper plans provide identical information to all concerned. Can you imagine how effective the assembly line at *General Motors* would be without a definitive plan? Extra tires, extra motors, etc.

Over a period of time, I have demonstrated the details and information that can be produced from ArchiCAD's virtual model to many architects and many contractors. Most exclaim; "Liability!" Liability is always a considerable concern that must be managed, but liability, however, seems to be the standard, ever ready, veil used to cover lack of competence or lack of training, or both. Graphisoft has provided the technology through the virtual modeling process that has all but eliminated the potential problem areas of improper coordination of drawing information. Soon, and properly so, incomplete plans will be the focus of litigation. Hiding behind the log will no longer be the "safe harbor" that it currently is.

The principal, in the firm where I do research & development for the virtual building model, announced at a business breakfast that his firm was now supplying free design services to all his clients. As his business associates eagerly inquired, the principal explained that the *net result* is free plans when taking into consideration the

money saved through construction by thorough and proper plans using the virtual building simulation.

In an interview with an established local heating and air contractor, I demonstrated the virtual building model and it's abilities to identify the full scope of his work and the work of others in conjunction with his. He said that with this detailed set of plans he could shop build all parts in advance, install the system, and then send a bill. This method would enable him to reduce his price by 30%. By spending an additional \$5000 in design we were able to generate a \$15,000 cost reduction on a \$45,000 heating & air contract. Letting the building process proceed *by accident* is pretty pricey. Letting the building process proceed by thorough planning provides free design services (or better) through construction savings.

In the early 1980's, when the Prime Interest Rate was at 22%, I was offered a contract to build 38 houses in 120 days at \$33/SqFt. \$55/SqFt was the going rate for a spec house at that time and 120 days seemed a little fast paced for me. I respectfully declined the offer. That night I could not quit thinking about the challenges and possibilities of that project. I spent the several days talking to subs and suppliers. They, of course, had no work during these hard times either. We collectively sharpened our pencils and developed a strategy to eliminate all waste and all wasted motion. We thoroughly eliminated the "*by accident*" part of the building process in this project by doing a building simulation on paper and with my old *IBM Series I* computer. Thorough planning produced a project that was so successful that we took on a second project that consisted of building 60 houses in 180 days. What a great feeling to know when and where every piece of time, labor, and material would be applied, and in advance, and not by accident. I made money, the subs made money, the suppliers made money and the client got a great, reduced priced product. What we accomplished in these two projects is the same fundamental process that Graphisoft® ArchiCAD® makes available with their 4d concept of modeling.

In defining how to utilize the *Virtual Building*™, Graphisoft foresees future design companies as design teams. The design teams will consist of Architects, Engineers, and Contractors. Each needs the experience of the others to be effective. Combining the knowledge of all three professions will make the most of the 4d building simulation. To paraphrase Lee Iacocca in "*Iacocca*": Graphisoft is so visionary in the CAD industry that they reminisce about the future!

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## **BIOGRAPHY**

### **F. Rutson (Rusty) Fuqua**

Rusty Fuqua graduated from Trinity University in 1973 with a Bachelor of Arts. As a General Contractor, from 1973 to 2002, Rusty's passion has been to develop building and computer skills for estimating and project management. His experience as a builder and his computer skills provide him with the expertise to prepare exceptionally functional and complete construction drawings using 3D modeling for J Wilson Fuqua & Associates Architects in Dallas, Texas. In July, 2004 he received the top award in an International Competition sponsored by Graphisoft for "Best Practices". As a Contractor he has built and remodeled over 200 homes ranging in price from \$30,000 to \$3,000,000. As a Civic Leader he has served as President of the Texas Panhandle Builders Association, Chairman of the Amarillo Building Board of Appeals, member of the Amarillo Board of

Review for Landmarks & Historic Districts, a member of the Amarillo Executive Club,  
and a member of the Southwest Amarillo Rotary.

Mr. Fuqua's essay for Graphisoft can be accessed at:

<http://download.graphisoft.com/ftp/pdf/accountability.pdf>

Various Archicad drawings and techniques by Mr. Fuqua can be found at:

<http://www.timeless-builder.com/ArchicadMenu.htm>

Various Residential Building Projects by Mr. Fuqua can be found at:

<http://www.timeless-builder.com>